Administrative Committee

Regular Meeting
~Agenda~

www.ci.moscow.id.us

Laurie M. Hopkins
City Clerk

208-883-7015

Monday, November 25, 2024	**4:00 PM**	**Council Chambers 206 E. Third St.**

The Moscow Mayor, City Council and Staff welcome you to today's meeting. We appreciate and encourage public participation. For regular agenda items, an opportunity for public comment is sometimes provided after the staff report. However, the formality of procedures varies with the purpose and subject of the agenda item and limitations may be placed on the time allowed for comments. If you plan to address the Committee, you will find a list of "Tips for Addressing the Council" in the door pocket outside the City Council Chambers. Please note that council committee meetings are televised, videotaped and/or recorded. Links to view the City Council meeting live can be found on the City website and the City's YouTube channel. Thank you for your interest in City government.

REGULAR AGENDA

1. **Approval of Administrative Committee October 28, 2024 Minutes (ACTION ITEM) - Laurie M. Hopkins**

2. **Disbursement Report October 2024 (ACTION ITEM) - Sarah Decker**
   Presentation of the Accounts Payable Report for the month ending October 2024.
   ACTION: Approve and authorize the use of digital signatures to sign the Disbursements Report for the month of October 2024.

3. **Personnel Policy Updates Resolution (ACTION ITEM) - Bonnie Dennler**
   The Human Resource Department has identified the need to make several updates to the City's adopted Personnel Policies. The proposed amendments to the policy include updates to reflect recent regulatory changes, adding provisions specific to the new Paramedic/Firefighter positions, aligning and formalizing policies with current practice regarding emergency City office closures, and updating position titles. Staff will present the proposed updates for the Council's consideration.
   PROPOSED ACTIONS: Recommend approval of the proposed Resolution; or provide staff with further direction.

4. **City Shop Replacement Project Bid Award (ACTION ITEM) - Cody Riddle**
   The deteriorating condition and deficiencies of the existing shop facility has been identified as one of the City's biggest challenges for years. To address the problem, and ensure City Staff can continue to efficiently provide key services in a safe working environment, construction of a new shop was prioritized by City Council in both the FY 2024 and 2025 budgets. Working with Lombard/Conrad Architects (LCA), a design package for a new shop building, dry materials storage shed, and recladding of the existing shop was completed earlier this fall. The project was subsequently advertised for bid on September 28th and October 5th, with a bid opening on November 6th. Seven bids were received. Wellens General Contractors from Enterprise, Oregon was the lowest bidder with a base bid of $6,567,000, Alternate #2 (dry materials storage shed) $177,000, and Alternate #3 (recladding of the existing shop) $504,000, for a total bid of $7,248,000. The bids included a deduct alternate for the exterior cladding system of the new

building. While the Wellens proposal would result in a savings of $212,000, the finished product would be less durable and not as energy efficient as the system included in the base bid. Given that, Staff is not recommending acceptance of the deduct alternate. The City recently worked with Wellens as the general contractor on the new police station. Their proposal for the shop has been reviewed and found to be complete and accurate by City Staff and the design architect. If awarded, construction is anticipated to commence in the spring of 2025 and be complete by March 1, 2026.

PROPOSED ACTIONS: Recommend acceptance of the low bid from Wellens General Contractors, Inc., award the contract for the bid amount of $7,248,000 (Base Bid and Alternates #2 and #3), and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount; or provide staff further direction.

5. **Development Agreement for 2216 S. Main St. (Fountain's Business Park) (ACTION ITEM) - Bob Buvel**

   On December 18, 2023, City Council approved the annexation of the property at 2216 S. Main, also known as the Fountain Business Park. As part of the annexation, the City of Moscow requested that the subject property be connected to the City water and sewer systems. Joel Cohen has submitted to the City a proposal to connect the property to the City Water and Sewer system. Part of that work would require up-sizing the existing 6-inch water main located in US95 to a 10-inch water main. The water main would be oriented in a way that it could be continued east when Nelson Avenue is extended. Staff has concluded that it is prudent to have the line upgraded at this time and recommends contributing funding to cover the cost difference with up-sizing the existing main. The bid from Cohen's contractor, 4G Contracting, has the work valued at $57,000.00. Staff reached out to a third party contractor for a quote to do the work. M.L. Albright's responded with a quote of $67,880.00. The Development Agreement reflects the recommended funding contribution to have 4G Contracting complete the work.

   PROPOSED ACTIONS: Recommend approval of the Development Agreement with Joel Cohen, deny Development Agreement with Joel Cohen, or provide staff with further direction.

6. **Leading Idaho Local Bridge Grant Application (ACTION ITEM) - Alisa Anderson**

   On March 16, 2022, Governor Little signed Senate Bill 1359, a landmark funding bill for local transportation in Idaho. The bill provided $200 million for local bridges. The Local Highway Technical Assistance Council (LHTAC) administers the bridge funds through the Leading Idaho Local Bridge (LILB) Program. On November 18, 2024, Engineering staff received notification that a recent bridge inspection identified a bridge in Moscow that qualifies for the last round of LILB funding. The bridge is located on Mountain View Road over Paradise Creek between 3rd Street and Hillcrest Drive. The grant application requires an executed Memorandum of Understanding and the LILB Grant Application accompanied by a Resolution which is due by December 12, 2024.

   PROPOSED ACTIONS: Recommend approval to submit a grant application for the Leading Idaho Local Bridge Program with the corresponding Memorandum of Understanding and Resolution; or provide staff with further direction.

7. **2025 WHITCOM Emergency Dispatch Agreement (ACTION ITEM) - Bill Belknap**

   The City currently contracts with the WHITCOM joint dispatch center for E911 emergency and non-emergency dispatch services. The proposed agreement would continue those services through the 2025 calendar year. The proposed fee for the dispatch services is the same as in the 2024 agreement, with a total annual cost of $776,874. Staff has prepared the agreement for the Council's review and approval.

PROPOSED ACTIONS: Recommend approval of the Emergency Dispatch Services Agreement, or provide staff further direction.

ADJOURN

NOTICE: It is the policy of the City of Moscow that all City-sponsored public meetings and events are accessible to all people. If you need assistance in participating in this meeting or event due to a disability under the ADA, please contact the City's ADA Coordinator by phone at (208) 883-7600, TDD (208) 883-7019, or by email at adacoordinator@ci.moscow.id.us at least 48 hours prior to the scheduled meeting or event to request an accommodation. The City of Moscow is committed to ensuring that all reasonable accommodation requests are fulfilled.

Administrative Committee

Regular Meeting
~Minutes~

www.ci.moscow.id.us

Laurie M. Hopkins
City Clerk

208.883.7015

Monday, October 28, 2024 **4:00 PM** **Council Chambers 206 E. Third St.**

The meeting was called to order at 4:00 p.m.
PRESENT: Bryce Blankenship, Julia Parker, Sandra Kelly
ABSENT: Drew Davis
STAFF: Bill Belknap, Cody Riddle, Mia Bautista, Sarah Decker, Mike Ray, Laurie M. Hopkins

1. **Approval of Administrative Committee September 23, 2024 Minutes (ACTION ITEM) - Laurie M. Hopkins**

The minutes were approved as presented.

2. **Amended Professional Services Agreement-Moscow City Shop (ACTION ITEM) - Cody Riddle**

In April of 2024, the City entered into a professional services agreement with Lombard Conrad Architects (LCA) for $320,610 in design services associated with construction of a new City shop building. Services included in the original agreement include preparation of construction drawings and specifications, bidding assistance, project inspections, and closeout, all associated with the new building. The project is proceeding as anticipated. Construction drawings have been prepared, published, and a bid opening is scheduled for November 6, 2024. However, as the project has advanced, it became necessary to expand the scope included in the original agreement. Additional services include landscape design, surveying, changes to the mechanical and electrical system, and improvements to the exterior of the existing shop building. In total, the additional services represent an increased cost of $22,631. This increase, and a detailed description of the new services are included in the attached, amended agreement for the Council's review and approval.

PROPOSED ACTIONS: Recommend approval of the amended professional services agreement, or provide staff further direction.

Riddle introduced the item as written above adding these updates do not change the project schedule. The redesign of the HVAC system in the office area was to separate it from the shop spaces which would be more in line with the City's climate action goals. The existing shop will continue to be used as street and storm divisions will remain. While there is a contractor on site, the exterior improvements to the existing building could be tied into the exterior work on the new building which could see a cost benefit as well as the hopes of another 15-20 years of use. The design for the HVAC came back as natural gas but for most of the buildings staff is trying to do air source heat pumps. Belknap said there will be another agreement coming forward in the future to look at interior renovations to the existing shop for electrical upgrades and interior reconfiguration. The Committee recommended approval and that it be placed on the Council consent agenda.

DRAFT

3. Ordinance Amending Moscow City Code Title 4, Chapter 6 Regarding Landscape Buffer Yard Requirements (ACTION ITEM) - Mike Ray

Moscow City Code Title 4, Chapter 6, Section 6-5 currently addresses landscape buffer yard requirements and has not been updated in some time. Landscape buffer yards are intended to provide a visual buffer between uses of different intensity, to reduce erosion and storm-water runoff, to protect property values, and to eliminate potential land use conflicts by mitigating adverse impacts from dust, odor, litter, noise, glare, lights, signs, buildings or parking areas. The Planning and Zoning Commission has been working on updating the landscape buffer yard requirements to provide more flexibility in the application of the standards, to update the illustrations to better convey the requirements, and to correct minor inconsistencies. On July 10, 2024, the Planning and Zoning Commission conducted a public hearing upon the proposed ordinance and recommended approval to City Council. The proposed ordinance has been scheduled for a public hearing before City Council at the upcoming November 4, 2024 meeting.

PROPOSED ACTIONS: Recommend forwarding the proposed ordinance for public hearing at the Council's upcoming November 4, 2024 meeting; or provide staff further direction.

Ray introduced the item as written above and described the updates which included correcting errors in the matrix, making it consistent with other places of the code, updating visuals/illustrations, updating plant size to the parking lot landscaping standards. The proposed change will allow more flexibility for buffer yards adjacent to arterial streets. The Tree Commission was not part of this update but was highly involved with the parking lot update which this proposal is more in line with. An audit is completed approximately every five years. The Committee forwarded the proposed ordinance to the City Council for public hearing.

4. City of Moscow Financial Policy Update (ACTION ITEM) - Sarah Decker

The City of Moscow is updating its Financial Policy, Resolution 2011-11, to comply with current Idaho State Code requirements, GFOA best practices, and to include City of Moscow governmental funds that have been created or to eliminate City of Moscow governmental funds that no longer exist.

PROPOSED ACTIONS: Recommend for approval of the updated City of Moscow Financial Policy, or provide staff with further direction.

Decker introduced the item as written above and went over the changes which included reporting updates according to changes in State Statute; payment of claims including a listing of the exceptions and the addition of the procurement policy. An update to the funds included the Arts fund moving to Recreation and Culture and the addition of the Moscow School District Community Playfields and Stormwater fund. The Committee recommended approval and that it be placed on the Council regular agenda.

5. Procurement and Purchasing Policy Amendment (ACTION ITEM) - Bill Belknap

In 2023, the City Council adopted Resolution 2023-24 which established policy and guidance on legal obligations and requirements, established employee purchase authority limits, established employee contract signatory authority limits, as well as established standards related to City vendor charge accounts and appropriate use of credit cards. Staff have identified additional items that are desired to be included within the policy to memorialize current practices related to certain staff purchases, establish guidelines for City donations to outside organizations, and update position titles. Staff will present the proposed policy updates for the Council's consideration.

PROPOSED ACTIONS: Recommend approval of the proposed Resolution; or take other action deemed appropriate.

Belknap introduced the item as written above. The City is limited in its ability to provide funds as a donation. It must be in the city's purview. For example, the City does not sell cars so would not be able

to donate to a dealership. It must be aligned with and support the City's mission and purpose and provide an identifiable public benefit. The proposed policy provides for an application and review process where small requests are reviewed by the City Administrator and larger requests by the City Council. Some items could need to be reviewed on case by case basis. The updates also include guidance regarding meal expenditures such as meals during emergency response events and then updates to the titles of staff.

The Committee recommended approval and that it be placed on the Council regular agenda.

ADJOURN

The meeting closed at 4:36 p.m.

DRAFT

COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

Disbursement Report October 2024 (ACTION ITEM) - Sarah Decker

RESPONSIBLE STAFF

Sarah Decker, Director of Finance & Employee Services

ADDITIONAL PRESENTER(S)

DESCRIPTION

Accounts Payable Report for the month ending October 31, 2024. A summary of the major expenditures has been approximated by category and represents 98% of the total expenditure of $6,722,156.49.

Payroll	$1,230,835.00
FY24 Professional Services	$231,604.00
FY25 Professional Services	$83,873.00
FY24 Sanitation	$433,423.00
FY24 Capital Outlay	$701,443.00
FY25 Capital Outlay	$92,493.00
FY25 Capital Outlay - Vehicles	$1,615,498.00
FY24 Capital Outlay - Improvements	$822,900.00
Supplies	$293,621.00
FY24 Utilities	$91,089.00
FY25 Utilities	$84,921.00
FY24 Minor Equipment	$4,201.00
Contractual Payments	$587,758.00
ACH Wells Fargo	$47,383.00
Insurance	$253,766.00
Total	**$6,574,808.00**

REVIEWED BY

PROPOSED ACTIONS

ACTION: Approve and authorize the use of digital signatures to sign the Disbursements Report for the month of October 2024.

STAFF RECOMMENDATION

Approve the disbursement report and use of digital signatures to sign the Disbursements Report for the month of October 2024.

OTHER RESOURCES

FISCAL IMPACT

PERSONNEL IMPACT

ATTACHMENTS

1. October Revenue Report 2024
2. Cash & Investments Balances - October 2024
3. Disbursement Report - October 2024
4. Major Expenditures Report October 2024

RECEIPTS REPORT FOR OCTOBER 2024

Fund #	FUND NAME	Taxes	Franchise Fees	Licensee & Permits	Intergovernmental	Charges for Services	Fines & Penalties	Investment Income	Refunds & Reimbursements	Contributions & Donations	Other	Grand Total
101	GENERAL	0.00	40,625.75	161,430.53	0.00	207,167.62	17,864.00	198,845.33	4,990.25	596.00	5,226.56	636,746.04
105	STREETS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,728.36	0.00	0.00	1,728.36
120	RECREATION AND CULTURE	0.00	0.00	0.00	0.00	17,895.89	0.00	0.00	35,645.18	1,956.00	0.00	55,497.07
121	MSD COMMUNITY PLAY FIELDS	0.00	0.00	0.00	9,068.75	0.00	0.00	1,660.00	0.00	0.00	0.00	10,728.75
123	1912 CENTER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
128	TRANSIT CENTER	0.00	0.00	0.00	0.00	24,654.83	0.00	0.00	0.00	0.00	0.00	24,654.83
220	WATER	0.00	0.00	0.00	0.00	723,626.87	0.00	0.00	0.00	0.00	0.00	723,626.87
230	SEWER	0.00	0.00	0.00	0.00	1,049,154.72	0.00	0.00	0.00	0.00	0.00	1,049,154.72
235	STORMWATER	0.00	0.00	0.00	0.00	94,118.57	0.00	0.00	0.00	0.00	0.00	94,118.57
240	SANITATION	0.00	0.00	0.00	0.00	496,618.14	0.00	0.00	0.00	0.00	0.00	496,618.14
290	FLEET	0.00	0.00	0.00	0.00	76,759.00	0.00	0.00	0.00	0.00	0.00	76,759.00
295	INFORMATION SYSTEMS	0.00	0.00	0.00	0.00	139,457.50	0.00	0.00	0.00	0.00	0.00	139,457.50
320	WATER CAPITAL PROJECTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	SEWER CAPITAL PROJECTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
335	STORMWATER CAPITAL FUND	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	SANITATION CAPITAL PROJECTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	CAPITAL PROJECTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
355	LID CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	HAMILTON P&R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	BOND & INTEREST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
595	LID FUNDS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL	0.00	40,625.75	161,430.53	9,068.75	2,829,453.14	17,864.00	200,505.33	42,363.79	2,552.00	5,226.56	3,309,089.85

City of Moscow
Cash and Investments
Balances as of 10/31/2024

Fund		Year to Date Balance
General Fund	$	8,048,978.45
Street Fund	$	2,939,121.07
Culture & Recreation	$	1,491,040.23
MSDCP	$	120,503.12
1912 Fund	$	59,996.41
Transit Center	$	86,080.27
Water Fund	$	3,366,175.85
Sewer Fund	$	4,148,989.76
Stormwater	$	425,732.32
Sanitation Fund	$	3,978,778.91
Fleet Fund	$	6,560,802.71
Information Systems	$	5,582,894.78
Water Capital	$	6,601,790.18
Sewer Capital	$	22,017,989.01
Stormwater Capital	$	198,890.34
Capital Projects	$	11,270,340.92
Sanitation Capital	$	8,583,066.73
LID Construction	$	218.29
Hamilton	$	793,788.24
Bond & Interest	$	560,468.71
LID Funds	$	32,643.53
Payroll Service	$	1,170,262.58
Total Cash & Investments	**$**	**88,038,552.41**

DISBURSEMENTS REPORT FOR OCTOBER 2024

	FUND NAME	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	WELLSFARGO CC ACH	WELLSFARGO CC ACH	ACCOUNTS PAYABLE ACH	VOID CHECKS	PAYROLL	PAYROLL	GRAND TOTALS
			FY2024		FY2024		FY2024		FY2024		FY2024		FY2024				
DATE		10/3/2024	10/3/2024	10/10/2024	10/10/2024	10/17/2024	10/17/2024	10/24/2024	10/24/2024	10/31/2024	10/10/2024 10/22/2024	10/22/2024	10/10/2024	10/3/2024 10/23/2024 10/29/2024	10/4/2024	10/18/2024	
BATCH #		AP 10.3.2024	AP 10.4.2024	AP 10.10.2024	AP 10.11.2024	AP 10.17.2024	AP 10.18.2024	AP 10.24.2024	AP 10.25.2024	AP 10.31.2024	AP 9.30.2024 AP 9.30.2024	AP 10.18.2024	AP 10.11.2024	AP 10.3.2024 AP 10.23.2024 AP 10.29.2024	PR119	PR120	
CHECK #'s		110487-110523 110621	110524-11062	110622-110660	110661-110709	110710-110765	110766-110777	110778-110831	110832-110837	110838-110894	September CC ACH's	October CC ACH's	October ACH's	110506 110633 110711,110540	21629	21630	
Fund #																	
101	GENERAL	150,099.11	15,742.64	49,388.29	11,662.71	13,839.65	2,477.54	8,483.99	45.33	213,600.44	9,809.90	5,376.47		(695.47)	335,680.77	383,293.39	**1,198,804.76**
105	STREETS	52,842.15	89,113.55	2,262.96	1,842.58			4,336.82		37,010.28	2,505.10				31,058.11	32,379.30	**253,350.85**
120	RECREATION AND CULTURE	41,489.06	18,447.69	19,751.25	6,841.07	3,227.50		10,766.78	40.00	12,984.05	5,595.73	1,151.17		(600.00)	55,917.62	60,590.23	**236,202.15**
121	MSD COMM. PLAY FIELDS	120.96			129.48			(27.12)	999.43		7,857.78				1,850.80	1,972.99	**12,904.32**
123	1912 CENTER	11,885.86															**11,885.86**
128	TRANSIT CENTER	2,062.11	19.91	216.36	99.84					24.26							**2,422.48**
220	WATER	63,447.07	163,888.08	5,017.75	16,429.19	77,807.01	21.30	65,354.13	1,148.00	38,758.36	2,908.53	727.60		(394.09)	53,472.68	52,632.59	**541,218.20**
230	SEWER	62,348.32	71,923.45	32,252.84	70,004.74	20,180.84	292.50	39,122.30		59,167.80	3,442.45	4,863.25	20,697.72	(53.33)	50,028.13	52,604.53	**486,875.54**
235	STORMWATER	916.58	177,210.35	2,321.97	3,819.22	618.74		2,240.64		385.53	1,420.05	56.97		(13.06)	17,524.79	18,652.35	**225,154.13**
240	SANITATION	3,109.85	123,967.53	1,565.42	198.33	1,012.58		124.90		23.00	19.07		288,765.85	(23.00)	7,852.68	8,294.00	**434,910.21**
290	FLEET	1,618,697.10	46,107.72	1,342.25	2,187.29	13,200.08	11,870.64	1,534.81		76,662.64	384.01				12,862.16	13,583.31	**1,798,432.01**
295	INFORMATION SYSTEMS	12,359.77	376,446.92	90,717.31	51.91	594.84	517.68	19,681.02		18,923.85	4,162.35	1,514.28			19,593.32	20,990.85	**565,554.10**
320	WATER CAPITAL PROJECTS		70,422.91		26,687.15				2,332.00								**99,442.06**
330	SEWER CAPITAL PROJECTS		26,608.16		290,112.80			4,407.50									**321,128.46**
335	STORWATER CAPITAL PROJECTS																**0.00**
340	SANITATION CAPITAL PROJECTS																**0.00**
350	CAPITAL PROJECTS		276,869.96		248,733.97	388.00	6,676.17	5,004.50	610.00		(4,411.24)						**533,871.36**
355	LID CONSTRUCTION																**0.00**
380	HAMILTON - PARKS & REC																**0.00**
590	BONDS & INTEREST																**0.00**
	TOTAL	**2,019,377.94**	**1,456,768.87**	**204,836.40**	**678,800.28**	**130,869.24**	**21,855.83**	**161,030.27**	**5,174.76**	**457,540.21**	**33,693.73**	**13,689.74**	**309,463.57**	**(1,778.95)**	**585,841.06**	**644,993.54**	**6,722,156.49**

Gina Taruscio

Hailey Lewis

Bryce Blankenship

Sarah L. Decker, Director of Finance & Employee Services

Major Expenditures for October 2024

FY24 Professional Service

FY24 Blue Logix, LLC Blue Logix LLC for September 2024: Water Support Time & Expenses	$ 5,280.00
FY24 Blum Enterprises, LLC Reimbursement for upsizing a water main from the required 12" to 16" per the City's request	$ 45,200.00
FY24 SWS Equipment Rental of Vac truck	$ 17,712.50
FY24 Viva Cleaning Company Janitorial Services for WRF, Water Ops, PWS and Parks	$ 7,684.32
FY24 Youmans Excavation Service, LLC Woodbury / Picabu Drainage Project FY24	$ 45,000.00
FY24 Youmans Excavation Service. LLC Slonaker Cul-de-sac Removal Project - FY24	$ 48,760.00
FY24 Hawley Troxell Ennis & Hawley Legal services for 2014 DEQ Loan bond sale	$ 7,646.00
FY24 I-U-B Engineers, Inc. Update City Standards Task Order #23 August & September 2024	$ 3,889.30
FY24 Jeff Arnett - Arnett's Professional Lawn Care WRF Landscaping	$ 9,475.00
FY24 M.L. Albright & Son's, Inc. Labor. Materials & Equipment to repair water line damaged by DeAtley Construction	$ 4,087.82
FY24 Palouse Masonry Restoration CH Sandstone Repair & Sealing	$ 5,320.00
FY24 Phillip R. Stradley Body slide pump repair	$ 3,465.64
FY24 HDR Engineering, Inc. Comprehensive water plan 8/25/24 - 9/30/24	$ 16,638.45
FY24 Gropp, LLC New wiring for power to the pumps and tank monitoring	$ 11,445.00
	$ 231,604.03

FY24 Capital Outlay- Improvements

FY24 Concrete Conservation, LLC Spectrashield manhole lining	$ 48,137.50
FY24 I-U-B Engineers, Inc. WRF Facility Improvements - IPS Replacement - Task #22 August 2024	$ 6,497.50
FY24 LaRiviere, Inc. Pay App 3 for the 'A' Street Reconstruction Project 2024	$ 303,951.36
FY24 Wintz Company Reimb. to Wintz Co. for cost of 50% Mtn View Improv.+ Change order from City - FY24	$ 179,778.12
FY24 HMH Engineering Progress Report #1 North Mtn View Pedestrian Improvements Project	$ 29,600.39
FY24 HMH Engineering Progress Report #2 North Mtn View Pedestrian Improvements Project	$ 43,820.87
FY24 Integrity Inspection Solutions, Inc. Sewer Patch Repairs	$ 37,375.00
FY24 I-U-B Engineers, Inc. WRF Facility Improvements - IPS Replacement - Task #22 September 2024	$ 7,338.99
FY24 LaRiviere, Inc. Pay App 4 for the 'A' Street Reconstruction Project 2024	$ 156,345.57
FY24 Motley-Motley, Inc. Pay App 2 for the Harvest Park Phase 1 Project 2024	$ 10,054.99
	$ 822,900.29

Insurance

FY25 ICRMP 1/2 premium of annual insurance	$ 253,766.00
	$ 253,766.00

Sanitation

FY24 Finley Buttes landfill Garbage- September	$ 123,959.16
FY24 Latah Sanitation (ACH Payment) Monthly LSI Billing for September 2024	$ 309,463.57
	$ 433,422.73

FY25 Professional Service

FY25 Cheyenne Stooks 2nd partial Per Diem for attending Idaho POST academy Meridian, ID	$ 2,950.00
FY25 Evcar, Inc. Monthly Cleaning for October	$ 4,630.17
FY25 GG Gutters, Inc. PD,RC,YC janitorial services October 2024	$ 6,446.28
FY25 Jurrian Hering 2nd Partial Per Diem for attending Idaho POST academy Meridian, ID	$ 2,950.00
FY25 Riley Alley 2nd Partial Per Diem for Attending Idaho POST academy - Meridian ID	$ 2,950.00
FY25 Idaho State Police Whitcom ILETS, October through December	$ 7,356.25
FY25 Dan Barnes Painting Invoice for Materials and Labor for the West and North Walls of the Filter Building	$ 7,400.00
FY25 RC Worst & Company, Inc. Pump Repair	$ 4,780.85
FY25 CDW Government, Inc. Netmotion Complete - 1 Year Renewal (10/25/24-10/24/25)	$ 4,560.00
FY25 Eastern Washington Surf Soccer Club Fall 2024 Micro Soccer Surf	$ 3,945.73
FY25 Germer Construction, Inc. Road widening for a portion of Mtn View (Logos Project)	$ 15,000.00
FY25 GG Gutters, Inc. PD,RC,YC janitorial services November 2024	$ 6,446.28
FY25 Hach Company Field Service Partnership	$ 9,282.45
FY25 Ziply Fiber October services	$ 5,174.91
	$ 83,872.92

FY24 Capital Outlay

FY24 Atlantic Signal, LLC Invictus PTT wired for Motorola APX Series Radio	$ 3,450.00
FY24 Consolidated Supply Co. Fountains Park addition service materials	$ 11,013.84
FY24 Consolidated Supply Co. 432/438 E 8th St. services	$ 8,577.55
FY24 Consolidated Supply Co. Home Depot services	$ 4,619.57
FY24 Motorola Solutions, Inc. Radios - Police apx4000 handheld and apx6500 mobile	$ 341,988.67
FY24 Motorola Solutions, Inc. Radios - Public Works apx900 handheld	$ 18,539.80
FY24 Youmans Excavation Service. LLC Anderson 7th Sidewalk Repair FY24	$ 14,870.00
FY24 Big Sky Development, Inc. Pay App #2 for the Alley E of Washington 5th St to 8th St Project	$ 276,337.38
FY24 Castellaw Kom Architects Design services for the HIRC Glulam Beams	$ 15,494.18
FY24 McKinney Construction Final Payout for Milton Arthur Park Playground Installation- work completed in FY24	$ 6,552.24
	$ 701,443.23

FY25 Capital Outlay

FY25 Owen Equipment, Inc. New RC Mower #7-45 (Parks) Serial #626436	$ 66,995.12
FY25 Consolidated Supply Co. 221 E C St parts for service	$ 6,439.77
FY25 Consolidated Supply Co. Fountains Park setters	$ 3,392.15
FY25 Consolidated Supply Co. Home Depot setters	$ 3,392.15
FY25 Consolidated Supply Co. 221 E C St. project setters	$ 3,392.15
FY25 GeoProfessional Innovation Corp. General Testing for Alley E of Washington 5th-8th Sewer Project August - Oct 2024	$ 4,407.50
FY25 Motley-Motley Pay App 3 for the Harvest Park Phase 1 Project 2024	$ 4,474.50
	$ 92,493.34

Supplies

FY24 Adrian Steel of Idaho Extended bed for #2-71 (Stormwater)	$ 4,257.00
FY24 Coleman Oil Co. Fuel for MPD motorcycle, training and fuel while pumps were down	$ 3,297.62
FY24 Filtration Technology, Inc. Salt for well's 6 & 10	$ 7,179.00
FY24 Hahn Rental Center, Inc. PTO Motor for #7-16 (Parks)	$ 3,454.94
FY24 Lakeside Industries EZ Street Asphalt (14 tons @ $124.00/ea)	$ 2,986.00
FY24 Motley-Motley Hot mix (96.43 tons @ $90.00/ea)	$ 9,364.32
FY24 Phillip R. Stradley Well #6 VFD replacement	$ 32,480.87
FY24 Source Electric, Inc. Electric vehicle charging infrastructure at city shop	$ 31,600.00
FY24 Oxarc, Inc. chlorine, so2	$ 6,942.33
FY24 Thatcher Company of Montana Alum Sulfate	$ 9,941.70
FY24 CHS, Inc. Diesel fuel (4,000 gals @ $2.82/ea)	$ 11,280.00
FY25 Salt Lake Wholesale Sports Purchase of 9mm and 5.56 ammo for budget year 2025	$ 12,161.02
FY25 L.N. Curtis & Sons Turnout gear INV868262 - Received in October	$ 18,115.20
FY25 L.N. Curtis & Sons Turnout gear INV872399	$ 5,172.86
FY25 W.M. Smith and Associates, Inc. SP Acidrite system 50% Deposit	$ 7,598.64
FY25 Consolidated Supply Co. Service line re-stock	$ 3,580.94
FY25 Hach Company Budgeted item Filter Turbidimeter Replacement	$ 9,128.00
FY25 Hach Company Budgeted Filter Turbidimeter replace	$ 9,128.00
FY25 Phillip R. Stradley VFD drive for SE Booster (FY2025)	$ 18,014.87
FY25 Phillip R. Stradley SE Reservoir booster pump #2 (FY 2025)	$ 26,414.45
FY25 Hach Company 2 Digital Sensors	$ 6,446.60
FY25 Motley-Motley Hot mix asphalt (36.61 tons @ $90.00/ea)	$ 3,555.20
FY25 Oxarc, Inc. Chlorine, so2 and deposit on chemical containers	$ 7,835.31
FY25 Thatcher Company of Montana T Floc Polymer	$ 8,338.00
FY25 WESCO Receivables Corp. Tunnel Card Parts	$ 5,488.07
FY25 Ferguson Waterworks Orchard Lift Station bypass	$ 2,627.80
FY25 Freedom Mobile Tire Moscow New tires and on-site mount/dismount for #2-43 (Streets) (6 @ $1036.95/ea)	$ 7,840.00
FY25 Owen Equipment, Inc. Chain cutters for conveyence	$ 11,053.98
FY25 Thatcher Company of Montana Polymer	$ 8,338.00
	$ 293,620.72

Utilities

FY24 Avista Utilities September 2024	$ 91,088.50
FY25 Avista Utilities October 2024	$ 84,920.52
	$ 176,009.02

Payroll

	$ 1,230,834.60

Contractual Payments

Alta Science and Engineering, Inc. - **FY24**	$ 24,623.55
SE Moscow Sewer District- Connection Fees - **FY24**	$ 2,593.15
Infosend, Inc. - **FY24**	$ 3,801.81
Shi International Corporation - **FY25**	$ 90,402.31
Clearwater Economic Development Association. - **FY25**	$ 8,386.00
Moscow Volunteer Fire Department - October	$ 1,750.00
Moscow Volunteer Fire Department - November	$ 1,750.00
Humane Society of the Palouse - October	$ 4,846.16
Humane Society of the Palouse - November	$ 4,846.16
Heart of the Arts - **FY25**	$ 10,750.00
Schindler Elevator - **FY25**	$ 6,240.95
University of Idaho-PBAC - **FY25**	$ 53,750.00
Whitcom 911 - **FY25**	$ 194,218.50
City of Moscow - Stormwater non-residential fee **FY25**	$ 32,147.85
Idaho Dept. of Environmental Quality - Public drinking water system fee **FY25**	$ 18,729.00
Idaho Dept. of Environmental Quality - IPDES PERMIT **FY25**	$ 22,618.26
Bitco Software, LLC - **FY25**	$ 10,400.00
Bennett Lumber Products, Inc. - **FY25**	$ 3,477.00
DLT Solutions - **FY25**	$ 19,371.02
Submittable Holdings, Inc. - **FY25**	$ 5,646.00
Bursar, University of Idaho - **FY25**	$ 43,838.50
Lexipoll LLC - **FY25**	$ 8,055.68
Lexipoll LLC - **FY25**	$ 3,244.10
Latah County Historical Society - **FY25**	$ 3,000.00
BeyondTrust Corporation - Support License & Maintenance Annual - **FY25**	$ 4,398.10
BeyondTrust Corporation - Appliance Renewal Annual - **FY25**	$ 4,873.55
	$ 587,757.65

ACH Wells Fargo

Commercial Card Expense - September 27th **FY24**	$ 11,680.65
Commercial Card Expense - October 4th **FY24**	$ 21,731.13
Commercial Card Expense - October 11th **FY24 & FY25**	$ 5,308.78
Commercial Card Expense - October 19th **FY25**	$ 8,662.91
	$ 47,383.47

Minor Equipment

FY24 CDW Government, Inc. Black Box Industrial Managed Ethernet PoE+ Switches	$ 4,200.92
	$ 4,200.92

Capital Outlay- Vehicles

FY25 Hughes Fire Equipment, Inc. 2025 Pierce Enforcer - payment to start build. No vin yet (FY25)	$ 1,549,896.00
FY25 Autozone, Inc. Chains for new loader	$ 6,413.62
FY25 Joe Hall Ford New vehicle #4-28 (VIN 1FMCU9MN9RUA84767) with trade	$ 31,419.46
FY25 Joe Hall Ford New vehicle #4-87 (Vin 1FMCU9GN9RUA43647) with trade in	$ 27,769.00
	$ 1,615,498.08

Major Expenditures $ 6,574,807.00 98% of the total expenditures of $6,722,156.49

Large Expenditures

FY24 Blum Enterprises, LLC Reimbursement for upsizing a water main from the required 12" to 16" per the City's request	$ 45,200.00
FY24 Youmans Excavation Service. LLC Woodbury / Picabu Drainage Project FY24	$ 45,000.00
FY24 Youmans Excavation Service. LLC Slonaker Cul-de-sac Removal Project - FY24	$ 48,760.00
FY24 Concrete Conservation, LLC Spectrashield manhole lining	$ 48,137.50
FY24 Integrity Inspection Solutions, Inc. Sewer Patch Repairs	$ 37,375.00
FY24 Phillip R. Stradley Well #6 VFD replacement	$ 32,480.87
FY24 Source Electric, Inc. Electric vehicle charging infrastructure at city shop	$ 31,600.00
FY24 LaRiviere, Inc. Pay App 3 for the 'A' Street Reconstruction Project 2024	$ 303,951.36
FY24 Wintz Company Reimb. to Wintz Co. for cost of 50% Mtn View Improv.+ Change order from City - FY24	$ 179,778.12
FY24 HMH Engineering Progress Report #1 North Mtn View Pedestrian Improvements Project	$ 29,600.39
FY24 HMH Engineering Progress Report #2 North Mtn View Pedestrian Improvements Project	$ 43,820.87
FY24 LaRiviere, Inc. Pay App 4 for the 'A' Street Reconstruction Project 2024	$ 156,345.57
FY24 Phillip R. Stradley SE Reservoir booster pump #2 (FY 2025)	$ 26,414.45
FY25 Shi International Corporation N365, Visio, CIS Suite, SQL Server & Win Remote Desktop Svcs software package	$ 90,402.31
FY25 ICRMP 1/2 premium of annual insurance	$ 253,766.00
FY24 Motorola Solutions, Inc. Radios - Police apx4000 handheld and apx6500 mobile	$ 341,988.67
FY24 Big Sky Development, Inc. Pay App #2 for the Alley E of Washington 5th St to 8th St Project	$ 276,337.38
FY25 Owen Equipment, Inc. New RC Mower #7-45 (Parks) Serial #626436	$ 66,995.12
FY25 University of Idaho-PBAC Admin & Research fee support - 7.1.2024 thru 6.30.2025	$ 53,750.00
FY25 Whitcom 911 October - December 2024	$ 194,218.50
FY25 City of Moscow - Stormwater non-residential fee FY2025 Stormwater non-residential fee	$ 32,147.85
FY25 Joe Hall Ford New vehicle #4-28 (VIN 1FMCU9MN9RUA84767) with trade	$ 31,419.46
FY25 Joe Hall Ford New vehicle #4-87 (Vin 1FMCU9GN9RUA43647) with trade in	$ 27,769.00
FY25 Hughes Fire Equipment, Inc. 2025 Pierce Enforcer - payment to start build. No vin yet (FY25)	$ 1,549,896.00
FY25 Bursar, University of Idaho Street Maintenance Agreement 1 of 2 (MS2281)	$ 43,838.50
Total:	**$ 3,990,992.92**

COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

Personnel Policy Updates Resolution (ACTION ITEM) - Bonnie Dennler

RESPONSIBLE STAFF

Bonnie Dennler

ADDITIONAL PRESENTER(S)

DESCRIPTION

The Human Resource Department has identified the need to make several updates to the City's adopted Personnel Policies. The proposed amendments to the policy include updates to reflect recent regulatory changes, adding provisions specific to the new Paramedic/Firefighter positions, aligning and formalizing policies with current practice regarding emergency City office closures, and updating position titles. Staff will present the proposed updates for the Council's consideration.

REVIEWED BY

City of Moscow Employee Advisory Committee (EAC) & Legal Department

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval of the proposed Resolution; or provide staff with further direction.

STAFF RECOMMENDATION

Recommend approval of the proposed Resolution.

OTHER RESOURCES

FISCAL IMPACT

PERSONNEL IMPACT

ATTACHMENTS

1. Resolution 2024_Amendments to PersonnelPolicy_final with attachment
2. Summary of Amendments to Personnel Policies_2024

RESOLUTION 2024-___

A RESOLUTION OF THE CITY OF MOSCOW, IDAHO, A MUNICIPAL CORPORATION OF THE STATE OF IDAHO, AUTHORIZING THE REPEAL OF RESOLUTIONS 2022-30 AND 2023-25 AND FOR SAID RESOLUTIONS TO BE REPLACED WITH THIS RESOLUTION ADOPTING AMENDMENTS TO THE CITY OF MOSCOW PERSONNEL POLICIES; PROVIDING FOR SPECIFIC AMENDMENTS TO CHAPTERS 2, 3, 4, 6, 7, 8 AND 10; PROVIDING FOR AMENDMENTS THROUGHOUT THE POLICY TO CHANGE ALL REFERENCES OF CITY SUPERVISOR TO CITY ADMINISTRATOR; AND PROVIDING THIS RESOLUTION SHALL BE EFFECTIVE UPON ITS PASSAGE AND APPROVAL.

WHEREAS, the City of Moscow recognizes that its employees are a valuable resource to the citizens of Moscow; and

WHEREAS, because of the increasingly complex legal nature of federal, state, and local laws and regulations that govern the relationship between a government employer and its employees, it is in the best interest of the City and of the employees of the City to have updated written personnel policies; and

WHEREAS, the Council passed Ordinance 2024-16 on September 3, 2024, amending Moscow City Code Title 2, Chapters 4 and 14, changing the title of City Supervisor to City Administrator and Deputy City Supervisor to Deputy City Administrator; and

WHEREAS, the Council believes the amendments contained herein to the Personnel Policies are appropriate and in the City's best interest to implement the proposed amendments to the Previous Personnel Policies passed by Resolution 2022-30 and amended by Resolution 2023-25;

NOW, THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Moscow that all matters stated above are true and correct and are incorporated herein by reference as if copied in their entirety and shall be adopted with the following:

1. That the City of Moscow Personnel Policies as approved through Resolution 2022-30, and amended through Resolution 2023-25 be repealed in its entirety and replaced with this Resolution.

2. That any City of Moscow Resolution inconsistent with the Personnel Policy adopted herein shall be and are hereby superseded by the policy attached as Exhibit 'A'.

3. That the provisions of this Resolution and the attached Exhibit shall be deemed severable and the invalidity of any provision of this Resolution or of the attached Exhibit shall not affect the validity of the remaining provisions.

4. That this Resolution shall be effective upon its passage and approval.

PASSED on Motion by the Following Vote:

	Aye	Nay	Abstain	Absent
Hailey Lewis	_____	_____	_____	_____
Drew Davis	_____	_____	_____	_____
Sandra Kelly	_____	_____	_____	_____
Gina Taruscio	_____	_____	_____	_____
Julia Parker	_____	_____	_____	_____
Bryce Blankenship	_____	_____	_____	_____

ADOPTED by the City Council of the City of Moscow, Idaho and **APPROVED** by the Mayor of the City of Moscow, this _____ day of _____, 2024.

_____
Arthur D. Bettge, Mayor

CERTIFICATION and **ATTESTATION**. I hereby certify that the above is a true copy of the Resolution passed at a regular meeting of the City Council, City of Moscow, held on _____, 2024, and attest to the Mayor's signature.

_____
Laurie M. Hopkins, City Clerk

DRAFT

Exhibit 'A'

City of Moscow Personnel Policies

~~Effective: December 5, 2022 Pursuant to Resolution 2022 – 30~~Effective: Pursuant to Resolution 2024-

~~Amended: November 6, 2023 Pursuant to Resolution 2023-25~~

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Chapter 1 – Code of Conduct

I. Workplace Expectations

The City of Moscow strives to administer fair and effective personnel policies, to require all employees to follow a code of conduct as detailed in this personnel policy which support the City's best interests, and to provide equal employment opportunities to all persons in all aspects of the employer-employee relationship, including recruitment, hiring, training, promotion, compensation, discipline and termination.

A. The City's goals for employees include the following:

1. To provide equal employment opportunity and treatment regardless of race, color, religion, sex, national origin, disability, genetic information, age (40 or older), marital or familial status (including pregnancy), sexual orientation, gender, gender expression or identity, military status, or any basis prohibited by local, state, or federal law;

2. To promote a productive work environment and not to tolerate conduct by any employee which harasses, disrupts, or interferes with another's work performance or which creates an intimidating, offensive, or hostile work environment;

3. To provide compensation and benefits commensurate with the work performed;

4. To establish reasonable hours of work based on the City's service needs.

5. To monitor and comply with applicable federal, state, and local laws and regulations concerning employee safety;

6. To offer training opportunities and continuing education for those whose needs, capabilities, and job position warrant such training; and

7. To establish appropriate means for employees to discuss matters of interest or concern with their immediate supervisor or manager.

B. The City expects all employees:

1. To communicate and treat the public, customers, suppliers, and each other in a professional manner;

2. To perform assigned tasks in an efficient manner;

3. To comply with the hours of work scheduled for the employee as determined by the employee's department manager or supervisor;

4. To demonstrate a considerate, friendly, and constructive attitude toward fellow employees; and

5. To adhere to the policies adopted by the City.

C. The City retains the sole discretion to exercise all managerial functions, consistent with these policies, including but not limited to the following:

1. To dismiss, reassign, supervise, and discipline employees;

2. To determine and change shifts, to include the start and end of any shift;

3. To transfer employees within departments or into other departments and other classifications;

4. To determine and change the size and qualifications of the work force;

5. To determine and change methods by which its operations are to be carried out;

6. To assign duties to employees in accordance with the City's needs and requirements; and

7. To carry out all ordinary administrative and management functions.

II. Employee Conduct

A. General Expectations.

Employees of the City of Moscow are expected to conduct themselves in a manner which does not reflect adversely upon the City. Each employee must recognize that public employees are subject to additional public scrutiny in their public and personal lives because the public's business requires the utmost integrity and care. In order to accomplish the goals of the City as a public institution, each employee is expected to avoid personal behaviors which would bring unfavorable public impressions of the City, its officials, and employees.

B. In order to accomplish the goals of the City, each employee shall:

1. Be prompt and regular in attendance at work or other required City functions;

2. Comply with dress standards established in the department for which the employee works. Dress standards shall be set by the supervisor, but in the absence of any department dress standards, clothing shall be appropriate for the functions performed and shall include proper grooming and a professional appearance as a reflection of how employees view their work and how the public sees employees and the City as a whole;

3. Dedicate primary efforts to the City of Moscow employment with secondary employment subject to approval. Individual department rules may provide permissible examples of "moonlighting" wherein employees may hold additional positions;

4. Avoid nepotism in appointments and working relationships with other employees in the City. No employee shall engage in conduct which violates Idaho State nepotism laws (I.C. § 18-1359, and Title 74 of Idaho Code) or City of Moscow Policy. The City believes that employment opportunities should not be influenced by family relationships. Additionally, employment of immediate family members is not allowed where one family member would have authority to influence employment decisions regarding the other, or where there is potential work-related conflict of interest between them;

5. Not accept gifts or gratuities in any personal or professional capacity which could create the impression that the giver was seeking favor from the employee or official;

6. Not serve on any board or commission which regulates or otherwise affects the official duties or personal interests of said official or employee in a way that could create disadvantage for other members of the public or advantage for the employee;

7. Not release personnel information or any other public record without the express authority of the public official responsible for custody or release of the record or without an order from a court of competent jurisdiction;

8. Not engage in conduct away from work which would reasonably be expected to reflect adversely upon the employee's position with the City of Moscow;

9. Not use substances, unlawful or otherwise, which will impair the employee's ability to function as a valued and competent member of the City of Moscow work force;

10. Not engage in conduct that would suspend any licenses required for the employee's ability to perform the employee's essential job functions; and

11. Not engage in workplace or public conduct otherwise detrimental to the accomplishment of the goals established by the City Council or the official or department for whom the employee works.

III. Workplace Conduct

Employees are expected to conduct themselves in the workplace in accordance with the following rules. These rules are not all-inclusive of conduct expected of City of Moscow employees and specific City Departments may have additional work place rules.

A. Each employee of the City shall:

1. Give best efforts to accomplish the work of the City of Moscow for public benefit in accordance with policies and procedures adopted by the City Council;

2. Adhere to any code of ethics in employee's profession and avoid conflicts of interest or using employee's public position for personal gain;

3. Follow all rules for care and use of public property to assure that the public investment in equipment is protected and that the safety of the public and other employees is maintained;

4. Abide by all departmental rules whether they be written or issued orally by their supervisor. No employee will be required to follow the directive of a supervisor which violates laws of any local jurisdiction, the state, or nation;

5. Abide by City of Moscow rules concerning the dissemination of information to the public from public records or about public matters. The decision to release information from public records or to disclose writings or other information in the hands of a public official belongs with the responsible official who has official custody of that record. Each employee shall maintain the confidential nature of records which are not open to public scrutiny in accordance with the direction of the responsible official. The City has a formal process by which all requests for public records must be submitted, which may change from time to time through City Council by Resolution;

6. Adhere to the defined work schedule and adhere to the procedures for requesting an exception from normal work schedules. Each employee will follow the rules regarding the reporting of work hours and the approval which must be given for pay record submittal. Failure to follow such rules may be grounds for delayed payment of wages, salaries, or reimbursements or for imposition of appropriate disciplinary penalties;

7. Follow rules regarding breaks and lunch periods, including provisions granting supervisors authority to adjust them. Timing of breaks or lunch periods may be changed to accommodate the completion of necessary work;

8. Follow all rules for reporting accidents on the job. Each employee will cooperate in the reporting and reconstruction of any job-related accident in order that workplace hazards can be eliminated and that proper consideration can be accorded to injured workers and the public;

9. Report any accidents observed to have happened on City property or involving City property or personnel. Each employee shall provide as much information as they can from the observations made in the course of activities associated with one's work. Such information should be reported to the employee's immediate supervisor as soon as physically possible and reasonable efforts should be made to assist those in need;

10. Follow all rules regarding safety in the workplace whether established formally by the department or by outside agencies having authority to regulate workplace safety. Employees are encouraged to suggest ways to make the workplace or work procedures safer;

11. Maintain a current driver's license when necessary in the conduct of work for the City. Each employee is obligated to report any state-imposed driving restrictions to their immediate supervisor and to notify their supervisor in the event that their driving abilities are impaired by other than state restrictions; and

12. Perform such obligations as are necessary to carry out the work of the City in an efficient and effective manner and with limited risk to the employee, the public and fellow employees.

B. The foregoing lists are not all-inclusive.

Violation of any of the rules set forth above, in addition to the ones imposed by the employee's supervisor or the employee's department, may be grounds for disciplinary action, including termination. The rules contained in the personnel policy manual are subject to change at any time at the discretion of the City Council upon approval by Resolution, and will be available through the intranet. Employees will be notified of the changes through email and will be required to review the changes and acknowledge their understanding of the changes. The changes approved by City Council are often effective immediately, but the effective date included in the Resolution will govern.

Chapter 2 – Compensation & Benefits

I. Salary Administration

A. Nondiscriminatory and Competitive

The City provides compensation that is nondiscriminatory and which strives to be competitive in relation to the local and regional job market, while taking into consideration the City's overall financial condition and the direction given by the Mayor and Council as they determine budget appropriations every year.

B. Review

Human Resources is responsible for the internal review of compensation and ensuring that each job is evaluated and assigned the appropriate job grade. This review should determine whether compensation accurately and fairly reflects each position's responsibilities and education, training, and licensing requirements.

C. Surveys

When considered appropriate, Human Resources will conduct and/or obtain compensation surveys to include other comparable employers with similar positions. These surveys and information will be used to set market values for each position in the City's pay structure.

D. Compensation Systems

The City of Moscow has two compensation systems the Step and Grade System (S & G) and the Actively Managed Performance System (AMPS). S & G applies to sworn law enforcement employees, AMPS applies to all other employees. Both systems are intended to compensate employees for their performance, positive contributions, knowledge and experience.

II. Employee Classification

For various reasons, employee status must be organized by classifications to administer employee policies, benefits, or otherwise address employment issues.

A. Employee Classification for Employment Status

1. All employees of the City, including part-time and temporary employees, are at-will employees, except appointed officials.

2. Appointed Officials: Officials appointed pursuant to Idaho Code § 50-204 and Moscow City Code Title 2, Chapter 3 may only be removed pursuant to Idaho Code § 50-206 and Moscow City Code Title 2, Chapter 3.

B. Employee Classification for Benefit Purposes

The classification of the position an employee holds with the City may affect the status of obligations or benefits associated with their employment. Primary classes of employees are:

1. Elected Officials

   Elected Officials are not considered regular employees. Elected Officials receive salaries pursuant to Moscow City Code Title 1, Chapter 8.

2. Full-Time Regular Employees

   Employees whose employment is sustained and continuing and whose typical work period consists of at least forty (40) hours per week are eligible for employee benefits provided by the City.

3. Part-Time Regular Employees

   a. Employees whose employment is sustained and continuing and whose typical work period consists of more than nineteen (19) but less than forty (40) hours per week may receive benefits to vary proportionately with the number of hours typically worked for a full-time regular employee. The number of hours worked may also affect the employee's obligation to participate in specific mandatory state benefit programs. Certain benefits may not be available because qualifying thresholds have not been reached.

   b. Employees whose employment is sustained and continuing and whose typical work period consists of nineteen (19) hours or less per week. These employees receive no benefits provided to regular employees.

4. Full- or Part-Time Temporary Employees

   Employees who work on an irregular, seasonal, or temporary basis are temporary. Temporary employees receive no benefits provided to regular employees, except those required by law or authorized by the City Council.

III. Compensation

A. Establishment of Employee Compensation

Employees are compensated subject to the City Council's decisions as annual budgets are approved and, as such, are subject to increase, reduction, or remain unchanged for any time period. Final decisions regarding compensation policy rest with the City Council.

B. Compliance with State and Federal Pay Regulations

The City will comply with all state and federal pay regulations governing compensation of its employees. Information contained within this policy is reflective of U.S. Department of Labor's administration of FLSA (https://www.dol.gov/agencies/whd/flsa).

C. Right to Change Compensation and Benefits

The City may change compensation for any reason deemed appropriate by the City Council. Compensation may also be adjusted based upon job performance and the availability of funds to maintain a solvent city budget. Hours worked may be reduced, or employees may be laid off as necessary to meet budgetary constraints or as work needs change.

IV. Health Benefits

The City will provide its employees with the opportunity to participate in health-related benefit programs, which includes medical, dental, and vision. The City also has various voluntary programs that may be available to employees~~, such as critical illness, accident, long term disability, supplemental life insurance, and hospital indemnity. The voluntary programs available~~ and that may change based on demand and what is available from the City's providers. Information and explanations of the various benefit plans that employees are eligible to participate in will be furnished to all plan participants on a timely and continuing basis by Human Resources. The City reserves the right to modify, amend, or terminate its benefits at any time in accordance with all federal and state regulations.

A. Health Benefit Coverage by Employee Classification

1. Elected Officials

Elected officials are not eligible to receive health benefits.

2. Full-Time Regular Employees

a. The City shall provide full coverage for medical, dental, and vision for the employee at no cost for the base plan. If an employee selects an enhanced plan, the employee shall be required to pay the difference in cost above the base plan.
b. The City shall pay a percentage, not less than ~~and~~ 50%, of their eligible dependent(s) ~~coverage paid by the City of Moscow~~premium for medical, dental, and vision coverage for the base plan. This percentage will be approved by the City Council prior to open enrollment of each new benefit plan year. The employee shall be responsible for the remainder of the eligible dependent(s) premium. If an employee selects an enhanced plan, the employee shall be responsible for any additional dependent(s) premium cost above the base plan.

a.c. When both benefit-eligible parents are employed by the City, the City will provide full coverage for medical, dental and vision for both employees and their eligible dependent(s) at no cost for the base plan. If the employee(s) select an enhanced plan, the employee(s) shall be responsible for any additional cost above the base plan.

3. Part-Time Regular Employees

   a. Part-time employees who consistently work more than thirty (30) hours per week shall be eligible to receive full coverage for medical, dental, and vision in the same manner as a full-time regular employee as described herein, including coverage for their dependent(s).for the employee and 50% of dependent coverage paid by the City of Moscow.

   b. Part-time employees who work less than thirty (30) hours per week are not eligible to receive health benefits.

4. Full or Part-Time Temporary and Seasonal Employees

   Full or part-time temporary and seasonal employees are not eligible to receive health benefits.

B. Enrollment

1. New Benefit-Eligible Employees

   Insurance coverage generally becomes effective on the first day of the calendar month following the first date of work.

2. Annual Open Enrollment

   Benefit Eligible employees have the opportunity to make changes to benefit elections annually at open enrollment. Human Resources will notify employees of the open enrollment period. Employees will only be permitted to make changes during the open enrollment, absent the occurrence of a qualifying life event.

3. Qualifying Life Event

   Employees (and covered dependents) who would otherwise lose or gain health coverage because of a "qualifying "life event" as defined by the benefit provider may be eligible to enroll in, or make changes to, the City's benefits outside the open enrollment period. Qualifying life events, also commonly called qualifying life events, are circumstances that can significantly impact your personal and financial situation and may include, but are not limited to;, getting married, getting divorced, having birth of a baby or adopting a child, the death of a spouse, termination of employment, and loss of dependent status, and are eligible to continue coverage under terms established by federal law known as

COBRA (Consolidated Omnibus Budget Reconciliation Act of 1985). ~~Changes to dependent coverage may be made when a qualifying event such as those mentioned above, occurs. Changes to benefit elections may be made annually at open enrollment. Open enrollment occurs annually and Human Resources will notify employees of the open enrollment period. Employee will only be permitted to make changes during open enrollment, absent the occurrence of a "qualifying event".~~

4. Retiree and Termination of Employment Coverage

   Eligible employees who retire or terminate employment from the City may be able to continue medical, dental, and vision benefit coverage through COBRA. COBRA information is provided separately and at the time of separation. Employees may contact Human Resources for COBRA-related information.

C. Eligible Dependents

1. Spouse: A person to whom the employee is legally married.

2. Domestic Partner (Affidavit Required) who meets the following criteria:

   a. 18 years of age or older;

   b. Share a close personal relationship and are each other's sole domestic partner;

   c. Responsible for each other's common welfare;

   d. Not legally married to anyone else;

   e. Not related by blood closer than would bar marriage in state of residence;

   d. Currently shares same and regular permanent residence and intend to do so indefinitely; and

   e. Jointly share financial responsibility for "basic living expenses" including cost of food, shelter, and other costs such as medical expenses.

3. Children: Employee's (or spouse's/domestic partner's) child who is under the age 26 and who meets the following criteria:

   a. Employee's (or spouse's/domestic partner's) natural child, stepchild, adopted child or child legally placed with the employee (or spouse/domestic partner) for adoption;

   b. A child for whom the employee (or employee's spouse/domestic partner) has court-appointed legal guardianship; or

c. A child for whom the employee (or employee's spouse/domestic partner) are required to provide coverage by a legal qualified medical child support order (QMCSO).

4. Employee's (or spouse's/domestic partner's) child who is age 26 or over and incapable of self-support because of intellectual disability or physical handicap that began before their 26th birthday. Employee must complete and submit an affidavit of dependent eligibility form, with written evidence of the child's incapacity, within 31 days of the child's 26th birthday, or employee's insurance effective date, whichever occurs later, and where either: the child is an eligible enrolled child before their 26th birthday; or, the child's 26th birthday preceded the employee's effective date and the child has been continuously covered as the employee's dependent on group coverage since that birthday.

V. Retirement Benefits

Employees become a PERSI member when they work in an eligible position with a PERSI employer. When an employee earns sixty (60) months of service credit, they will be vested to receive a lifetime benefit at retirement. The sixty (60) month vesting period (five (5) months for elected and some appointed officials) does not need to be with the same PERSI employer. Unless an employee leaves public employment altogether, changing jobs should not affect their PERSI membership.

A. Enrollment in the PERSI Base Plan is automatic.

Pursuant to Idaho law, employees automatically become a member of PERSI and eligible for the Base Plan if:

1. Employer belongs to PERSI; and
2. Employment is for 5 consecutive months or more; and
3. Employee normally works 20 hours or more per week; and
4. An elected or appointed official serving on a board, council, or commission who receives a salary or honorarium for services performed, even though you receive a nominal salary and do not normally work 20 hours or more per week.

B. Those NOT eligible to join PERSI include:

1. Independent contractors;
2. Employee is provided employment in a public program benefiting themselves;
3. Inmates of a state correctional institution;
4. Student at a state college or university, and employed at the same school where the employment depends on maintaining student status;

5. Employee is making contributions to the U.S. Civil Service Commission under the U.S. Civil Service System Retirement Act; and

6. Seasonal employees whose employment depends on weather and growing seasons with less than 8 months of service.

C. PERSI Contributions and Regulations

1. Employee contributions are made by the employee and employer contributions are made by the City through the payroll process on a percentage of salary determined by PERSI.

2. Regulations pertaining to PERSI are pursuant to Idaho Code Title 59, Chapter 13 and IDAPA 59.

3. Additional information may be obtained by visiting the official website: persi.idaho.gov

VI. Overtime

The City follows the federal overtime provisions contained in the Fair Labor Standards Act (FLSA) and as amended. All employees are classified as exempt (salaried) or non-exempt (hourly) for purposes of complying with FLSA. Unless exempt, employees covered by the Act must receive overtime pay in accordance with the provisions of applicable wage and hour laws and as detailed in Chapter 2 Section VI.B Overtime Eligibility. Overtime shall be compensated at a rate of one and one half (1 ½) times the regular hourly rate. ~~for hours worked over 40 in a workweek at a rate not less than time and one-half their regular rates of pay. There is no limit in the Act on the number of hours employees aged 16 and older may work in any workweek. The Act does not require overtime pay for work~~ Time worked on Saturdays, Sundays, ~~holidays,~~ or regular days of rest, are compensated at the regular hourly rate unless overtime is worked on such days. ~~All employees are classified as exempt (salaried) or non-exempt (hourly) for purposes of complying with FLSA.~~

A. Exempt and Non-Exempt Employees

1. Exempt Employees - Employees who are exempt from the overtime provisions of the FLSA. These employees are paid based on a salary commensurate with their job functions and meet the requirements of an exempt employee per the FLSA. Exempt employees generally receive the same weekly or bi-weekly salary regardless of hours worked.

2. Non-Exempt Employees - Employees who are subject to the minimum wage and overtime pay provisions of the FLSA. These employees are paid based on an hourly rate and based on the hours worked.

B. Overtime Eligibility

1. Overtime ~~applies to only non-exempt employees and~~ shall be defined as any time worked beyond the regular hours designated in the work period as indicated below:~~.~~

   a. Non-public safety personnel: Overtime for non-public safety personnel is defined as any time worked beyond ~~A minimum of~~ forty (40) hours per work ~~period~~week. ~~for non-public safety personnel~~

   b. Public Safety Personnel (Sworn Law Enforcement and Fire Personnel as defined in Idaho Administrative Code *59.01.01.200)* Overtime for sworn law enforcement and fire personnel is defined as any time worked beyond ~~and~~ eighty (80) hours per pay period. ~~for sworn law enforcement/fire personnel before overtime is applied.~~

   c. Paramedic/Firefighters shall be paid threshold pay for hours worked in excess of one hundred and six (106) hours worked in a fourteen (14) day work period. The threshold rate shall be calculated by dividing the annual salary by Two Thousand, Seven Hundred Fifty-Six (2,756) and then dividing the results by two (2).

2. Overtime pay earned in a particular workweek or work period must be paid on the regular payday for the pay period in which the wages were earned. The amount of overtime pay due to an employee is based on the employee's regular rate of pay and the number of hours worked in a work period as defined in this policy document.

3. It is the policy of the City to limit overtime work. When overtime is necessary and consistent with the protection of the lives and property of the citizens of Moscow and the efficient operation of the various Departments, such overtime may be authorized by the employee's supervisor~~,~~ but shall be kept at a minimum. Prior authorization by the employee's supervisor is required before overtime can be incurred. Supervisors are responsible for ensuring that overtime hours are kept to a minimum. The supervisor has the discretion, in situations where an employee works more hours than their regular work schedule in any given day, to adjust the employee's hours for the rest of the work period to avoid overtime whenever possible.

4. Non-exempt, sworn law enforcement and fire protection personnel who are assigned to shifts, but use hours charged to sick leave, vacation leave, compensatory time or a City-designated holiday WILL be counted as hours worked for overtime purposes. For all other employees, holiday pay WILL NOT be counted when calculating the number of hours worked during a forty (40) hour pay period.

5. ~~Employees entitled to overtime compensation will receive overtime pay at a rate of one and one-half times their regular rate of pay for each hour worked in excess of the defined work period.~~ The City will allow the accumulation of

compensatory time instead of overtime pay at a rate of one and one half (1½) hours for each hour worked in excess of the defined work period as detailed in Chapter 2 Section VII. Compensatory Time.

VII. Compensatory Time

A. Compensatory Time

1. Compensatory time are hours of leave that are earned in lieu of taking overtime pay. Compensatory time may be earned whenever required by a supervisor or when requested by an employee with a supervisor's approval. Compensatory time is earned at the rate of one and one-half (1½) hours of leave per hour of work performed that would otherwise qualify for overtime pay. The City will allow the accumulation of compensatory time in lieu of overtime pay in an amount not to exceed eighty (80) hours at any time.

2. The use of compensatory time should be requested at a minimum of forty-eight (48) hours in advance and approved by the supervisor or manager. The minimum notice requirement may be altered on a case by case basis at the discretion of the supervisor or manager. The use of earned compensatory leave depends upon the department's ability to effectively operate during an employee's requested absence. Every effort will be made to permit an employee to use compensatory leave on the date requested unless doing so would unduly disrupt the operations of the department.

3. If repeated requests to use compensatory time are unable to be scheduled and reasonable opportunities to use such time are unavailable, an employee's accrued compensatory time will be paid via the payroll process. In the event the supervisor or employee feel repeated requests for time off have not been met or are not able to be accommodated, a request for such payout is to be directed to Human Resources for review.

4. Compensatory time earned in a pay period may not also be used in that same pay period. University Special Events overtime shall not be taken in compensatory time, pursuant to the City's Contract with the University of Idaho.

5. Earning and using compensatory time must be pre-approved by the immediate supervisor.

B. Compensatory Pay

1. When an employee selects compensatory time in lieu of pay, a later request to convert the compensatory time to pay will not be permitted, except in situations where the employee has requested to use compensatory time that was not approved and reasonable opportunities to use such time were not available.

2. Employees will be paid for all accrued compensatory time upon their termination of employment.

VIII. Educational Assistance

A. The City recognizes the need for employees to continually grow and enhance their skills and knowledge. Regular full-time employees with at least one (1) year of service may be eligible to be reimbursed for expenses relating to tuition for work-related classes. An employee who meets the eligibility criteria is not guaranteed educational assistance. Programs must be reviewed by the employee's supervisor and approved by the City ~~Supervisor~~ Administrator prior to registration.

B. A passing grade must be achieved to qualify for reimbursement. Transcripts and receipts must be submitted to Human Resources within sixty (60) days following the completion of the course to receive reimbursement. At the discretion of the City ~~Supervisor~~Administrator, tuition may be paid by the City prior to taking the class.

1. Recognizing the constraints of budgetary resources, the number of employees approved for educational assistance shall be limited at the discretion of the City ~~Supervisor~~Administrator.

2. Employees who are terminated during enrollment because of a reduction in force or job elimination will be reimbursed for the full amount of the costs of education incurred up to the date of termination.

3. Employees who, prior to completing the approved course, voluntarily leave the City or are terminated for reasons other than those listed above will not be reimbursed for the expenses associated with the course. If tuition was paid in advance by the City, reimbursement will be made to the City by deduction from the employee's final pay check, or if insufficient funds are available in the employee's last pay check, employee will be required to reimburse City for its contribution to the tuition paid.

4. Employees seeking reimbursement for educational expenses must agree in writing to repay the City in full for all tuition expenses reimbursed by the City if the employee leaves the City voluntarily or is terminated within one (1) year from the date of reimbursement. Reimbursement to the City will be made by deduction from the employee's final pay check, or if insufficient funds are available in the employee's last pay check, employee will be required to reimburse City for its contribution to the educational assistance expenses.

5. Employees are expected to schedule class attendance and the completion of study assignments outside of the employee's regular working hours. If it is necessary to schedule a class during normal working hours, the employee and their supervisor will mutually agree on a plan to make up the lost work time. Make-up time will not be counted for overtime purposes unless actual hours worked exceed forty (40) during the work week. It is expected that educational

activities will not interfere with the employee's work, and unsatisfactory job performance during enrollment may result in forfeiture of educational assistance and termination of employment.

6. Records of all educational programs completed by each employee will be maintained by Human Resources.

7. In keeping with IRS guidelines any educational assistance amounts paid on the behalf of any employee greater than the currently adopted IRS amount will be subject to tax and will be reported as such on the employees W2.

Chapter 3 – Hiring

I. Equal Employment Opportunity

A. All selection of employees and all employment decisions, including hiring, classification, transfer, discipline, and discharge, will be made without regard to race, color, religion, sex, gender, sexual orientation, gender expression or identity, age, marital or familial status (including pregnancy), national origin, or non-job-related physical or mental disability, or any other characteristic protected by law. No job or class of jobs will be closed to any individual except where a mental or physical attribute, sex or age is a bona fide occupational qualification.

B. The City will also endeavor to make reasonable accommodations for its employees' religious needs and practices, including those related to appearance and observance of holidays. The law requires an employer to reasonably accommodate an employee's religious beliefs or practices, unless doing so would cause ~~difficulty or expense for the employer~~a burden that is substantial in the overall context of the City's business. An employee should advise either the manager, supervisor, or Human Resources if they require accommodation for religious reasons.

C. Any concerns regarding hiring or other employment practices should be brought to Human Resources or City ~~Supervisor's~~ Administrator's attention. Employees can raise concerns and make reports without fear of retaliation. Anyone found to be engaging in any unlawful discrimination will be subject to disciplinary action, up to and including termination of employment.

II. Americans With Disabilities Act

The law requires that the City provide reasonable accommodation to an employee with a disability, unless doing so would cause significant difficulty or expense for the employer. Americans with Disabilities Act of 1990, 42 USC 12101, et seq. A reasonable accommodation is any change in the workplace (or in the way things are usually done) to help a person with a disability apply for a job, perform the duties of a job, or enjoy the benefits and privileges of employment. The City will endeavor to make reasonable accommodations for qualified individuals with known disabilities unless doing so would result in an undue hardship. An employee should advise the manager, supervisor, or Human Resources if they require an accommodation to enable the employee to perform the job's essential tasks.

III. Veteran's Preference and Rights

A. The City will grant a preference to individuals eligible for preference pursuant to Idaho Code § 65-503. In the event of equal qualifications for an available position, a veteran or family member who qualifies for the preference will be selected.

B. The City will comply with the reemployment, leave of absence, and other provisions of the Uniformed Services Employment and Reemployment Rights Act, 38 USC. § 4301, et seq. and Idaho Code § 65-508.

IV. Nepotism/Hiring of Relative

A. No person will be employed by the City when the employment would result in a violation of provisions found in Idaho Code, including but not limited to I.C. Title 74, Chapter 4, Idaho Code §18-1359 and their successors. Any employment made in violation of these sections may be void.

B. The appointment or employment of the following persons is expressly prohibited:

1. No person related to the Mayor or a City Council member by blood or marriage within the second degree shall be appointed to any compensated office, position, employment or duty (I.C. § 18-1359(3)); and

2. No public servant, including Elected Officials and employees, shall appoint or vote for the appointment of any person related to them by blood or marriage within the second degree to any compensated office, position, employment or duty. This means no one related within the second degree to anyone involved in any way in the hiring process can be hired and no one related to an applicant within the second degree by affinity (blood) can take part in the hiring process (I.C. § 18-1359(1)(e)).

C. An employee whose relative is subsequently elected may be eligible to retain employee's position and receive general pay increases, step increases, cost of living increases, and/or other across the board increases in salary or merit increases, benefits and bonuses or promotions as allowed by relevant provisions of Idaho law, including I.C. § 18-1359(5).

D. A relative of an employee will be considered for employment by the City if the applicant possesses all the qualifications for employment. However, a relative will not be hired if the employment would:

1. Create either a direct or indirect supervisor/subordinate relationship with the relative; or

2. Create either an actual conflict of interest or the appearance of a conflict of interest as determined by Human Resources or when the conflict may involve Human Resources staff, as determined by the City ~~Supervisor~~Administrator.

E. Employees who marry another employee or become members of the same household as another employee may continue employment as long as there is not a direct or indirect supervisor/subordinate relationship between the employees.

F. These criteria will also be considered when assigning, transferring, or promoting an employee.

G. For the purpose of this policy, the definitions that apply to this section are as follows:

1. *Child* – A biological, adopted, or foster child, a stepchild, a legal ward, or a child of a person standing "in loco parentis" by providing day-to-day care and/or financial support. For FMLA leave for adoption, foster care or a family member with a severe health condition, the child must either be under age eighteen (18), or age eighteen (18) or older and incapable of self-care because of mental or physical disability as defined by the ADA. For FMLA leave due to birth and care of a newborn child, the child must be under twelve (12) months of age.

2. *Domestic Partner* – As defined in Resolution 2007-31; Each are eighteen (18) years of age or older; share a close personal relationship and are each other's sole domestic partner; are responsible for each other's common welfare; are not legally married to anyone else nor has either had a domestic partner within thirty (30) days immediately prior to completing the application for enrollment to qualify as domestic partners; are not related by blood closer than would bar marriage in Idaho; share the same regular, and permanent residence and each intends to continue to do so indefinitely; jointly share financial responsibility for basic living expenses, including, but not limited to, the cost of food, shelter, and other costs such as medical expenses.

3. *Household* – The spouse and dependent children of the elected official or employee and/or persons whom the elected official or employee is legally obligated to support (I.C. § 74-403(7)). Reside in the same home and are responsible for each other’s common welfare, share the same regular and permanent residence, and each intends to continue to do so indefinitely; jointly share financial responsibility for basic living expenses, including, but not limited to, the cost of food, shelter, and other costs such as medical expenses.

4. *Immediate Family Member* – A spouse, brother, sister, parents, children, stepchildren, father-in-law, mother-in-law, sister-in-law, brother-in-law, daughter-in-law, son-in-law, and any other member of the employee's household.

5. *Parent* – A biological, adoptive, step or foster parent, or another person who stood "in loco parentis" to the eligible employee when the employee was a child by providing day-to-day care and financial support. The term does not include parent-in-law.

6. *Relative* - Related to Elected official/employee by blood or marriage within the second degree (I.C. 18-1361A). A relative of the second degree includes an aunt, uncle, grandparent, grandchild, niece, nephew, and first cousin.

7. *Spouse* - A husband or wife as defined or recognized under State law for purposes of marriage in the State where the employee resides.

V. Promotion & Transfer

A. Qualified City employees may be given preference over outside applicants to fill vacancies in the workforce without following the notice and selection procedures customarily required for hiring new employees. The City of Moscow strives to provide training and development for employees and to offer employees promotions to higher-level positions when appropriate and as the position and funding becomes available. Promotions are encouraged, and supervisors may first consider current employees with the necessary qualifications and skills to fill vacancies unless external recruitment is considered to be in the City's best interest.

B. The requirements for the new position determine an employee's basic eligibility for promotion or transfer. To be eligible for a promotion or transfer, employees must meet the new position requirements, have a satisfactory performance record, and have no adverse disciplinary actions during the same six-month period. Employees may not request transfers for positions that are not currently open. Promoted and transferred employees are subject to the provisions of the INTRODUCTORY PERIOD policy and are subject to all requirements of the new position.

VI. Re-Employment of Former Employees

Former employees who left the City in good standing may be considered for re-employment. Former employees who resigned without written notice or were dismissed for disciplinary reasons may not be considered for re-employment. A former employee who is re-employed is considered a new employee from the date of re-employment unless the break in service is less than thirty days, in which case the employee will retain accumulated seniority. The length of service for the purposes of benefits is governed by the terms of each benefit plan.

Chapter 4 - Performance Evaluation

I. Introductory Period

All new employees, and all present employees transferred or promoted to a new job, are to be carefully monitored and evaluated for an initial introductory period. After satisfactory completion of the introductory period, those employees will be evaluated as provided for in the PERFORMANCE APPRAISALS section.

A. Unless otherwise specified within the job offer letter or other documentation, the introductory period shall last six (6) months from the date of hire. ~~The introductory period for police officers will last up to one (1) year.~~ Supervisors should observe carefully the performance of each employee in a new job position. Where appropriate, weaknesses in performance, behavior, or conduct are to be brought to the employee's attention for correction prior to the end of the introductory period.

B. The introductory period for police officers may last up to twelve (12) months from the date of hire and is dependent on the successful completion of the Moscow Police Department Field Training and Evaluation Program and achieving the state of Idaho basic Peace Officer Standards and Training (POST) certification.

C. The introductory period for paramedic/firefighters shall last twelve (12) months from the date of hire.

D. ~~B.~~ Supervisors will prepare a written evaluation of the employee's job performance ~~at~~ prior to the end of the introductory period. The evaluation shall include a recommendation as to whether the employee should continue in the position or whether the introductory period should be extended as described below. Copies of the evaluation ~~are to~~shall be forwarded to the department manager/supervisor and Human Resources for inclusion in the employee's personnel file.

E. ~~C.~~ Employees will be allowed to continue in their new positions if they are given both a satisfactory evaluation by the end of their introductory period, and their supervisor's endorsement to continue in the job.

F. ~~D.~~ Employees who do not receive a satisfactory evaluation and endorsement may have their introductory period extended by up to an additional six (6) months ~~thirty (30) day increments~~ to demonstrate their ability to do the job if the supervisor feels additional time is warranted in order to achieve acceptable job performance. The introductory period may also be extended by the number of ~~work days~~workdays missed because of an excused absence or other circumstances that necessitate extending the introductory period. Employees will be provided notification of the extension of the introductory period in writing.

G. ~~E.~~ Supervisors may recommend the termination of an employee at any time during their introductory period. A recommendation for termination should be submitted in writing to Human Resources for review and should include an evaluation and a

listing of actions taken to assist the employee. Employees will not be entitled to the appeal process during their introductory period.

H. ~~F.~~ Transferred or promoted employees who are unable to perform satisfactorily in their new jobs may be returned to their original jobs, if a vacancy exists, or may be terminated.

II. Performance Appraisals

A. Job performance of each employee should be evaluated regularly by the employee's supervisor. Supervisors should complete performance appraisals upon the following occasions:

1. At the conclusion of their introductory period; and

2. Annually prior to the start of the calendar year.

B. In addition to scheduled appraisals, supervisors should discuss with employees any performance issues that warrant attention as they arise and should keep records of any significant incidents, which includes actions taken by the supervisor to address the performance issues or matters of concern.

C. Performance Appraisal Guidelines:

1. In evaluating employees, supervisors should consider such factors as the experience and training provided to the employee, the job description, and the employee's attainment of previously set objectives and goals. Other factors that normally should be considered include, but are not limited to, knowledge of the job, quantity and quality of work, promptness in completing assignments, cooperation, initiative, reliability, attendance, judgment, conduct, acceptance of responsibility, and adherence to City policies and procedures.

2. In completing evaluations, supervisors should prepare a written appraisal of each employee's job performance. Such an appraisal should include the supervisor's comments and recommendations, an action plan for both the employee and supervisor, and agreed upon performance goals for the next evaluation period if appropriate.

3. The supervisor's manager should review each supervisor's written evaluation to help assure that the evaluation has been properly completed in as fair and objective a manner as possible prior to the supervisor discussing the evaluation with the employee.

4. The supervisor and employee should meet and discuss the evaluation, assess the employee's strengths and weaknesses in a constructive manner, and set objectives and goals for the period ahead. The employee should be given the opportunity to examine the evaluation and make written comments about any aspect of it. The employee and supervisor should then sign and date the evaluation.

5. Employees may add written comments to their performance appraisal and may request a review by their supervisors' manager or Human Resources.

6. Information derived from the performance appraisal may be considered when making decisions affecting an employee including, but not limited to, training needs and opportunities, pay, promotion, transfer, or continued employment.

7. The final evaluation should then be forwarded to Human Resources for review and inclusion in the employee's personnel file.

Chapter 5 - Legal Requirements

I. Unlawful Workplace Discrimination, Harassment and Retaliation

A. Overview

The City strives to maintain a supportive and civil workplace – one in which employees treat each other with respect and dignity. In keeping with these values, the City promotes equal employment opportunities and prohibits and does not tolerate unlawful workplace discrimination, harassment or retaliation. The following defined terms are applicable to this section:

1. Legally protected class means a personal characteristic that is protected by law. Title VII of the US Civil Rights Act of 1964 includes the following protected classes, race, color, national origin, religion, sex (including pregnancy, sexual orientation and gender identity), age (40 and older), disability, or any other characteristic protected by law.

2. Participation in the workplace includes all aspects of being an employee at the City, including recruitment, hiring, job performance, performance reviews, training, development, promotion, demotion, transfer, compensation, benefits, educational assistance, layoff and recall, participation in social and recreational programs, termination and/or retirement.

B. Workplace Discrimination

1. Workplace discrimination is disparate treatment of an individual as a result of their membership in a legally protected class with respect to their participation in the workplace. Adverse employment actions usually involve decisions made by supervisors, managers, or Elected Officials that affect the workplace status and benefits of employees.

2. Illegal adverse employment actions may include, but are not limited to, not hiring a qualified applicant due to their age, not promoting an employee due to their religious beliefs, denying an employee a raise due to their race, disciplining an employee more harshly than others due to their sex, and terminating an employee due to their national origin.

C. Workplace Harassment

1. Workplace harassment is unwelcome conduct that is directed to anyone in the workplace that interferes with their participation in the workplace. The offensive conduct must be severe or recurring such that it creates a work environment that a reasonable person would consider intimidating, hostile or abusive.

2. Offensive conduct may include, but is not limited to, offensive jokes, slurs, epithets or name calling, physical assaults or threats, intimidation, ridicule or mockery, insults or put-downs, offensive objects or pictures.

D. Workplace Sexual Harassment

1. Sexual harassment is a specific type of workplace harassment. Since it is particularly destructive to the work environment it is more thoroughly addressed here. Sexual harassment occurs when one or more persons are subject to unwelcome sexual advances, request for sexual favors, or other verbal, non-verbal, visual or physical harassment of a sexual nature such that it creates a hostile or offensive work environment.

2. Sexual harassment includes sexually harassing others of the same and/or different gender, gender identity or gender expression. Sexual harassment is unlawful whether it involves co-workers, supervisors, managers, Elected Officials, or customers of the City. Sexual harassment may include, but is not limited to:

   a. Leering, making sexual gestures, or displaying derogatory and or sexually suggestive objects, pictures, cartoons, posters or drawings;

   b. Sexually degrading language, derogatory comments, epithets, slurs, sexually explicit jokes or comments;

   c. Verbal or non-verbal unwanted sexual advances or propositions;

   d. Threatening or making reprisals after a negative response to sexual advances;

   e. Offering employment benefits such as raises, promotions and job retention in exchange for sexual favors;

   f. Unwanted physical conduct such as touching, massaging, pinching, patting, hugging; and

   g. Physical interference with normal work or movement including impeding or blocking movement.

E. Hostile Work Environment

Pursuant to the Idaho Human Rights Act (IHRA), in order to show that a work environment is sufficiently hostile, a plaintiff must show the occurrence of numerous improper acts which establish a pattern of conduct sufficiently severe or pervasive to alter the conditions of employment. Patterson v. State Department of Health & Welfare, 151 Idaho 310 (2011).

The standard to prove a hostile environment under the Idaho Human Rights Act (IHRA) is that the environment is both subjectively and objectively perceived as hostile based on a totality of the circumstances.

F. Workplace Retaliation

Workplace retaliation is when an employee is punished or negatively treated because the employee engaged in legally protected activity, including initiating a complaint of discrimination or harassment, providing information or assisting in an investigation or refusing to follow orders that would result in discrimination or harassment. Retaliation can result from employment action taken by a supervisor, manager, Elected Official or from acts of other employees.

Examples of conduct that might be considered retaliation for engaging in protected activity include assigning the employee to less desirable tasks or shifts in the office, denying an employee a promotion or raise, socially isolating an employee, playing practical jokes on the employee, and allowing other employees to be critical of an employee for participating in a workplace investigation into alleged discrimination or harassment.

G. Reporting Process

1. The City encourages employees to report any perceived incident of harassment, discrimination or retaliation to which they have been subjected or have witnessed, regardless of the offender's identity or position. Employees, if comfortable doing so, may advise the offender that their behavior is unwelcome and request that it be discontinued immediately. This action alone may stop the behavior which is in process, and may thereby resolve the immediate situation. Of course, the employee may prefer to disengage from the situation and pursue the matter through the City's reporting procedure~~,~~ and is encouraged to do so.

2. The following steps must be followed to report and for the City to then investigate incidents of unlawful discrimination, harassment, sexual harassment, retaliation, or the development of a hostile work environment.

   a. An employee who believes they have been unlawfully discriminated, harassed or retaliated against, or who observes or knows about behavior in the workplace that could be considered unlawful discrimination, harassment or retaliation, should report it to their supervisor, manager, Human Resources, City ~~Supervisor~~Administrator, or City Attorney as soon as possible after the observed or experienced incident.

   b. The individual receiving the report must then forward it to Human Resources. If Human Resources is the subject of the complaint, the report must then be forwarded to the City Attorney.

   c. Once such a complaint has been made, the complaint cannot be withdrawn by the complainant without a determination that it was made erroneously.

d. Human Resources/City Attorney (whoever initially received the complaint) should promptly review the complaint and consult with the City Attorney (or the City Attorney should promptly review the complaint and consult with the City ~~Supervisor~~Administrator).

e. In appropriate circumstances, the employee who is alleged to have committed the offense may be placed on paid or unpaid administrative leave pending the investigation into the allegations, such determination is made by the City Administrator~~Supervisor~~.

f. Human Resources, in consultation with the City Attorney (or City Attorney in consultation with the City Administrator~~Supervisor~~), will engage an appropriate person to investigate the complaint. The investigator should be a neutral party.

g. The investigator will interview the complainant, the employee alleged to have committed the offense(s), and any relevant witnesses.

h. At the conclusion of the investigation, the investigator will submit a report of the findings to Human Resources (or City Attorney), who will then route it as appropriate.

   i. Human Resources (or City Attorney) and/or the appropriate supervisors and legal counsel for the City will meet separately with both the complainant and the employee alleged to have committed the offense(s) to notify them in person of the findings of the investigation.

   ii. The complainant and the employee alleged to have committed the offense(s) may submit written statements to Human Resources (or City Attorney) and/or supervisors challenging the factual basis of the findings. Unless circumstances prevent, the statement must be submitted no later than 5 working days after the meeting in which the findings of the investigation are discussed.

i. After Human Resources (or City Attorney) and/or supervisors have met with both parties and reviewed the documentation, and after consultation with legal counsel for the City, a decision will be made as to what action, if any, should be taken by the City Administrator~~Supervisor~~.

j. At the conclusion of this complaint procedure:

   i. The accused will be informed as to the disciplinary action, if any is determined to be needed.

   ii. The complainant should be informed that appropriate action, if any, has been taken. Because disciplinary personnel matters are confidential, details of the specific discipline should not be shared with the complainant.

3. Any retaliation against an individual for reporting harassment, discrimination or hostile work environment or for participating in an investigation of a claim related to any of the such, is serious and, like the act of harassment, discrimination or hostile work environment itself, will be subject to an investigation and possible disciplinary action. Acts of retaliation should be reported promptly.

H. Disciplinary Action

If it is determined that unlawful discrimination, harassment or retaliation has occurred, an appropriate course of action will be taken by the City. The action will depend on the following factors:

1. The severity, frequency and pervasiveness of the conduct;

2. The conduct of the respective employees;

3. Prior complaints made against the employee alleged to have committed the offense; and

4. The quality of the evidence (first-hand knowledge, credible corroboration etc.).

If problematic conduct is revealed in the investigation, corrective action may be taken even if the investigation is inconclusive or if it is determined that there has been no unlawful discrimination, harassment or retaliation.

I. Confidentiality

Confidentiality will be maintained to the fullest extent possible in accordance with applicable federal, state and local law. However, a complete and thorough investigation of the allegations will require the investigator to inform witnesses of certain aspects of the complaint in order to obtain an accurate account of the actions of the parties involved. The City's insurer may also be engaged to assist in any or all phases of any proceeding or investigation.

II. Drug-Free Workplace Policy

A. Expectations

1. The City recognizes alcohol and drug abuse as potential health, safety and security problems. The City expects all employees to assist in maintaining a work environment free from the effects of alcohol, drugs or other intoxicating substances. Compliance with this substance abuse policy is made a condition of employment, and violations of the policy may lead to discipline and/or termination.

2. All employees are prohibited from engaging in the unlawful manufacture, possession, use, distribution or purchase of illicit drugs, alcohol or other

intoxicants, as well as the misuse of prescription drugs on City premises or at any time and any place during working hours. While we cannot control the behavior of employees off the premises on their own time, we certainly encourage employees to behave responsibly and appropriately at all times. All employees are required to report to their jobs in an appropriate mental and physical condition, ready to work.

3. Substance abuse is an illness that can be treated. Employees who have an alcohol or drug abuse problem are encouraged to seek appropriate professional assistance. Employees may inform their immediate supervisor, manager, or the Human Resources Office for assistance in seeking help, including possible coverage under the City's medical insurance plan to address substance abuse. When work performance is negatively impacted by an employee's substance use, the employee's admission to or use of a treatment or other program does not preclude appropriate disciplinary action by the City, which may include termination.

B. Reasonable Suspicion Test

1. Behavior exhibited by an employee that causes reasonable suspicion to believe an employee may be under the influence of alcohol, drugs or other intoxicating substances should be reported immediately to a supervisor. Supervisors should then immediately report to Human Resources or designee. Human Resources or designee, together with the supervisor, will determine whether the employee should be examined by a physician or clinic and whether or not the employee should be tested for drugs, alcohol, and/or any other intoxicating substances (reasonable suspicion test).

2. Employees believed to be under the influence of drugs, narcotics, alcohol, or any intoxicating substance will be required to leave the premises. Human Resources or supervisor will arrange safe transit for any employee who is required to leave. Employee will be required to utilize sick leave or vacation leave for this time away from work.

C. Drug Testing

1. Pre-employment: Only Police Officers and employees filling positions requiring a commercial driver's license and subject to Federal Department of Transportation regulations are required to complete pre-employment drug and alcohol tests.

2. Random: No drivers other than CDL holders will be randomly tested for drugs, alcohol, or other intoxicating substances.

3. Reasonable Suspicion: Drug and alcohol tests may be conducted on any employee where there is a reasonable suspicion that the employee is impaired by drugs, alcohol, or other intoxicating substances. The basis of suspicion

indicating drug or alcohol impairment may be a specific contemporaneous event or conduct evidencing impairment observed over a period of time.

4. Post-Accident Testing:

   An employee who is operating a City vehicle or is driving their personal vehicle while conducting official city business and is involved in a motor vehicle accident must notify the City of the accident as quickly as possible. Employees must comply with any drug and alcohol testing requirement based on the nature of the accident and as follows:

   a. When the accident occurs on public or private roadways or private property – a post-accident drug and alcohol test is required if one of the following conditions are met:

      i. If the accident involved the loss of human life or any bodily injury to any person involved in the accident;

      ii. If the accident results in one or more motor vehicles incurring disabling damage as a result of the accident. Disabling damage is defined as the motor vehicle needing to be transported away from the scene by a tow truck or other motor vehicle due to the damage sustained from the accident.

      iii. If the accident results in damage to public or private property estimated at $2,500 or more by the employee's supervisor or designee.

      iv. If the supervisor or designee has reasonable suspicion that the employee is impaired by drugs, alcohol, or other intoxicating substances.

   b. When the accident occurs on City property – the supervisor shall determine if a post-accident drug or alcohol test is required.

   c. When a post-accident test is required, alcohol testing must be performed within two (2) hours of the accident, and drug testing must be performed within thirty-two (32) hours of the accident. Any employee required to be tested under this section must remain readily available for such testing and such employee may not consume drugs, alcohol, and/or an intoxicating substance within thirty-two (32) hours post-accident.

   d. An employee who is seriously injured and cannot provide a specimen for testing will be required to authorize the release of relevant hospital reports that would indicate the presence, or lack thereof, of drugs, alcohol, and/or other intoxicating substances in such driver's system at the time of the incident.

5. Refusal to Test:

Federal regulations and standards established by the U.S. Department of Transportation and standards established by the U.S. Department of Transportation prohibit CDL license holders from refusing a test. The following are some examples of conduct that the regulations define as refusing a test:

a. Failing to appear for any test after you were directed to do so by the City.

b. Failing to remain at the testing site until the testing process is completed.

c. Failing to provide a urine or breath sample.

d. Failing to permit the observation or monitoring of your providing a urine specimen.

e. Failing to provide a sufficient urine or breath sample (when it has been determined through the required medical evaluation that there was not adequate medical explanation for the failure).

f. Failing to take a second test when directed to do so.

g. Failing to cooperate with any part of the testing process, including but not limited to:

   i. Refusing to empty your pockets

   ii. Behaving in a confrontational manner with the collector

h. Failing to wash your hands when directed to do so.

i. Failing to obtain a medical evaluation as part of a "shy bladder" or "shy lung" procedure.

j. Failing to sign Step 2 of the Alcohol Test Form.

k. Providing a urine specimen that is verified as adulterated or substituted.

l. Failing to follow the observer's instructions during a directly observed urine collection.

m. Possessing or wearing a prosthetic or other device that could be used to interfere with the collection process

n. Admitting to the collector or MRO that you adulterated or substituted a specimen.

6. Consequences of a Refusal to Test:

A determination of refusal to test has the same consequences as those who receive a positive test. CDL employees who refuse to submit to a test will be subject to discipline, up to and including termination.

D. Counseling

1. Employees who are experiencing work-related or personal problems resulting from drug, narcotic, or alcohol abuse or dependency may request or be required to seek counseling help. City-sponsored or required counseling will be kept confidential and will not have any influence on performance appraisals. Job performance alone, not the fact that an employee seeks counseling, is to be the basis of all performance appraisals.

2. Any employee who is abusing drugs, alcohol, and/or other intoxicating substances may be granted a leave of absence to undertake rehabilitation treatment. The employee will not be permitted to return to work until certification is presented to Human Resources that the employee is capable of performing their job. Failure to cooperate with an agreed-upon treatment plan may result in discipline, up to and including termination. Participation in a treatment program does not insulate an employee from the imposition of discipline for violations of this or other City policies.

3. Employees who violate this policy will be subject to the Employee Discipline Policy.

E. Commercial Drivers Licenses

1. Employees whose jobs require a valid Commercial Driver's License (CDL) license must keep their license on their person at all times when working. Employees who are at work without their CDL license will be sent home and/or will be subject to disciplinary action.

2. Employees must notify their supervisor and Human Resources immediately if there has been any action taken against their license for any traffic violations (except parking), including but not limited to suspension, revocation, cancellations or if you are disqualified from CDL driving. The requirement to report is required no matter what type of vehicle you were driving when the action against the employee's license occurred. The U.S. Department of Transportation's Federal Motor Carrier Safety Administration passed The Omnibus Transportation Act, which was intended to create an alcohol and controlled substance free transportation industry. The controlled substance and alcohol testing that is conducted under this act is called Federal or DOT (Department of Transportation) testing. Where there are differences in the requirements under the Omnibus Transportation Act and this policy, the Act takes precedence.

3. Effective January 6, 2020 the U.S. Department of Transportation established the Federal Motor Carrier Safety Administration Clearinghouse. Clearinghouse

rules and regulations apply to a variety of CDL drivers including municipal vehicle drivers. As the City of Moscow employee's municipal vehicle drivers, the City complies with all Clearinghouse regulations.

https://clearinghouse.fmcsa.dot.gov/Resource/Index/Factsheet

4. This includes a requirement to conduct both electronic queries and traditional manual inquiries with previous employers to meet the three-year implementation timeframe (through January 6, 2023) as required by FMCSA's drug and alcohol use testing program, for checking CDL driver violation histories.

5. The following policy information regarding the use of controlled substances and alcohol, required tests, testing procedures, test results and their consequences, apply to CDL-covered employees performing safety-sensitive duties.

F. Employees Subject to Federal DOT Testing

The Federal DOT alcohol and controlled substance testing rules apply to every person who operates a commercial motor vehicle (CMV) in interstate or intrastate commerce. This includes individuals who only operate a CMV occasionally or in an emergency.

G. Definition of Safety Sensitive Functions

A CDL employee is performing a safety sensitive function at the following times:

1. All time on City property, public property, or other property waiting to be dispatched to drive;

2. All time inspecting, servicing or conditioning any CMV at any time;

3. All CMV driving time;

4. All time other than driving time in or upon any CMV;

5. All time loading or unloading a vehicle, supervising or assisting in the loading or unloading, attending a vehicle being loaded or unloaded, remaining in readiness to operate the vehicle, or in giving receipts for shipments loaded or unloaded;

6. All time spent performing driver requirements relating to accidents; and

7. All time repairing, obtaining assistance, or remaining in attendance upon a disabled vehicle.

H. Prohibited Conduct - CDL-Covered Employees May Not:

1. Use any illicit (illegal) controlled substance. *

2. Possess any illegal controlled substance while assigned to or performing safety-sensitive functions.

3. Use any legal prescription which is a controlled substance (or possess it while assigned to or performing safety-sensitive functions), unless taking it in accordance with the instructions of a licensed medical provider, and that medical provider has advised that it will not adversely affect your ability to safely operate a CMV.

4. Use or possess alcohol while assigned to or performing safety-sensitive functions. This includes anything that contains alcohol, such as mouthwash and cough medication.

5. Perform safety-sensitive functions within eight (8) hours after using alcohol.

6. Report for duty or remain on duty if:

   a. Under the influence or impaired by alcohol; or

   b. Have a blood alcohol concentration of .02 or greater

7. Refuse to submit to any test for alcohol or controlled substances (refusal also means adulterating or substituting a specimen).

   *Medical marijuana, even if legally prescribed in a state, is an illegal drug under Idaho state and federal law. The use of medical marijuana is prohibited conduct for CDL-covered employees.

I. Consequences of Engaging in Prohibited Conduct:

Engaging in prohibited conduct has the same consequences as those for a positive test.

J. Prescription Medicine and Over-The-Counter (OTC) Drugs

These may affect a driver's fitness for duty or ability to perform duties safely. It is the CDL-covered employee's responsibility to know how the medications taken for health reasons affect the ability to perform the employee's job in a safe manner. Employees are encouraged to always ask their medical provider how any medication they are taking will affect their ability to operate a CMV safely.

Chapter 6 - Discipline & Termination

I. Employee Discipline

A. The Employee Discipline Policy provides the process and progressive measures to address employees' workplace actions and/or violation of the City's standards of conduct and job performance requirements as documented within the City of Moscow Personnel Policy Manual. These procedures are directory in nature and minor variations in the processes set forth herein will not affect the validity of any actions taken pursuant to this policy.

B. The following framework guides the progressive steps to be taken when an employee violates employment policies or fails to adequately perform their duties. Nothing contained herein is intended to limit the reasons for which the employee may be disciplined, up to and including termination of employment. In addition, nothing contained herein is intended to change the at-will nature of the employment for those employees identified as at-will in the City of Moscow Personnel Policies - Employee Classification Policy. Progressive steps may be implemented in order to encourage improved performance or attitude, but are not required. The City may take any of the prescribed steps, in any order, when a supervisor deems an action of the employee is serious enough to warrant a certain step.

1. Step 1: Counseling and Verbal Warning – intended to provide an opportunity for the immediate supervisor to bring attention to the existing performance or conduct issue. The supervisor will discuss the nature of the problem or the violation of City's policies with the employee. The supervisor will clearly describe performance and/or conduct expectations, support the supervisor will provide to assist the employee in improving their performance and/or conduct, and steps the employee must take to resolve the problem. This session is documented in the Verbal Warning Form and available from Human Resources.

2. Step 2: Written Warning – involves more formal documentation of the performance or conduct issues and consequences. At Step 2, the immediate supervisor and department manager or supervisor will meet with the employee to review the issue, and any prior relevant corrective action plans as appropriate. The immediate supervisor will outline the consequences for the employee's continued failure to meet performance or conduct expectations, as well as the support the supervisor will provide to assist the employee in successfully correcting the performance or conduct issue. The written warning may also include a statement indicating that the employee may be subject to additional discipline, up to and including termination, if immediate and sustained corrective action is not taken. This step is documented in the Written Warning Form available from Human Resources.

3. Step 3: Suspension and Final Written Warning – some performance, conduct or safety incidents are so problematic and harmful that the most effective action may be the temporary removal of the employee from the workplace.

Suspensions that are recommended as part of the normal sequence of the progressive discipline policy and procedures are subject to approval from the immediate supervisor, department manager or supervisor, Human Resources, and the City Administrator~~Supervisor~~. This step requires a memo documenting the specific performance or conduct issue(s), including documentation of all prior verbal and written disciplinary actions taken to address the performance issues. The memo and accompanying documentation shall be sent to Human Resources for review, followed by review and approval by the City Administrator~~Supervisor~~. Human Resources will provide the employee and supervisor with the written notice of suspension.

4. Step 4: Recommendation for Termination of Employment – the most serious step in the progressive discipline process is a recommendation to terminate employment. The City of Moscow will generally follow the progressive nature of this policy by first providing counseling, a written warning, issuing a final written warning, or suspending the employee from the workplace, before proceeding to a recommendation to terminate employment. In cases of serious misconduct or any time a supervisor determines it is necessary (including by example, but not limited to, a major breach of policy, safety violation, or violation of law), the City reserves the right to escalate disciplinary actions, up to and including immediate suspension and/or termination, depending on the circumstances of each situation and the nature of the offense. Recommendations to terminate employment must be approved by the immediate supervisor, department manager or supervisor, Human Resources, and City Administrator~~Supervisor~~. Notices of termination are prepared by Human Resources to provide for proper liability review.

C. Discipline and Termination Process

1. If an employee is not meeting City standards of conduct or performance, the employee's supervisor should take the following actions:

   a. Meet with the employee to discuss the matter.

   b. Inform the employee of the nature of the problem, facts which support the concern, support or coaching to be provided to the employee and the action the employee is expected to take to correct the issue.

   c. Complete a Verbal Warning Form, available from Human Resources, that includes the date the discussion is held, supervisor and employee names, issue with date of occurrence, and support the supervisor agrees to provide and corrective actions expected.

   d. Forward form to Human Resources for filing in personnel file.

2. If there is a second occurrence, the supervisor should meet again with the employee to provide further feedback taking the following actions:

a. Meet with the employee to discuss the matter.

b. Inform the employee of the nature of the problem, facts which support the concern, support or coaching to be provided to the employee and the action the employee is expected to take to correct the issue.

c. Complete a Written Warning Form, available from Human Resources, to serve as the official written reprimand to include the following:

i. Summary of instances or discussion held regarding the issue to date as outlined in the original Verbal Warning Form.

ii. Summary of current instance, expectations of employee moving forward, corrective action the employee is required to take, support and coaching City is committed to providing, and consequences for not meeting expectations.

d. Forward form to Human Resources for filing in personnel file.

D. If there are additional occurrences the supervisor or manager should confer with the City Administrator~~Supervisor~~ and Human Resources to take one or more of the following action(s), depending on the situation and severity of the conduct:

1. Issue an additional written reprimand or warning; or

2. Suspend the employee with or without pay; or

3. Suspend the employee with or without pay indefinitely and recommend termination; or

4. Other such action as deemed appropriate.

E. Human Resources under usual circumstances should review and approve a recommendation for termination before any final action is taken. An employee who believes that discipline received is too severe or who disagrees with the reason(s) for the discipline, may utilize the grievance procedure outlined in the Employee Grievance Policy.

II. Employee Grievance

A. It is the policy of the City that current employees should have an opportunity to present their work-related complaints and to appeal employment related management decisions through a grievance procedure. The City will attempt to promptly resolve all grievances that are appropriate for processing under this policy. The grievance procedure is not available to an employee who is recommended for termination or to an employee selected for layoff. Employees are encouraged to talk to each other to resolve their problems. Other methods of resolution may include communicating with their direct supervisor in order for the

supervisor to try to resolve the problem. Supervisors should try to resolve any grievance as quickly as possible. When they're unable to do so, they should refer to Human Resources and cooperate with all other procedures.

B. When employees have an issue with their direct supervisor, it is encouraged that they should first try to discuss the matter and resolve it between them. In that case, they're advised to request an informal meeting.

C. If the grievance relates to a supervisor behavior that can bring disciplinary action (e.g. sexual harassment or violence), employees should refer directly to Human Resources or the next level supervisor.

D. Human Resources will assist with the formal Grievance Procedure as follows:

1. Work with employee to fill out a Grievance Form;

2. Work with employee to ensure the matter is understood completely;

3. Communicate the issue as appropriate to the City Administrator~~Supervisor~~ and the City Attorney;

4. Provide the employee who faces allegations with a copy of the grievance;

5. As appropriate, organize mediation procedures (e.g. arranging a formal meeting);

6. As appropriate, investigate the matter or engage the assistance of an investigator when needed;

7. Keep employees informed throughout the process;

8. Communicate the formal decision to all employees involved;

9. Take actions to ensure the formal decision is followed;

10. Process appeals by gathering more information and investigating further; and

11. Keep accurate records.

E. The grievance procedure may vary according to the nature of a grievance. For example, if an employee is found guilty of actions not allowed as highlighted in these policies, the City will engage in the disciplinary process.

III. Termination of Employment

A. Termination

~~1.~~ The City may terminate employment because of an employee's voluntary resignation, ~~discharge~~involuntary termination, ~~or~~ retirement,~~;~~ or a permanent reduction in the work force resulting in layoff as outlined in Chapter 7 Section VII.

~~1. Employees shall give written notice of their intent to resign. Failure to give written notice will result in ineligibility for re-employment. It is suggested that supervisory and managerial employees give four weeks' notice. All other employees should give at least two weeks' notice.~~

~~2. Employees who are absent from work for three consecutive days without being excused or giving proper notice will be considered as having voluntarily terminated their employment.~~

B. Voluntary Resignation

1. Employees ~~who desire to end their employment with the City~~ shall send notice of resignation to their supervisor and/or chain of command. Supervisory and managerial employees should give four (4) weeks' notice. All other employees should give no less than two (2) weeks' notice. Supervisors shall forward employee resignation notices to Human Resources to initiate the employee ~~exit~~ separation process. ~~and open hiring for replacements as appropriate.~~

2. Employees who voluntarily ~~terminate~~ resign from their employment and leave in good standing may be eligible for future employment if recommended by their supervisor.

3. Employees who are absent from work for three consecutive days without being excused or giving proper notice will be considered as having voluntarily resigned from their employment with the City and will be ineligible for future employment with the City.

C. Involuntary ~~Resignation~~ Termination

1. Supervisors shall send recommendations for termination to Human Resources, including all information and documentation as outlined in Chapter 6 Section I ~~the~~ Employee Discipline ~~Policy~~, before any final action is taken.

2. As determined by Human Resources in consultation with the City Administrator~~Supervisor~~, City Attorney and related manager, administrative leave with or without pay may be extended to the affected employee ~~in order to~~to provide the necessary time ~~and separation~~ for review of the recommendation for termination.

3. Following proper review and/or investigation and consultation with ~~ICRMP~~the City's liability insurance provider, a decision will be made to officially terminate the employee, or to take such other action as deemed appropriate.

4. The decision to terminate shall stand unless the employee shows by clear and convincing evidence that the decision to terminate is premised only upon inaccurate information or would constitute a violation of applicable law. In this instance, the Employee Grievance Policy as detailed in Chapter 6 Section II. Discipline & Termination would apply.

D. Retirement

Employees who retire from the City under the provisions of the Public Employee Retirement Systems of Idaho (PERSI) retirement plan will be considered to have retired from the City.

~~D.~~E. Compensation, Benefits and City Property upon Termination

Human Resources is responsible for securing the return of funds advanced and/or all City property in the possession of terminated employees. If the employee owes the City any monies or is responsible for any lost or damaged property, such accounts are to be settled by deduction from final pay. Human Resources will also notify terminating employees who are covered by the City's group health plan of their right to continue coverage under that plan, as required by law.

IV. Name-Clearing Hearing

A. Eligibility

1. All employees are at-will employees. At-will employees may experience adverse consequences such as unlawful discrimination or retaliation based on allegations of dishonesty, immorality or criminal misconduct. A public employee who is demoted with a reduction in pay or terminated from employment based on such allegations may be provided an opportunity to be heard, also known as a name-clearing hearing, when one is requested. Failure to pursue the opportunity to be heard at a name-clearing hearing procedure constitutes a waiver of this opportunity.

2. It is unlawful to discriminate or retaliate based on race, color, religion, sex, gender, sexual orientation, gender expression or identity, age, marital or familial status (including pregnancy), national origin, or non-job-related physical or mental disability, or any other characteristic protected by law when not a bona fide occupational qualification. The City does not condone discrimination on the basis of the foregoing. It is unlawful to retaliate against an employee for initiating a charge of discrimination or harassment, or for assisting in any way in an investigation of such charges.

3. Issues involving job performance or employee attitude, which do not include allegations of discrimination, retaliation, dishonesty, immorality, or criminal misconduct, are not the proper subject of a name-clearing hearing and will not be heard.

B. Name Clearing Process

1. Within fourteen (14) days of employee's termination or demotion, the employee may submit a written allegation of unlawful discrimination or retaliation, or the basis for entitlement to a name-clearing hearing, stating particularly the basis for the requested hearing. Written allegations that are untimely submitted or that fail to state a particular, legally recognized basis will not be granted an opportunity to be heard. An employee will be promptly notified if a requested hearing is denied.

2. An employee alleging unlawful discrimination or retaliation, and who is requesting a name–clearing hearing, will meet with the City Administrator~~Supervisor~~. The hearing will not exceed one (1) hour in duration.

3. Minutes of the hearing may be made and maintained as part of the personnel record.

4. The employee's supervisor may provide a brief written statement at least twenty-four (24) hours prior to the hearing in response to the charges. The City Administrator~~Supervisor~~ may require the employee's supervisor to participate in the hearing.

5. The employee will be provided an opportunity to present evidence upon which the claims are based.

6. The City Administrator~~Supervisor~~ may ask questions during this process.

7. The employee may question participants during this process.

8. The Idaho Rules of Evidence do not apply to this opportunity to be heard or name-clearing hearing.

9. After the hearing, the City Administrator~~Supervisor~~ will consider the information submitted and any other pertinent information in the City's records. The City Administrator~~Supervisor~~ will then issue a written decision concerning the employee's allegations and will include the reasons for the City Administrator's ~~Supervisor's~~ determination.

Chapter 7 - Hours of Work

I. Hours of Work

A. The City shall establish the time and duration of working hours as required by the workload, customer service needs, the efficient management of personnel and departmental resources, and any applicable law.

B. Each supervisor determines the schedule of hours for all classifications of employees (exempt and non-exempt) with final determination by the Deputy City Administrator~~Supervisor~~ or City Administrator~~Supervisor~~. Employees are to be informed of their daily schedule of hours of work, including meal and rest periods, and any changes deemed necessary or desirable by the City.

C. Supervisors may schedule overtime or extra shifts when, and to the extent, it is deemed necessary. Supervisors will assign overtime to non-exempt employees in a particular job for which overtime is required. Employees are not permitted to work overtime without the prior approval of their supervisor.

D. Employee attendance at lectures, meetings, and training programs, including travel time, will be considered hours of work if such attendance is requested or approved by their Supervisor.

E. At their discretion, supervisors may allow non-exempt employees to make-up lost time during a given workweek, if the make-up time does not result in placing the employee on overtime.

F. All non-exempt employees are required to complete an individual time record showing the daily hours worked.

II. Work Period

A. Per the Fair Labor Standards Act (FLSA), a typical ~~an~~ employee's work period is a fixed and regularly recurring period of one hundred sixty-eight (168) hours during seven (7) consecutive twenty-four (24) hour periods. It need not coincide with the calendar week but may begin on any day and at any hour of the day. Different work periods may be established for different positions or groups of employees such as employees engaged in fire protection, emergency medical services or law enforcement (FLSA, 29 U.S.C § 207(k)).

B. Work Periods for the City of Moscow are as follows:

1. Non-Exempt, ~~Non-Law Enforcement, Non-Fire Personnel~~Non-Public Safety Personnel Work Period – Seven (7) Days

   a. Begins at midnight on Monday of each week

   b. Concludes at 11:59 p.m. of the succeeding Sunday.

c. For the purposes of payroll processes, two work periods make up one pay period. Averaging of hours over two or more defined work periods is not permitted.

2. Public Safety Personnel (Sworn Law Enforcement Personnel, Fire Personnel as defined in Idaho Administrative Code *59.01.01.200* and Paramedic/Firefighters) ~~Sworn Law Enforcement Officers and Fire Personnel Work Period~~ – Fourteen (14) Days

   a. Begins at midnight on Monday of the first week of the work period

   b. Concludes at 11:59 p.m. on the last~~concluding~~ Sunday of the work period

3. Exempt Personnel

   Not applicable under FLSA guidelines.

III. Attendance and Punctuality

A. The City requires all employees (exempt and non-exempt) to report for work punctually and to work all scheduled hours and any required overtime. Excessive tardiness and poor attendance disrupt work flow and customer service and will not be tolerated.

B. Supervisors will notify employees of their starting, ending, and break times. Employees are expected to be engaged in carrying out their duties during all scheduled work time and should be ready to begin working at their scheduled starting time.

C. Employees must notify their supervisor as far in advance as possible whenever they are unable to report for work, know they will be late, or must leave early. Such notification should include a reason for the absence or tardiness and an indication of when the employee can be expected to report for work. If the supervisor is unavailable, notification should be made to supervisor's supervisor.

D. Employees are to be compensated during authorized absences in accordance with City policies. Non-exempt employees (those employees subject to the minimum wage and overtime requirements of the Fair Labor Standards Act) will not receive compensation for time missed because of tardiness or early departure if the time missed exceeds ten minutes after starting time or before quitting time. Failure to properly notify the City of any absence may result in loss of compensation during the absence and may be grounds for disciplinary action, up to and including termination.

E. Employees who are delayed in reporting for work more than thirty minutes and who have not notified their supervisor of the expected tardiness may lose their opportunity to work the balance of the work day. In addition, employees who report for work without proper equipment or in improper attire may not be permitted to

work. Employees who report for work in a condition considered not fit for work, whether for illness or any other reason, will not be allowed to work.

F. The City expects each employee to make reasonable efforts to report to work in inclement weather situations. If weather or traveling conditions delay or prevent an employee from reporting to work, they should notify their supervisor as soon as possible. If an employee is unable to report to work at all due to weather or traveling conditions, the employee will be expected to charge the absence to accrued vacation leave or compensation time.

G. Occasionally, severe weather conditions may necessitate closing some City offices. If office closure occurs, employees may have the opportunity to make up the missed time. Any missed time must be made up within the work period of the closure. Otherwise, missed time must be charged to accrued vacation or compensatory time. Missed time cannot be charged to sick leave unless there is a qualifying reason for the use of sick leave in accordance with this policy.

H. Employees will not be required or permitted to work any period of time before or after scheduled starting or quitting times for the purpose of making up time lost if the result of making up such time will put the employee in overtime status during the workweek.

I. Employees must report to their supervisor as soon as possible when late or absent, to explain the circumstances surrounding their tardiness or absence, and, when applicable, certify that they are fit to return to work. When appropriate, the supervisor should counsel the employee on the importance of good attendance and warn that excessive tardiness or absences will lead to discipline, up to and including termination.

J. Unauthorized or excessive absences or tardiness will result in disciplinary action, up to and including termination. An absence is considered to be unauthorized if the employee has not followed proper notification procedures or the absence has not been properly approved.

K. Employees who are absent from work for three consecutive days without giving proper notice to the City will be considered as having voluntarily quit and/or resigned. At that time, the City will formally note the termination and advise the employee of the action by certified mail to the employee's last known address.

IV. Rest and Meal ~~Periods~~Break

~~Idaho law does not require employers to give breaks or meal periods. However, t~~The City of Moscow is committed to providing a work environment that supports employees' best efforts. As such, rest and meal ~~periods~~ breaks are provided for employees as follows:

A. Rest ~~Periods~~Break

1. All employees are permitted a fifteen (15) minute paid rest break for each four-hour work period unless conditions do not allow. Breaks are not permitted at either the beginning or end of the workday to offset arrival and departure times; nor are breaks permitted at the beginning or end of lunch to extend an unpaid meal period; or combined to create a 30 min. paid break during the workday. Employees who choose to remain at work during rest breaks are not entitled to leave before the scheduled quitting time and will not receive extra pay for the time worked. Employees who voluntarily work through their rest breaks will not be paid additional compensation.

2. Time spent on rest breaks will be compensated as working time, and employees are not required to sign out and in on their ~~time cards~~timesheets. However, employees are expected to be punctual in starting and ending their breaks.

B. Meal ~~Periods~~Break

1. All employees who work eight (8) or more hours in a day are required to take an unpaid meal break of thirty (30) to sixty (60) minutes depending on operating requirements.

~~1.~~2. Part-time employees scheduled to work more than five consecutive hours during any workday will receive a meal break of the same duration as full-time employees in their department. Meal breaks are unpaid and not counted toward hours worked.

~~2.~~3. Employees are to be completely relieved from duty during their meal break. If a non-exempt employee is required by their supervisor to perform any work duties while on their meal break ~~period~~, the employee must be compensated for the time spent performing work duties. The time spent working during the meal break will be counted toward the total hours worked.

C. Enforcement

Supervisors are responsible for scheduling the time for employee rest and meal ~~periods~~ breaks and should take into consideration the workload and the nature of the job performed. Supervisors may also schedule the place for rest breaks. Whenever necessary, the frequency, time, and/or place of meal and rest ~~periods~~ breaks may be changed.

D. Break Time for Nursing Mother

The Fair Labor Standards Act (FLSA) requires employers to provide reasonable break time for an employee to express breast milk for their nursing child for one (1) year after the child's birth each time such employee has need to express the milk.

Nursing mothers have a right to utilize their fifteen (15) minute paid rest break, as provided in section IV.A to express breast milk. Whenever an employee is completely relieved of work duties and the time needed to express breast milk goes

beyond the allotted rest break time, that time is considered unpaid. The frequency of breaks as well as duration needed to express breast milk will likely vary, as such, employees should communicate their specific needs to their supervisor to ensure adequate break time is provided and to coordinate for schedule adjustments if needed.

Employees are entitled to a place to express breast milk at work, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public. Departments and/or employees should work with Human Resources to ensure a space is provided that meets these requirements.

V. On-Call and Call-Back

A. Applicability

1. The City of Moscow provides critical services to its residents. As such, employees may be required to be available and to work outside their regular schedule. The purpose of this policy is to provide a consistent method throughout all City departments to compensate employees for On-Call shifts and Call-Back responses. Specifically, this policy sets forth eligibility and compensation for non-exempt regular employees.

2. FLSA-exempt employees are not eligible for On-Call or Call-Back compensation.

3. Temporary and seasonal employees are not eligible for On-Call shifts and do not qualify for On-Call, or Call-Back compensation.

B. On-Call Status

1. On-Call shift hours usually coincide with regular shift hours. Any employee may be assigned to an On-Call status, which requires the employee be accessible, available, and able to report for duty if called. Such shifts may vary in beginning and ending times from department to department or division to division and are subject to change by an administrative decision based on workload needs.

2. Supervisors are responsible for maintaining a roster of all qualified employees for On-Call, determining the need for availability, assigning employees to On-Call status, and maintaining an equitable rotation schedule. On-Call shifts are to be scheduled in 24-hour increments.

3. On-Call compensation is calculated at two (2) hours of pay per On-Call shift at one and one-half (1½) times the regular hourly pay rate.

4. On-Call compensation may be paid as overtime pay or taken as compensatory time at the employee's request and at the approval of the department based on department necessity and budget constraints.

C. Call-Back Status

1. When an eligible employee is called back to work from On-Call status or otherwise at a time not previously scheduled, the employee will receive Call-Back Compensation. Response time for On-Call personnel should average thirty (30) minutes but is managed operationally by each department/division.

2. Call-Back Compensation: An employee in call-back status will receive a minimum of two (2) hours of pay at one and one-half (1½) times the regular hourly pay rate, even if the time spent back on the job is less than two (2) hours. Hours worked that exceed two (2) hours are also paid at one and one-half (1½) times the regular hourly pay rate as actual hours worked. Drive time to and from the worksite is considered hours worked for Call-Back compensation.

3. Call-Back compensation may be taken as compensatory time, in lieu of paid time at the employee's request and at the approval of the employee's primary department supervisor based on department necessity and budget constraints.

VI. Telecommuting

A. Overview

1. Telecommuting allows employees to work at home, on the road, or in a satellite location for all or part of their work period. The City of Moscow considers telecommuting a viable, flexible work option when both the employee and the job are suited to such an arrangement. Telecommuting may be appropriate for some employees and positions but not for others. Telecommuting is not an entitlement, it is not a City-wide benefit, and it in no way changes the terms and conditions of employment with the City of Moscow.

2. Telecommuting can be informal, such as working from home for a short-term project or on the road during business travel, or a formal, set schedule of working away from the office as described below. Either an employee or a supervisor can suggest telecommuting as a possible work arrangement.

3. Any telecommuting arrangement made will be on a trial basis to be determined by the supervisor with the approval of the City Administrator~~Supervisor~~. Any arrangement may be discontinued at the sole discretion of the City. Every effort will be made to provide 2 weeks' notice of such change to provide time to address issues that may arise from the termination of a telecommuting arrangement. There may be instances, however, when no notice is possible.

B. Eligibility

1. Individuals requesting formal telecommuting arrangements must be employed with the City of Moscow for a minimum of twelve (12) months of continuous, regular employment and must have a satisfactory performance record, unless in cases of extenuating circumstances. Before entering into any telecommuting

agreement, the employee and supervisor will evaluate the suitability of such an arrangement, reviewing the following areas:

a. Job responsibilities. The employee and supervisor will discuss the job responsibilities and determine if the job is appropriate for a telecommuting arrangement.

b. Performance measurement. The employee and supervisor will discuss the feasibility of developing a comprehensive work plan with consistent and measurable progress points.

c. Employee suitability. The employee and supervisor will assess the employee's needs and work habits, compared to traits customarily recognized as appropriate for successful telecommuting arrangements.

d. Equipment needs, workspace design considerations, and scheduling issues. The employee and supervisor will review the physical workspace needs and the appropriate location for the telework.

e. Tax and other legal implications. The employee must determine any tax or legal impact under IRS, state and local government laws, and restrictions of working out of a home-based office. Responsibility for fulfilling all obligations in this area rests solely with the employee.

2. Should the employee and supervisor agree that a telecommuting arrangement may work, a draft Telecommuting Work Arrangement Form is required for review by the Deputy City Administrator ~~Supervisor~~ (or City Administrator~~Supervisor~~) of the operational group. If approved by the Deputy City Administrator~~Supervisor~~, the proposal is then forwarded to the City Administrator~~Supervisor~~. If the City Administrator~~Supervisor~~ approves the proposal, a trial period is determined, and the arrangement may proceed.

3. Evaluation of employee performance during the trial period will include regular interaction by phone and e-mail between the employee and the supervisor, and weekly face-to-face meetings to discuss work progress and problems. At the end of the trial period, the employee and supervisor must complete an evaluation of the arrangement. Should it be determined that the needs of the employee and City are being met, any recommendations for modifications, and a request to continue the arrangement, must be submitted to the City Administrator~~Supervisor~~ for approval. Evaluation of employee performance beyond the trial period will be consistent with employees working in-office in both content and frequency. Such assessment will focus on work output and completion of objectives as well as time-based performance.

4. An appropriate level of communication between the employee and supervisor is required as part of the discussion process and development of the telecommuting arrangement request. The supervisor and employee will communicate at a level consistent with peer employees working at the office or

in a manner and frequency that is appropriate for the job and the individuals involved.

C. Equipment

1. On a case-by-case basis, the City of Moscow will determine, with information supplied by the employee and the supervisor, the appropriate equipment needs (including hardware, software, modems, phone and data lines, and other office equipment) for each telecommuting arrangement. The Human Resource and Information System Departments will serve as additional resources in this matter.

2. Equipment supplied by the City will be maintained by the City. Equipment supplied by the employee, if deemed appropriate by the City, will be maintained by the employee. The City of Moscow accepts no responsibility for damage or repairs to employee-owned equipment. The City of Moscow reserves the right to determine appropriate equipment, subject to change at any time.

3. Equipment supplied by the City is to be used for business purposes only. The employee must sign an inventory of all the City of Moscow property received and agree to take appropriate action to protect the items from damage or theft. Upon termination of employment, all City property will be returned to the City, unless other arrangements are made.

4. The City of Moscow will supply the employee with appropriate office supplies (pens, paper, etc.) as deemed necessary.

5. The employee will establish an appropriate work environment for work purposes at their home. The City of Moscow will not be responsible for costs associated with the setup of the employee's home office, such as remodeling, furniture or lighting, or repairs or modifications to the home office space.

D. Safety

1. Employees will maintain their home workspace in a safe manner, free from safety hazards. Employees must abide by the City of Moscow Employee Safety Policy. Each employee must agree to maintain their home workspace in keeping with the safety requirements outlined in the Telecommuting Arrangement Request Proposal. Injuries sustained by the employee in a home office location in conjunction with their regular work duties are to be immediately reported to the employee's supervisor and Human Resources. The City has no responsibility or liability for any injuries sustained by visitors to the employee’s home worksite.

2. Telecommuting is not a replacement for appropriate child care. Although an individual employee's schedule may be modified to accommodate childcare needs, the focus of the arrangement must remain on job performance and meeting business demands. Prospective employees are encouraged to discuss

expectations of telecommuting with family members before entering a trial period.

E. Security

Consistent with the City's expectations of information security for employees working at the office, telecommuting employees are expected to ensure the protection of sensitive information accessible from their home office. Steps include the use of locked file cabinets and desks, regular password maintenance, and any other measures appropriate for the job and the environment.

F. Time Worked

Telecommuting employees who are not exempt from the Fair Labor Standards Act's overtime requirements are required to accurately record all hours worked using the City of Moscow's time-keeping system. Hours worked in excess of those scheduled per day, and per workweek requires the advance approval of the employee's supervisor. Failure to comply with this requirement may result in the immediate termination of the telecommuting agreement.

G. Informal Arrangements

1. An employee's supervisor may approve temporary telecommuting arrangements for circumstances such as inclement weather, special projects, or business travel. These arrangements are approved on an as-needed basis only, with no expectation of ongoing continuance.

2. Other informal, short-term arrangements may be made for employees on family or medical leave to the extent practical for the employee and the City and with the consent of the employee's health care provider, if appropriate.

3. All informal telecommuting arrangements are made on a case-by-case basis, focusing first on the business needs of the City. Informal arrangements that are temporary and short term in nature do not require telecommuting arrangement approval.

VII. Layoff and Recall

The City will, through the exercise of prudent management and budgetary practices, attempt to avoid layoffs and will consider all reasonable alternatives to layoff before any final decisions regarding layoffs are made. If there is to be a reduction of employment because of significant adverse economic or other conditions, layoffs and recall from layoffs will be conducted as consistently as practicable and as set forth below.

A. Layoff

1. In response to a request by the City Administrator~~Supervisor~~, manager(s) will identify and recommend departmental positions to be considered for layoff (based upon the needs of the departments and of the City as a whole). In the event that layoffs are expected, the City Administrator~~Supervisor~~ will communicate such information to the Mayor, Council, and staff in a timely manner.

2. Communication regarding layoffs may occur in an Executive Session held pursuant to Idaho law. The City Administrator~~Supervisor~~ will recommend a layoff plan to the Council based upon input from City staff and after consultation with the Mayor. The Council will make the final determination of the specific employment positions to be subject to the layoff.

3. In general, City employees are to be considered and selected for layoff in the following order of priority (unless smooth functioning of the City would be unduly compromised):

   a. Temporary and part-time employees should be laid off first (except where such employees are needed to continue important City functions/positions on a "bare-bones" basis).

   b. Next, new employees in their INTRODUCTORY PERIOD should be considered for layoff.

   c. Finally, full-time employees will be identified for layoff based on the positions' contribution and performance, as assessed by their manager and the City Administrator ~~Supervisor~~ (in consultation with the Mayor). In order to retain employees considered to be best suited to perform the remaining work, the City Administrator ~~Supervisor~~ (in consultation with the respective managers) may reassign individuals. If contribution and performance are equal between or among employees considered for layoff, length of service should be considered.

4. Employees selected for layoff will be given the notice required by law and as much as is reasonable under the circumstances (as determined by the City Administrator~~Supervisor~~, in consultation with the Mayor). Employees will be informed of the reason for the layoff and of the estimated length of the layoff by the City Administrator~~Supervisor~~. Employees selected for layoff cannot use the City's grievance procedure.

5. Previously accrued vacation and compensatory time will be maintained for employees laid off. During the layoff period, no additional leave will accrue. Retirements benefits are maintained by the State of Idaho through the PERSI system.

B. Recall

1. The names of employees who are laid off will be maintained on a recall list for one (1) year or until the Council determines the layoff is permanent, whichever occurs first. Removal from the recall list terminates all recall opportunities the employee may have. While on the recall list, employees should report to Human Resources if they become unavailable for recall. Employees who fail to keep a current home address on record with Human Resources will lose recall opportunities.

2. Employees will be recalled according to the City's need and the employee's classification and ability to do the job. Notice of recall will be sent by certified mail (return receipt requested to Human Resources), to the current home address (as furnished by the employee). Unless an employee responds to the recall notice within seven (7) working days following receipt of the recall notice or its attempted delivery, the employee's name will be removed from the recall list and the employee will cease to have recall opportunities with the City. Neither failure to be recalled nor failure to respond to a recall notice prohibit a former employee from re-applying for employment with the City.

3. Employees laid off for more than thirty (30) days, and who are recalled within one (1) year from the date of layoff, credit for retirement benefits, vacation or sick leave hours, will not be accrued during a layoff of thirty (30) days or more if an employee returns to work following recall.

4. Following recall, the returning employee may use any vacation or days of paid absence that were accumulated but not used when the employee was laid off.

5. Vacation pay equal to the number of days accrued, minus the number of days taken, will be paid to the employee at the time of layoff if the layoff is expected to exceed thirty (30) days.

VIII. Shift Differential

The City provides shift differential compensation to employees who are regularly scheduled to work a shift in which fifty percent (50%) or more of scheduled hours are between 6:00 p.m. and 6:00 a.m. Specifically, this policy sets forth eligibility and compensation for non-exempt regular employees. Exempt employees do not qualify for shift differential compensation.

A. Sworn personnel of the City of Moscow Police Department receive shift differential compensation per pay period, at a rate specified in the Police Department pay schedule located within the City Summary Budget.

B. All other City employees receive shift differential compensation for all hours worked during the scheduled work shift. Shift differential compensation is paid at a per-hour rate specified in the City salary schedule located within the City Summary Budget.

Chapter 8 – Leave

I. Leaves of Absence Without Pay

Leave without pay (LWOP) is a temporary non-pay status and absence from work. LWOP may only be granted in limited circumstances, which include:

A. Qualifying under the Family and Medical Leave Act (FMLA), as amended, which provides covered employees an entitlement of up to a total of twelve (12) weeks of LWOP during any twelve (12) month period for certain family and medical needs.

B. Qualifying under the National Defense Authorization Act, as amended, which provides covered employees with an entitlement of up to a total of twenty-six (26) weeks of unpaid leave during a single 12-month period to care for a covered service member.

C. Qualifying under the Uniformed Services Employment and Reemployment Rights Act of 1994, as amended, which provides employees with an entitlement to LWOP when employment with an employer is interrupted by a period of service in the uniformed service. (See 5 CFR 353.106.)

D. In accordance with a worker's rights and requirements under Worker's Compensation.

E. Any other state or federal leave requirement pertaining to entitled use of LWOP.

F. In other limited circumstances, at the approval of the City Administrator~~Supervisor~~.

II. Leave Approval (REPEALED PER RESOLUTION 2023-25)

III. Active-Duty Military Leave

A. Active-Duty Military Leave is granted if an employee is absent to serve in the United States' uniformed services for a period of up to five years (not including specific involuntary extensions of service). A leave without pay of absence will be granted to an employee to participate in ordered and authorized field training in accordance with Idaho Code §§ 46-407 and 46-409, and the Uniformed Services Employment and Reemployment Rights Act (USERRA). The City will re-employ returning service members in the job that they would have maintained, if still qualified to perform the duties of the position, or will re-employ the returning service member to a position of like seniority, status and pay, had they not been absent for uniformed service who perform and return from service in the Armed Forces, the Military Reserves, the National Guard, or certain Public Health Service positions. Returning service members will retain certain rights with respect to reinstatement, seniority, layoffs, and compensation.

B. If the employee's military leave is for thirty (30) days or less, the City will continue health benefits as if the employee is actively working. If the employee's military

leave is for a period of thirty-one (31) days or more, the City will terminate paid status benefits, but will provide COBRA-like benefits, cost to be paid by the employee, for up to twenty-four (24) months as required by USERRA (subject to change based on USERRA law).

C. Employees returning from a military leave must also comply with all of the reinstatement requirements specified by federal law. If the same job or one of equivalent status and pay is not available due to a reduction in force, the employee will be treated in the same manner as though employee were not on leave at the time of the reduction in force.

IV. Inactive-Duty or Training Military Leave

Any regular full-time or part-time employee serving in the United States uniformed services is entitled to time off at full pay for certain types of inactive duty in the National Guard or as a Reserve of the Armed Forces as provided in this policy. This leave category is provided to cover the hours of leave necessary to cover the period of inactive duty, training, and necessary travel (the equivalent of up to approximately three (3) forty (40) hour workweeks). Employees have three options for managing their military time and pay as follows:

A. During this period of leave, City employees may be paid their regular pay rate, including all benefits to maintain in-service pay status (prorated for regular part-time employees by the number of hours in the employee's regular schedule). In exchange, compensation the employee receives from active or inactive duty is paid over to the City of Moscow up to, but not to exceed, the net pay distributed to the employee.

B. An employee may be eligible for leave without pay, as long as the employee has a combination of hours worked, vacation used, or compensatory time is taken, which equals twenty (20) hours or more in any week. This instance also requires verification from payroll that all employee obligations for payroll deductions and expenses can be met.

C. An employee may take vacation leave to meet inactive-duty or training obligations and may retain both City paid wages as well as military paid wages.

V. Disability Leave (REPEALED PER RESOLUTION 2023-25)

VI. Floating Holiday

A. Eight (8) hours of personal time each calendar year may be taken as a paid day off. Floating ~~holidays~~ Holidays may not be carried over to the next calendar year.

B. Requests for the use of an employee's Floating Holiday ~~are to~~shall be made in writing to the responsible supervisor. Efforts will be made to accommodate the preference of the employee in Floating Holiday scheduling, while minimizing the impact on department operations ~~but first priority will be the orderly functioning of~~

~~affected departments~~. The Floating Holiday~~'s~~ may not be used until ~~they are~~ earned ~~.~~and ~~Floating Holidays~~ may be taken in eight (8) ~~-~~hour increments only.

~~B.~~C. Employees holding Paramedic/Firefighter positions will be paid eight (8) hours annually in place of taking Floating Holiday paid leave as detailed in Chapter 8, Section VII.E.

VII. Holidays

A. The City observes certain days each year as holidays. Holidays begin at midnight and end at 11:59 p.m. the following day. The City observes holidays that occur on a Saturday or Sunday on either the preceding Friday or the following Monday. Holidays observed by the City include the following (other holidays may be declared by the Governor, Mayor and City Council):

New Year's Day *(January 1)*	Labor Day *(1st Monday of September)*
Idaho Human Rights Day *(3rd Monday of January)*	Veteran's Day *(November 11)*
President's Day *(3rd Monday of February)*	Thanksgiving Day *(4th Thursday of November)*
Memorial Day *(last Monday of May)*	The day following Thanksgiving *(substitute for Indigenous People's/Columbus Day)*
Juneteenth *(June 19)*	Christmas Day *(December 25)*
Independence Day *(July 4)*	

B. Holidays are paid per employee types as follows:

1. Regular full-time employees are eligible to receive their regular pay rate up to eight (8) hours for each observed holiday.

2. Regular part-time employees who work thirty (30) or more hours per week are eligible to receive holiday pay on a pro-rata basis and only for their regularly scheduled number of hours up to eight (8) hours.

3. Regular part-time employees who work less than thirty (30) hours per week, ~~Temporary~~ temporary employees, separated employees who remain in pay status utilizing accrued vacation leave, and employees on unpaid leaves of absence ~~or on layoff~~ are not eligible to receive holiday pay.

C. To receive holiday pay, an eligible employee must be at work, or on an approved absence, on the workdays both immediately preceding and immediately following the day on which the holiday is observed. An approved absence is a day of paid vacation or other paid leave. If an employee is absent on one or both of these days

because of an illness or injury, the City reserves the right to verify the reason for the absence before approving holiday pay.

D. Non-exempt employees who work on a City-designated holiday may choose compensatory time off or pay at the rate of one and one-half (1 ½) times the amount of time worked.

E. If a holiday falls on a day in which an eligible employee is regularly scheduled for more than eight (8) hours (*for example; 10 or 12-hour shifts*) and the employee is not required to work or has requested the holiday off as leave, any time over the eight (8) hours for holiday will be taken as paid leave. Employees may request to adjust their schedule within the same work week as the holiday at the discretion of their supervisor instead of taking leave for hours above the eight (8) hours of holiday pay.

F. Holidays that fall during an employee's approved vacation leave period will be counted as holiday pay up to eight (8) hours.

G. Employees hired into Paramedic/Firefighter positions shall be entitled to a lump sum payment annually for up to eleven (11) days (88 hours) of Holiday and one (1) day (8 hours) for their Floating Holiday. Holiday pay shall be calculated by dividing the employee's annual base salary as of January 31st of the prior year by 2,756. This holiday amount will be received in January to compensate the employee for eligible holidays which occurred the previous year.

1. During the first year of employment, the number of holidays eligible for payment will be based on the Paramedic/Firefighters start date. *For example; if the employee was hired in March they would only receive payment for eight (8) holidays (64 hours) and one (1) day (8 hours) for their floating holiday the following January.*

2. At the time of voluntary separation, Paramedic/Firefighters shall receive a lump sum holiday pay based on the number of holidays which occurred in the year prior to their date of separation. *For example; if the date of separation occurs in August, the employee would receive a lump sum payment for six (6) holidays (48 hours) and one (1) day (8 hours) for their floating holiday at the time of separation.*

VIII. Moscow Volunteer Fire Department Leave

City of Moscow employees are, at the discretion of their supervisor, granted time off with pay during regular work hours while serving as a volunteer with the Moscow Volunteer Fire Department for active call outs. Employees must be in good standing with their supervisor and department. Overtime is not permitted to accommodate for volunteer hours provided during regular work hours.

IX. Paid Parental Leave

A. Paid Parental Leave is intended to provide employees the time and financial support to adjust to the addition of a new family member following the birth, adoption, or placement of a child for activities related to the physical and mental well-being and care of the child and parents or caregiver.

B. This leave is separate and in addition to other leave policies. Eligible employees are able to receive up to six (6) weeks (240 hours) of paid parental leave, Paramedic/Firefighters are eligible to receive up to 336 hours, to be used within the first six (6) months of the birth, adoption, or regular full-time custody of a child not previously under an employee's care, paid on the employee's regular payroll dates. If applicable, the amount of leave permitted with this benefit will be deducted from the employee's FMLA entitlement.

C. Under some circumstances, employees may take paid parental leave on an intermittent or reduced schedule basis. Use of intermittent or reduced schedule parental leave requires departmental approval prior to the use of paid parental leave.

D. If both parents are City employees and meet benefit eligibility criteria, each parent is eligible to receive the six-week paid parental leave benefit. An eligible parent is defined as a biological parent, same-sex spousal equivalent, domestic partner, new adoptive parent, or caregiver assuming significant parental and financial responsibility for a child. An individual who adopts a spouse or partner's child(ren) is not eligible for this benefit.

E. Eligibility

1. City employees regularly working thirty (30) or more hours per week who have been employed for the previous twelve (12) consecutive months and have worked for at least one thousand two hundred fifty (1,250) hours during the prior twelve (12) month period are eligible for paid parental leave. Eligibility requirements must be met as of the last day worked prior to the start of the paid leave.

2. Part-time employees who work an average of thirty (30) hours per week will receive Paid Parental Leave on a prorated basis to be calculated by dividing the average hours worked per work period over the prior twelve months by forty (40) (i.e. if an employee averaged thirty-five (35) hours per work period over

the prior year, they would receive two hundred and ten (210) hours of parental leave ((35/40)*240=210).

3. Temporary, part-time employees who work less than thirty (30) hours per week, and seasonal employees are not ineligible for Paid Parental Leave.

X. Bereavement

A. Up to three (3) days of paid bereavement leave is available in the event of the death of an employee's immediate family member, a member of or a person living in the same household, or a relative as defined below. Bereavement leave may be extended for an additional five (5) working days by deduction from the employee's sick leave accrual. The compensable days must fall within the regularly scheduled workweek and must be approved in advance by the employee's supervisor and department manager.

B. For the purpose of this policy, the definitions that apply to this section and chapter are as follows:

1. Immediate Family Member – A spouse, brother, sister, parents, children, stepchildren, father-in-law, mother-in-law, sister-in-law, brother-in-law, daughter-in-law, and son-in-law.

   a. *Child* – A biological, adopted, or foster child, a stepchild, a legal ward, or a child of a person standing "in loco parentis" by providing day-to-day care and/or financial support. For FMLA leave for adoption, foster care or a family member with a severe health condition, the child must either be under age eighteen (18), or age eighteen (18) or older and incapable of self-care because of mental or physical disability as defined by the ADA. For FMLA leave due to birth and care of a newborn child, the child must be under twelve (12) months of age.

   b. *Parent* – A biological, adoptive, step or foster parent, or another person who stood "in loco parentis" to the eligible employee when the employee was a child by providing day-to-day care and financial support.

   a.c. *Spouse* – A person to who the employee is legally married.

   1. *Domestic Partner* – As defined in Resolution 2007-31; Each are eighteen (18) years of age or older; share a close personal relationship and are each other's sole domestic partner; are responsible for each other's common welfare; are not legally married to anyone else nor has either had a domestic partner within thirty (30) days immediately prior to completing the application for enrollment to qualify as domestic partners; are not related by blood closer than would bar marriage in Idaho; share the same regular, and permanent residence and each intends to continue to do so indefinitely; jointly share financial responsibility for basic living expenses, including,

~~but not limited to, the cost of food, shelter, and other costs such as medical expenses.~~

1. Household – A Domestic Partner as defined in Chapter 3, Section IV.G.2, domestic partners dependent child(ren) or other persons whom the employee is legally obligated to support within their same household.~~The spouse and dependent children of the elected official or employee and/or persons whom the elected official or employee is legally obligated to support (I.C. § 74-403(7)). Reside in the same home and are responsible for each other's common welfare, share the same regular and permanent residence, and each intends to continue to do so indefinitely; jointly share financial responsibility for basic living expenses, including, but not limited to, the cost of food, shelter, and other costs such as medical expenses.~~

~~4. *Immediate Family Member* – A spouse, brother, sister, parents, children, stepchildren, father-in-law, mother-in-law, sister-in-law, brother-in-law, daughter-in-law, son-in-law, and any other member of the employee's household.~~

~~5. *Parent* – A biological, adoptive, step or foster parent, or another person who stood "in loco parentis" to the eligible employee when the employee was a child by providing day-to-day care and financial support. The term does not include parent-in-law.~~

2. Relative - Related to ~~Elected official/~~the employee by blood or marriage within the second degree ~~(I.C. 18-1361A). A relative of the second degree~~which includes an employee's aunt, uncle, grandparent, grandchild, niece, nephew, and first cousin.

~~7. *Spouse* – A husband or wife as defined or recognized under State law for purposes of marriage in the State where the employee resides.~~

XI. Jury Duty

A paid leave of absence will be granted to employees who serve on jury duty. Employees will be paid their regular pay rate, including all benefits in order to maintain in-service pay status. In exchange, the employee's compensation from jury duty is paid over to the City of Moscow up to, but not to exceed, the net pay distributed to the employee. An employee whose public service duty is completed before the midpoint of their typical working day is expected to return to their work location at the City. As an alternative, employees may take vacation leave to meet jury duty or witness obligations and may retain both City paid wages as well as court compensation.

XII. Vacation

A. Full-time, regular employees are eligible to accrue vacation leave based on length of service. The City Administrator~~Supervisor~~ may determine the vacation accrual rates for new employees. Part-time employees who ~~work an average of~~ consistently

work more than thirty (30) hours per week accrue vacation hours on a prorated basis. Temporary employees and part-time employees who consistently work less than thirty (30) hours per week are ~~in~~not eligible for vacation accrual.

B. Full-time, regular employees accrue vacation at the following rates based on their FLSA exemption status.~~, exempt employees may qualify for a different accrual schedule~~ Employees classified as a Paramedic/Firefighter accue vacation leave based on the Exempt Employees accrual schedule:

	Non-Exempt Employees	**FLSA Exempt Employees**
Year 1 through 4	8 hrs/month (3.69/pay period)	12 hrs/month (5.54/pay period)
Year 5 through 8	10 hrs/month (4.62/pay period)	14 hrs/month (6.46/pay period)
Year 9 through 12	12 hrs/month (5.54/pay period)	16 hrs/month (7.38/pay period)
Year 13 through 16	14 hrs/month (6.46/pay period)	18 hrs/month (8.31/pay period)
Year 17 through 20	16 hrs/month (7.38/pay period)	18 hrs/month (8.31/pay period)
Year 21 +	18 hrs/month (8.31/pay period)	18 hrs/month (8.31/pay period)

C. The maximum accumulation at the end of the calendar year is two hundred forty (240) hours. An employee may request an additional forty (40) hours to be rolled over at the end of the year. All requests are subject to approval by employee's supervisor and the City Administrator~~Supervisor~~ and may only be approved where it is determined that work demands, staffing levels or other conditions prohibited the employee from reasonably utilizing their vacation time accrual.

D. Requests for vacation leave are to be made in writing to the responsible supervisor and based on the department requirements for requesting leave. Efforts will be made to accommodate the employee's preference in vacation scheduling~~,~~ while minimizing the impact to department operations~~but the first priority will be the orderly functioning of the affected departments~~. Vacation leave may not be used until it is earned or in any amount greater than the number of vacation leave hours accrued.

E. If a paid holiday falls ~~within~~ during an employee's approved vacation period, ~~time for~~ the holiday will count as holiday pay up to eight (8) hours. Employees scheduled shifts greater than eight (8) hours will use vacation leave for the remaining hours~~not be charged to the employee's vacation credit~~.

~~E.~~F. If an employee qualifies for sick leave during their vacation period, and provides information to their supervisor to support use of sick leave, such time ~~will~~

~~not be charged to the~~may be taken as sick leave and not counted against an employee's vacation ~~credit~~leave.

G. ~~F.~~ Upon termination of employment, employees shall be paid for all unused vacation accrued. Employees who leave in good standing may be eligible by approval of the City Administrator~~Supervisor~~ to take vacation to extend their in-pay status beyond their final day in office. The extension of in-pay status does not provide for the accrual of sick leave, ~~or~~ vacation hours, or holiday pay. ~~The employee would be responsible for the employer's contribution for the employee's continued medical benefits.~~

H. The value of unused vacation leave hours will be calculated at the hourly rate of the employee at the time of separation.

1. For Exempt employees working a standard 40-hour workweek or 80-hour work period the hourly rate will be calculated by dividing the employee's annual salary by 2,080.

2. For Paramedic/Firefighters the hourly rate will be calculated by dividing the employee's base annual salary by 2,756.

XIII. Sick Leave

A. The City recognizes that there are times when employees themselves or their dependents have health problems that require time away from work. Sick leave is provided for the following circumstances.

1. Personal illness or injury including work-related injuries, pregnancy and birth of a child, etc.;

2. Care for children, spouse or other members of immediate family when they have a health condition that requires supervision/ treatment;

3. Medical, dental or optical appointments for self or dependents, if arranged in advance with the appropriate supervisor;

4. Extended Bereavement Leave;

~~4.~~5. Care for new-born children during the twelve (12) month period following their birth as permitted under FMLA.

B. Regular, full-time employees accrue three point six-nine (3.69) hours of sick leave per pay period~~ of continuous service~~. Regular part-time employees who consistently work ~~an average of~~more than thirty (30) hours per week accrue sick leave hours on a prorated basis. Sick leave accrues only when an employee's status is active, i.e., working or taking paid time off. The maximum accumulation of sick leave is nine hundred sixty (960) hours. Once maximum accumulation is reached,

no additional hours are accumulated until the employee's balance falls below nine hundred sixty (960) hours.

~~B.~~C. Paramedic/Firefighters accrue eleven point zero eight (11.08) hours of sick leave per pay period. Sick leave accrues only when an employee's status is active, i.e., working or taking paid time off. The maximum accumulation of sick leave is two thousand eight hundred and eighty (2,880) hours. Once maximum accumulation is reached, no additional hours are accumulated until the employee's balance falls below two thousand eight hundred and eighty (2,880) hours. Due to the nature of the shift work, Paramedic/Firefighters may only use sick leave in increments as defined by the Fire Department.

~~C.~~D. In the event sick leave is needed, the appropriate supervisor must be notified initially; daily contact must be made after that unless otherwise arranged. A signed physician's release may be required for leaves of absences of three (3) work days or more, or at the discretion of the supervisor depending on the reoccurring nature of sick leave requests.

~~D.~~E. A supervisor may request a signed physician's release at any time when an employee is suspected of abusing sick leave. Absences that are designated as FMLA absences must be converted to a leave of absence if employment rights are to be maintained under the FMLA. Employees returning from sick leave may be asked to provide certification of their ability to perform their job's essential functions.

~~E.~~F. Sick leave may not be used until it is earned or in any amount greater than the number of sick leave hours accrued. Any misuse of sick leave will be considered cause for discipline, which may include termination of employment.

~~F.~~G. In the event that an employee is unable to work due to a work-related injury and is collecting compensation payments appropriately through the State Insurance Fund (SIF) with an open worker's compensation claim, the employee may submit the SIF compensation payment to the City in exchange for additional sick leave hours in the amount commensurate with the compensation payments received.

H. ~~G.~~ When an employee leaves City employment in good standing, fifteen percent (15%) of the value of sick leave hours accumulated will be contributed to the employee's VEBA account or Health Savings Account (HSA). Any amounts under $100 will be paid directly to the employee through payroll on their final paycheck. If an employee separates prior to the set up of a VEBA or HSA account, any amount will be paid directly to the employee through payroll on their final paycheck. Sick leave payout is forfeited when an employee leaves City employment due to involuntary termination.

I. For Paramedic/Firefighters the number of sick leave hours accumulated for the fifteen percent (15%) sick leave payout will be calculated as follows: the number of accumulated sick leave hours divided by three (3). *For example; if a*

paramedic/firefighter has 1,200 hours accumulated at the time of separation or retirement: 1200 divided by 3 equals 400 (1200/3=400). The 15% sick leave payout would be based on the calculated 400 hours.

J. The value of the sick leave hours will be calculated at the hourly rate of the employee at the time of separation.

1. For Exempt employees working a standard forty (40) hour workweek or eighty (80) hour work period the hourly rate will be calculated by dividing the employee's annual salary by two thousand and eighty (2,080).

2. For Paramedic/Firefighters the hourly rate will be calculated by dividing the employees base annual salary by two thousand seven hundred and fifty-six (2,756).

XIV. Sick Leave Bank

The purpose of the Sick Leave Bank is to provide a means of obtaining additional sick leave days to avoid loss of compensation and to remain in pay status due to a significant or catastrophic illness or injury.

A. Sick Leave Bank Program

1. All regular full-time City of Moscow employees who have a sick leave balance of forty (40) or more hours at the time of the initial contribution of eight (8) hours of sick leave shall be eligible to participate in the Sick Leave Bank Program. Initial contributions are deducted from the sick leave days available to the contributing employee. Once hours are contributed to the Sick Leave Bank, they may not be reclaimed by the employee. Only employees who are active members of the Sick Leave Bank shall be eligible to draw on the Sick Leave Bank.

2. Newly hired employees shall be eligible to participate in the Sick Leave Bank the month following the successful completion of their introductory period and after their initial contribution has been made.

3. Once employees elect to participate in the Sick Leave Bank, membership is established for the duration of their employment with the City of Moscow.

4. A participant granted a leave of absence shall retain their active status in the Sick Leave Bank Program upon returning to regular duties.

5. Participants of the Sick Leave Bank Program may be granted up to twenty (20) days, or 160 hours of sick leave at any one time. Requests are limited to two (2) per incident.

6. If the City of Moscow discontinues the Sick Leave Bank – active employees who have contributed and who have not received leave from the Sick Leave Bank will be credited 8 hours of sick leave to their accounts.

B. Eligibility and Criteria

1. The Sick Leave Bank is available to:

   a. Eligible employees participating in the Sick Leave Bank program who have legitimately exhausted all of their accumulated paid leave time. This time includes all earned vacation, sick leave, floating holiday, and compensatory time.

   b. Employees unable to work due to a work-related injury who have legitimately exhausted all of their accumulated sick leave time and also meet the following conditions:

      i. Is an active participant in the Sick Leave Bank Program;

      ii. Has met the 5-day waiting period for workers' compensation; and

      iii. Has an active worker's compensation claim through the State Insurance Fund (SIF)

2. Criteria for Sick Leave Bank Program usage is as follows:

   a. Catastrophic accident or illness of the employee requiring absences from work: Catastrophic illness and/or injury is defined as an acute or prolonged illness or injury that is considered life-threatening or with the threat of serious residual disability.

   b. Extended hospitalization of the employee.

   c. Absence from work due to a work-related injury and an active Worker's Compensation Claim.

   d. To be considered for hours through the Sick Leave Bank Program, the Sick Leave Bank Request form, signed by the employee's supervisor(s), must be submitted by the employee to Human Resources for approval by the City Administrator~~Supervisor~~. Progress reports may be required as a condition of receiving sick leave hours from the Sick Leave Bank Program.

   e. The Sick Leave Bank will not be made available in cases of suspected sick leave abuse.

C. Sick Leave Bank Administration:

1. Human Resources shall be responsible for managing and administering the Sick Leave Bank Program including the procedural establishment, solicitation of contributions, processing of applications, and records management.

2. Payroll shall be responsible for all payroll processing of the Sick Leave Bank, as well as managing and administering the Sick Leave Bank for employees with active workers' compensation claims through SIF. Refer to the City's Personnel Policy, Chapter 8, Section XV Worker's Compensation for more details.

XV. Workers Compensation

The City of Moscow has established the following for treatment and compensation of work-related injuries in accordance with Title 72 of Idaho Code. The City holds a Worker's Compensation Policy under the Idaho State Insurance Fund (SIF). This policy covers all employees regardless of employee classification.

A. Employee Reporting

1. All employees are required to report any accident or incident resulting in an injury or illness, even if an employee only received first-aid treatment, to their supervisor immediately.

2. A First Report of Injury form (FROI) must be completed for all injuries whether or not medical treatment was sought. The FROI is used to provide the needed information to the SIF should a claim need to be filed and provides information to determine how, where, and when the accident occurred, any direct or underlying causes including unsafe behaviors, conditions, and corrective actions to be taken.

B. Medical Treatment

1. In the event that an employee is injured while at work the supervisor will conduct an initial assessment of the employee, take any immediate action necessary to address the medical needs of the employee, and ask the injured employee whether they would like to seek medical treatment. In emergency situations and if the employee appears to be in a condition where they should not be moved or need emergency services, the supervisor should call 911 immediately.

2. In the event that the employee's injury requires treatment outside of regular work hours:

   a. Contact the supervisor to report the treatment; or

   b. If unable to contact the supervisor, email or call and leave a message with Human Resources and then follow up with the supervisor the next work day.

C. Compensation

1. Under Idaho Worker's Compensation law, employees do not receive income benefits from SIF for the first five (5) days they are off work due to an injury, unless the injury requires overnight hospitalization or the time loss exceeds fourteen (14) days.

a. During the first five (5) day waiting period employees may use accrued sick leave, vacation leave, compensatory time, floating holiday, or unpaid leave if no other leave is available.

b. If the on-the-job injury requires overnight hospitalization, no leave will be charged.

2. If the leave exceeds fourteen (14) days, the first five (5) day waiting period charged to leave balances will be returned.

3. In the event of a work-related temporary disability in which the employee is unable to return to work beyond five (5) days, the employee may be entitled to benefits to be paid a percentage of their regular wages from Worker's Compensation. The employee can choose to:

   a. Keep the SIF compensation payments and continue to use sick leave. Of note – if the employee runs out of sick leave to use while unable to work, the employee will be responsible for the employee portion of benefit premium payments while not in pay status.

   b. Remit the SIF compensation payment to the City for conversion to sick leave hours. Of note - this method provides additional sick leave hours to be used to keep the employee in pay status.

4. An employee that sustains a workplace injury or illness that requires the employee to leave work to seek medical treatment shall receive full regular pay for the date of injury. Employees are expected to return to work the same day as the injury unless the treating physician provides a written statement that the employee is not able to return to work.

5. If an employee's worker's compensation absence qualifies as a serious health condition as defined under the Family Medical Leave Act, the City will designate the leave as an FMLA-qualifying event and the worker's compensation absence will run concurrently with FMLA.

6. An employee, past the 5-day waiting period, actively receiving benefits, who depletes their accumulated sick leave, and is a participant in the Sick Leave Bank Program, is eligible to request sick leave bank hours. Employees will not be required to exhaust other leave types for medically necessary time off due to the original work-related injury.

XVI. Compensation (REPEALED PER RESOLUTION 2023-25)

XVII. Family and Medical Leave Act (FMLA)

The Family and Medical Leave Act (FMLA) of 1993 entitles eligible employees of covered employers to take unpaid, job-protected leave for specified family and medical

reasons. The City of Moscow is covered under FMLA and complies with all FMLA requirements.

A. Employee Eligibility:

1. To be eligible for FMLA, City employees must:

   a. Have worked at the City for at least twelve (12) months; and

   b. Have worked at least one thousand two hundred fifty (1,250) hours during the twelve (12) month period immediately preceding the leave;

2. The twelve (12) months of employment do not have to be consecutive. Time previously worked for the City (including seasonal work) could, in most cases, be used to meet the 12-month requirement. If the employee has a break in service that lasted seven (7) years or more, the time worked prior to the break will not count unless the break is due to service covered by the Uniformed Services Employment and Reemployment Rights Act (USERRA).

B. Leave Entitlement

1. Eligible employees may take up to twelve (12) workweeks (480 hours) of leave in a 12-month period for one or more of the following reasons:

   a. The birth of a child or placement of a child with the employee for adoption or foster care;

   b. To care for a spouse, child, or parent who has a serious health condition;

   c. For a serious health condition that makes the employee unable to perform the essential functions of their job; or

   d. For any qualifying exigency arising out of the fact that a spouse, child, or parent is a covered military member on covered active duty or call to covered active duty status.

2. An eligible employee may take up to twenty-six (26) workweeks (1,040 hours) of leave during a "single 12-month period" to care for a covered servicemember with a serious injury or illness when the employee is the spouse, son, daughter, parent, or next of kin of the service member.

3. Under some circumstances, employees may take FMLA on an intermittent or reduced schedule basis. When leave is needed for planned medical treatment, the employee must make a reasonable effort to schedule treatment or appointments to minimize disruption to the City's operations.

4. If FMLA is for the birth, adoption, or foster placement of a child, the use of intermittent or reduced schedule leave requires prior departmental approval.

C. Compensation and Health Benefits

1. Employees are required to use accrued paid leave concurrently with any FMLA. If the employee does not have sufficient accrued paid leave to cover the full time out on FMLA, the employee may utilize leave without pay (LWOP) and work with Human Resources (HR) to coordinate usage of paid and unpaid leave.

2. Holidays that occur during FMLA will be paid in accordance with the City's Holiday policy.

3. Leave accruals while on FMLA will be in accordance with the City's Sick Leave and Vacation Leave policies.

4. The City will maintain group health plan benefits for employees on FMLA. Employees on unpaid FMLA or who do not have enough accrued leave to cover their portion of premiums are responsible for arranging with the City to pay their full portion of the premium.

D. Requesting Leave under FMLA:

1. Employees should comply with departmental requirements for requesting leave and provide enough information to reasonably determine whether FMLA applies to the leave request.

2. Employees requesting FMLA should submit written or verbal notice to HR. HR will determine if an employee's need for leave qualifies under FMLA and provide the employee with any required forms, notices, and information on rights.

3. Requests for FMLA should be submitted thirty (30) days in advance of the need for leave if the leave is foreseeable. If thirty (30) days advance notice is not possible employees must provide notice as early as possible under the circumstances.

E. FMLA Certification

1. When requesting FMLA for an employee's own serious medical condition or to care for a family member with a serious medical condition, healthcare certification is required and must be received by HR within fifteen (15) calendar days of the FMLA start date, or as soon as practical.

2. Employees do not have to share a medical diagnosis but must provide enough information to determine if the leave qualifies for FMLA protection. A statement or document(s) from the health care provider for the individual being treated should include the following information for supporting the FMLA request:

a. Contact information for the certifying health care provider.

b. The date the serious health condition began and how long it will last.

c. Appropriate medical facts about the condition such as symptoms, hospitalization, or doctor's visits.

d. For leave for the employee's own serious health condition, information showing that the employee cannot perform the essential functions of the job.

e. For leave to care for a family member, a statement establishing the family member needs care, an estimate of when and how long the leave is needed.

f. For leave that needs to be taken in short blocks of time, an estimate of how much time will be needed for each absence, how often absences may occur, and information establishing the medical necessity for taking intermittent leave or requiring a reduced schedule.

3. When requesting leave for a qualifying exigency for Military FMLA certification is required and must be received by HR within fifteen (15) calendar days of the Military FMLA start date, or as soon as practical. This certification will be provided using the Department of Labor (DOL) "Certification of Qualifying Exigency for Military Family Leave."

4. When requesting leave for a serious injury or illness of a covered member for Military FMLA certification is required and must be received by HR within fifteen (15) calendar days of the leave start date, or as soon as practical. This certification will be provided using the DOL Certification for Serious Injury or Illness of Covered Service member.

5. If FMLA or Military FMLA certification is deemed incomplete or insufficient, the employee will be advised in writing of what additional information is necessary to make certifications complete and sufficient. Employees must return revised medical certifications to HR within the date specified.

6. The City may require employees to obtain a second medical certification from a health care provider that is selected and paid for by the employee's department. See Chapter 8. Section XVIII of the City's Personnel Policy, Fit for Duty, for additional processes guidelines.

7. If FMLA or Military FMLA is requested for an employee's or their family member's serious health condition that continues beyond a single leave year, employees shall provide HR with new medical certifications each leave year.

F. Job Restoration

1. Upon return from leave under FMLA, an employee must be restored to their original job or to an equivalent job with equivalent pay, benefits, and other terms and conditions.

2. Employees who return from FMLA retain all benefits they accrued prior to the start of leave. They also will receive any City-wide pay increases distributed during their period of leave.

3. The City may require an employee on FMLA leave to report periodically on the employee's status and intent to return to work.

XVIII. Fit for Duty

A. Applicants to whom a conditional offer of employment has been extended and current employees may be required to undergo medical tests, procedures, or examinations whenever there is a question of the employees' ability to perform their job responsibilities in a safe, secure, productive, and effective manner.

B. Successful applicants for employment may be required as a condition of employment to pass a medical examination to establish their fitness to perform the jobs for which they have applied without endangering the health and safety of themselves or others. If the manager determines that an examination is appropriate to a particular position, all applicants for the job to whom a conditional offer of employment has been made are to be examined.

C. Employees may be required to have a medical examination on other occasions when the examination is job-related and consistent with business necessity. For example, a medical examination may be required when an employee is exposed to toxic or unhealthy conditions, requests an accommodation for a disability, or has a questionable ability to perform their duties on the job for which they are being considered.

D. Medical examinations required by the City will be paid for at City expense and must be performed by a physician or licensed medical facility designated or approved by the City. Medical examinations paid for by the City are the property of the City, and the examination records are to be treated as confidential and held in separate medical files.

E. However, records of specific examinations, and if required by law or regulation, will be made available to the employee, persons designated and authorized by the employee, public agencies, relevant insurance companies, and/or the employee's doctor.

F. Employees who need to use prescribed drugs or narcotics while at work must report this necessity to their supervisor if the use of such prescribed drugs might reasonably be expected to impair their ability to perform the job safely and effectively. Depending on the circumstances, employees may be reassigned, forbidden to perform certain tasks, or even prohibited from working if they are

judged by their supervisor unable to perform their job safely and properly while taking prescribed drugs.

G. The City reserves the right to require acceptable confirmation of the nature and extent of any illness that requires an employee to be absent from scheduled work. Employees returning from a disability leave of absence caused by health problems may be required to provide a doctor's certification of their ability to perform their regular work satisfactorily without endangering themselves, the public or their fellow employees. The City reserves the right to require a second and, if necessary, third medical opinion regarding an employee's absence because of illness or injury. Any required second or third opinions will be paid for by the City.

H. Employees who become ill on the job or suffer any injury, either of which is related to work, no matter how minor, must report to their supervisors, who will arrange referral for examination and treatment, as circumstances require and who will record the incident. Time spent by an employee in obtaining this medical attention will be considered hours worked for pay purposes. The cost of medical treatment sought will initially be covered by the employee's insurance and may later be reimbursed to the employee pending worker's compensation claim (if appropriate) or by the City at request of the employee.

I. An injured employee's supervisor, manager, or medical personnel are authorized to direct the employee to be transported to a medical facility for treatment. Human Resources is responsible for developing and directing programs concerning employee health and safety.

XIX. Return to Work – Light Duty

The City may allow employees who have been seriously injured or who are seriously ill and cannot return to full duty due to physical limitations to return to a temporary light duty assignment at the City's discretion. Upon release to full duty, employees are not eligible for a temporary light duty assignment.

A. The City may allow an employee to return to a temporary light duty assignment for a period of time not to exceed thirty (30) calendar days following the first day of the temporary light duty assignment. At the end of the thirty (30) day period the temporary light duty assignment will end. The employee may request and the City may allow a new temporary light duty assignment not to exceed thirty (30) calendar days. Any additional temporary light duty assignment will not necessarily involve the same tasks and duties as a prior temporary light duty assignment.

B. To consider a request for a temporary light duty assignment, there must be a legitimate temporary light duty assignment available in the employee's department or in another department within the City. Temporary light duty assignments will be coordinated by the supervisor and Human Resources.

C. The affected employee must be qualified to perform the essential functions of the temporary light duty assignment.

D. The employee's health care provider must release the employee with all restrictions noted to perform the temporary light duty assignment.

E. In cases where a temporary light duty assignment is not available, the employee may remain on Workers Compensation if the injury or illness was classified as an on-the-job accident or illness and has been processed through the City's Worker's Compensation insurance. During such time the employee may also use accrued leave or request a medical leave of absence. Leave(s) must be coordinated through Human Resources.

F. When a temporary light duty assignment is not available and the employee has not been released to full duty due to physical limitations, and the employee has exhausted all paid or unpaid leave, the employee's employment with the City may be terminated.

XX. Emergency Closures

The City understands that inclement weather and other emergencies can affect the ability for City operations to be open and services to be available. It is the policy of the City to provide timely information to City employees and the community concerning the status of City offices as a result of weather conditions or emergency situations.

In the event of inclement weather or other unforeseen emergencies, the City Administrator or authorized designee will determine and communicate appropriately any impact to normal City operations which necessitates the delayed opening, or the closing of a City building, facility, or service during normally scheduled business hours. Essential employees are to report to work as normally scheduled or as required in the event of inclement weather or other emergency situation.

A. Essential Employees:
There are certain critical City operations and services that cannot be suspended or interrupted to ensure the continued safety of the community. Essential employees are employed in positions and/or departments which require they provide essential services to the public or provide direct leadership or support, regardless of environmental factors. Essential departments typically operate on a 24-hour day rotating schedule or play a critical role in maintaining the safety or services of the City.

1. Police Department: All sworn personnel are designated as essential employees. Non-sworn employees may be designated as essential at the discretion of the Chief of Police and City Administrator.

2. Fire Department: All public safety personnel are designated as essential employees. Public safety administrative employees may be designated as essential at the discretion of the Fire Chief and City Administrator.

3. Public Works: The Deputy City Administrator and City Administrator will determine which departments or employees within Public Works are designated as essential employees.

4. Information Services: All IS personnel are designated as essential employees to ensure that communication equipment and other City technology remains functional. The Information Services Manager may determine if services could be maintained via remote or if on-site monitoring is required.

5. Other personnel may be designated as essential based on the nature of the emergency situation.

B. Compensation

1. If a City facility or service is suspended for an entire work day, or portion of a work day, non-essential employees who are scheduled to work on that day, will receive their regular pay for the duration of the emergency closure and will not be required to use vacation leave, sick leave, or compensatory time.

2. Employees already scheduled for paid time off (i.e. on vacation, sick leave, compensatory time, etc., including FMLA) will continue to use the scheduled paid time off and are not eligible to receive regular pay for emergency closures.

3. Employees may be asked to work remotely to the extent possible during an extreme weather event and when doing so shall not be entitled to extra pay or overtime for such hours worked during the regularly scheduled workday.

4. Essential employees required to work during their regularly scheduled hours will be compensated at a rate of one and one half (1 ½) times the regular hourly rate.

5. If the City remains open on an adverse weather day or other unforeseeable event, but an employee elects not to work or is unable to report to work due to school/daycare closures and/or road conditions they should notify their supervisor(s) as soon as possible. Employees who are unable to report to work may:

   a. Request use of available vacation, comp time, or personal holiday.

   b. If eligible, may request to work from home. Work from home will only be granted at the approval of the supervisor.

   c. If an employee does not have available paid leave to cover this time off, leave may be recorded as leave without pay as approved by the City Administrator.

6. All employees are expected to make their own decisions regarding their personal safety while commuting to work and act accordingly.

Chapter 9 - Records

I. Payroll and Time Records

A. Employees are paid every two weeks throughout the year. All paychecks are distributed by direct deposit with paystubs issued on every payday. Paychecks compensate employees for work performed in the pay period preceding the week in which the check is issued.

B. Each non-exempt employee is responsible to accurately record time that they have worked following the procedures established by the Finance Department - Payroll Office. Each report of non-exempt employees must be signed manually or electronically by both the Supervisor and the employee. It must contain a certification that it is a true and correct record of the employee's actual time worked and benefits used for the time period covered. Any changes to the time record made by a Supervisor or the Payroll Office to correct mistakes must be acknowledged by the employee. Exempt employees may be required to document time worked or benefits used for accountability purposes.

C. Employees may not falsify their timesheet or alter another employee's timesheet in any way. Employees must not under or over report hours worked by themselves or other employees, or conceal any falsification of time records, even if instructed to do so by a supervisor, manager, an Elected Official, or another person. If instructed to do so, the employee must immediately report it to the City Attorney.

D. Every effort will be made to ensure that employees are paid correctly. Occasionally, however, inadvertent mistakes occur. Each employee must monitor the accuracy of compensation received and review their paper or electronic paycheck stub when received to make sure it is correct. The information shown on the employee's paycheck stub is provided for information only. Actual practices regarding the issuance of paychecks and allocation of employee benefits must be consistent with the City's official policy. In the event of disagreement between the computer-generated paycheck stub and official policy, as interpreted by the City Council, the policy will prevail. Employees are obligated to call the City's attention by notifying payroll to any such errors, whether to the employee's advantage or disadvantage. When mistakes are made and are called to the City's attention, the City will correct the error as soon as possible.

II. Personnel Files

A. Personnel Records

1. The official employee records for the City will be kept in the Human Resource Office.

2. The personnel files should contain records related to employee performance, employee status, and other relevant materials related to the employee's service with the City.

3. The employee's supervisors and the employee them self may contribute materials to the personnel files deemed relevant to the employee's performance.

B. Access to Personnel Files

1. Only the employee's supervisors, attorneys for the City, Human Resources staff, and the employee are authorized to view materials in a personnel file. Access of others to such files will be allowed only when authorized after consultation with legal counsel for the City or upon receiving written consent by the employee.

2. Information regarding personnel matters will only be provided to outside parties with a release from the employee, when deemed necessary by legal counsel for the City, or pursuant to a Court order or a proper subpoena.

3. The City reserves the right to disclose the contents of personnel files to outside state or federal agencies, its insurance carrier or its carrier's agents for risk management purposes, or when necessary to defend itself against allegations of unlawful conduct.

4. Copies of materials in an employee's personnel file are available to that employee without charge, subject to exceptions provided by statutes.

C. Employee Responsibility

1. Employees have a responsibility to make sure their personnel records are up to date and should notify Human Resources in writing as soon as possible of any changes in at least the following areas:

   a. Name

   b. Current address

   c. Social Security Number or other tax identification number

   d. Marital status

   e. Number of withholding allowances (dependents)

2. This information is required for the City to properly process and report W4 and W2 information as required by the Internal Revenue Service.

III. Management of Information In Personnel Files

Each employee may contest the contents of their personnel file at any time, by filing a written objection and explanation that will be included in the file along with the objectionable material. It is the sole judgment of the City Administrator~~Supervisor~~ or designee, after consultation with Human Resources and City Attorney, to determine if any material may be removed from a personnel file. In general, there is a presumption that materials are to remain in personnel files accompanied by the employee's written objection and explanation to provide a complete employment history. Any such approved removal of information will be documented in writing and maintained in the employee's personnel file.

Chapter 10 - Operational Policies

I. Conflicts of Interest

The City prohibits its employees from engaging in any activity, practice, or conduct which conflicts with, or appears to conflict with, the interests of the City. Since it is impossible to describe all of the situations which may cause or give the appearance of a conflict of interest, the prohibitions which may cause or give the appearance of a conflict of interest, include but are not limited to the following examples.

A. Employees are expected to represent the City in a positive and ethical manner and have an obligation both to avoid conflicts of interest and to refer questions and concerns about potential conflicts to their supervisor or manager.

B. Employees are not to engage in, directly or indirectly either on or off the job, any conduct which is disloyal, disruptive, or damaging to the City.

C. Employees and their immediate family are not to accept gifts, (except those of nominal value), or any special discounts or loans from any person or firm doing, or seeking to do, business with the City.

D. Employees are not to give, offer, or promise, directly or indirectly, anything of value to any representative of a customer, of a potential customer, or of a financial institution in connection with any transaction or business that the City may have with that customer, potential customer, or financial institution.

E. While actively employed, employees shall not:

1. Hold any City of Moscow elective office. (Employees may run for any City of Moscow elective office; but, must resign their City position if elected and prior to being sworn into such elective office.)

2. Engage in any campaigning or circulating political petitions while on the job;

3. Use any City funds, resources, time supplies or equipment for political purposes;

4. Participate in any political activity while wearing any uniform or part of any uniform associating them with their City employment.

II. Outside Employment

A. The City may allow its employees to engage in outside work or hold other jobs, subject to certain restrictions as outlined below.

B. The City requires that employee's activities and conduct away from the job must not conflict with or compromise the City's interests, or adversely affect job performance and the ability to fulfill the employee's responsibilities to the City.

This requirement, for example, prohibits employees from performing any services for customers on non-working time that are normally performed by City personnel. This prohibition also extends to the unauthorized use of any City tools or equipment. In addition, employees are not to solicit or conduct any outside business during paid working time.

C. Full-time employees are not encouraged to engage in outside employment or other work activity, but may be permitted to do so if granted permission. Employees are cautioned to consider carefully the demands that additional work activity will create before requesting permission to seek or accept outside employment. Outside employment will not be considered an excuse for poor job performance, absenteeism, tardiness, leaving early, refusal to travel, or refusal to work overtime or different hours. If outside work activity does cause or contribute to job-related problems, it must be discontinued; and, if necessary, normal disciplinary procedures will be followed to respond to the specific problems.

D. All employees, including part-time employees, must obtain prior approval from their manager before any outside employment or other work activity is undertaken. Failure to do this may result in disciplinary action. To request approval, complete the Outside Employment Form, available from Human Resources.

E. The request should state any pertinent information about the outside employer, the nature of the job, and the hours of employment. The manager should then either approve or disapprove the request and forward to Human Resources for inclusion in the employee's personnel file.

F. This form must be reviewed and approved by the employee's supervisor, deputy city ~~supervisor~~administrator, and Human Resources. Decisions of approval or disapproval, at all levels, are final.

G. The following factors are examples of when an Outside work requests may not be approved:

1. May reduce the employee's efficiency in working for the City.

2. Involve working for an organization that does business with the City, such as contractors and suppliers.

3. May create a potential for CONFLICT OF INTEREST.

H. Employees who have accepted outside employment are not eligible for paid sick leave if the absence is used to work on the outside job or is the result of an injury sustained on the outside job. Fraudulent use of sick leave or personal absences will result in disciplinary action.

I. Any employee who is injured or becomes ill while working on any outside job must report the injury or illness to their supervisor.

III. Business Travel

Business travel must be approved in advance and should be engaged in and reimbursed according to the guidelines below.

A. Employees holding jobs that require some travel are expected to travel as a condition of employment. For all other jobs, travel is considered only an incidental function of the position, but may be required.

B. Supervisors must approve any employee travel in advance.

C. The City may issue guidelines specifying or restricting travel booking requirements. Under normal circumstances, employees should use the most expedient mode of transportation available, book the least expensive fares, and stay in and eat at moderately priced establishments.

D. Employees should provide their supervisor with a copy of their itinerary before leaving on business travel.

E. Employee expenses for approved travel will be paid or reimbursed when properly documented by the employee and approved by the supervisor. Employees who know or anticipate that they will have a special request for travel expense reimbursement should seek approval for the expense from their supervisor before the expense is incurred. Any travel expenses deemed unreasonable relative to the circumstances will not be paid or reimbursed and are the employee's personal responsibility.

F. Employees may obtain a cash advance for travel expenses in accordance with the adopted per diem schedule by submitting a written request to their supervisor. When city employees receive an advance for per diem, they are not required to keep receipts of their use of the per diem.

G. Meal expense amounts paid by credit card shall comply with the approved per diem rate of the travel location.

H. Time spent by non-exempt employees in traveling away from home on City business during normal working hours is considered hours worked for pay purposes.

I. Employees traveling on City business are representatives of the City and are expected to maintain a high level of professionalism and follow all of the City's policies and rules.

IV. Use of Communication Systems

Communications systems necessary to promote the efficient conduct of its business will be provided.

A. The City Communications System includes but is not limited to the following: mail; electronic mail; courier services; facsimiles; computers; computer networks; on-line services; computer files; intercom systems; video equipment; recording devices and recordings; pagers; two-way radio equipment; phones; and cellular phones.

B. Supervisors are responsible for instructing employees on the proper use of The City Communications Systems used by the organization for both internal and external business communications.

C. No employee shall have any expectation of privacy in any message, file, image, or other form of data created, sent, received, accessed, or in the City's Custody or control, by use of the City's Communication System, which includes GPS data. All City equipment used for communication, including the messages transmitted or stored, and the location of where the messages are transmitted, are the sole property of the City. Supervisors and/or managers may access and monitor employee use of the City Communication Systems and files, as considered appropriate. Some City issued systems and devices have the ability to include GPS tracking data. The employee has no expectation of privacy as it relates to the GPS data stored on any City issued system or device when such device is used for work or personal reasons.

D. Authorized personal use of the City Communication System includes uses made by City employees where such use:

   1. Does not adversely affect the performance of the City Communication Systems;

   2. Creates no significant additional cost to the City, however, personal long-distance calls and personal use of City-issued cellular phones are prohibited;

   3. Is of reasonable duration and frequency, and whenever possible, made during employee's personal time (such as breaks or the time before and after a shift);

   4. Has little impact on the employee's or other employees' productivity or ability to perform their assigned duties.

E. While at work, employees are to exercise discretion in using City Communication Systems or personal devices such as cellular phones. Excessive personal use of any communication systems or personal devices during the work day interferes with employee's productivity and can be distracting to others; therefore, excessive personal use (regardless of the system used) during an employee's workday is prohibited.

F. Users of the City Communication Systems shall obey all pertinent federal, state, county, and local laws and ordinances.

G. While at work, public safety employees (police and fire) are expected to operate vehicles and other equipment in a safe manner and shall not utilize any device in a manner that interferes with the safe operation of the vehicle/equipment. Public

safety employees shall not operate any non-City issued Communication System devices while operating a vehicle/equipment.

H. While at work, non-public safety employees shall not operate any device while driving a motor vehicle or operating equipment. Non-public safety employees who receive a cell phone call or text message while driving a motor vehicle or operating equipment are required to stop the vehicle/equipment in a safe location so that communication occurs while the vehicle/equipment is stopped. The use of hands-free technology and the use of vehicle installed two-way radio equipment is acceptable as long as it does not interfere with the safe operation of the vehicle/equipment. This section shall not apply to employees who are passengers in a motor vehicle.

I. Improper use of City Communication Systems equipment will result in discipline, up to and including termination. Improper use for the purposes of this policy includes, but is not limited to: playing computer games, sending any harassing, offensive, demeaning, insulting, intimidating, or sexually suggestive written, recorded, or electronically transmitted messages, materials, or data.

V. Vehicle Use

This Policy applies to all employees and City volunteers (those that volunteer on a regular basis, not one-time volunteers) who operate vehicles on City business. Activities of these employee drivers will be reviewed by supervisors to ensure full implementation and compliance of this Policy.

A. Employees operating City-owned or leased motor vehicles shall always drive safely, legally and courteously, remembering that they are directly responsible for maintaining both City-owned property and the public trust.

B. Employees are expected to operate vehicles safely. It is the policy of the City to provide a safe working environment that protects City employees and citizens from injury and property loss. The City considers the use of vehicles part of the working environment and is committed to safe responsible employee driving behavior that reduces the risk of personal injury and property loss.

C. Some City vehicles may be equipped with GPS capabilities where at any given time the vehicle may transmit and the City may utilize the GPS information to identify where the vehicle is located or historical information as to where the vehicle has been. Employee has no expectation of privacy as it relates to the use of the City vehicle and as it relates to the electronic information the vehicle may store or transmit. The City has the discretion to utilize this information for any use it determines appropriate.

D. Authorized Use

1. Employees must be authorized by their supervisor to operate a City vehicle.

2. Vehicles owned or leased by the City are to be used for the approved functions of the City. Personal use, use by a person not employed by the City, or any other type of use must be authorized.

3. The City Street/Vehicle Maintenance Manager is entrusted with the care and keeping of the vehicles and may assign that responsibility to an employee.

4. Some employees may be assigned the use of a City vehicle that is driven home. Such personal use, if allowed, may be a taxable benefit.

5. Vehicles over 26,000 gross vehicle weight, buses, and vans over fifteen (15) passengers require a commercial driver's license (CDL). Members of the Moscow Volunteer Fire Department are exempt from the CDL requirement per Idaho Code § 49-302(3).

E. Employees who drive their personal vehicles on City business are subject to the requirements of this Policy including:

1. Maintaining auto liability insurance with minimum state limits.

2. Maintain their vehicle in a safe operating condition when driven on City business.

F. Assigned or Permitted Drivers

1. Each employee assigned to a City vehicle or employees who operate a City vehicle or personal vehicle while conducting City business is required to have a valid driver's license. Should an employee's driver's license expire, be revoked or suspended, the employee shall immediately notify their supervisor. During the entire time of the revocation or suspension, the employee's City vehicle-use privileges will be suspended. Under no circumstances will such an employee operate a City vehicle until the employee's driver's license has been fully restored and validated.

2. Each employee assigned or permitted to operate a City vehicle shall be responsible for the proper and safe operation of the vehicle.

G. To evaluate employees as drivers, management may:

1. Review past driving performance and work experience through reference checks with previous employers;

2. Review the employee's driver's license record (DLR);

3. Ensure the employee has a valid driver's license; and

4. Ensure that the employee is qualified to operate the type of vehicle they will drive.

H. Seatbelt Use - Except as specifically authorized herein, all drivers and passengers are required to utilize seatbelts as mandated by law. Exception: City sworn law enforcement officers may dispense with wearing safety restraints in specific tactical situations or when it reasonably appears that, due to unusual circumstances, wearing a seatbelt would hinder rather than increase safety. Idaho Code § 49-673(2)(b).

I. Mobile Communication Device, Cell Phone and Computer Use - Except as specifically authorized herein, the driver of a City vehicle, or any other vehicle being used for City business, is prohibited from using a mobile communication device, cell phone or computer of any type while the vehicle is in motion. Drivers must be safely parked before using phone or mobile computer equipment. For purposes of this section of this Policy, a mobile communication device is defined as "a text messaging device or a wireless, two-way communication device designed to receive and transmit voice or text communication". This section of this Policy does not apply to City work-related two-way radios. Exception: Moscow Volunteer Fire Department Command Staff may use mobile communication devices in specific tactical situations. City sworn law enforcement officers may use mobile communication devices in specific tactical situations or as otherwise authorized by the Chief of Police.

J. Smoking Prohibited in Vehicles - Smoking is expressly prohibited in all City vehicles.

K. Impaired Driving - No driver shall operate a City or a personal vehicle while on City business when their ability to do so is impaired or influenced by: alcohol, illegal drugs or other illegal or intoxicating substances, prescribed or over-the-counter medication, or illness, fatigue or injury. The employee driver is obligated to report to their supervisor any reason that may affect their ability to drive safely.

L. Proof of Insurance - Employee drivers must make sure that the current insurance card is kept in the vehicle at all times.

M. Accident Reporting

1. In the event of an accident, the driver shall, when possible, first check on the safety and welfare of all persons involved and seek immediate medical attention (should it be required for themselves or others).

2. Drivers shall always report any incident that involves a City vehicle or an instance when driving a personal vehicle while conducting City business to the police. This will help ensure that the employee and the City are protected from unwarranted claims. No driver or passenger should discuss fault with or sign anything from anyone except for a police officer, a representative from the City's insurer, or an authorized representative of the City.

3. Vehicles should be left at the scene of the accident until police arrive. If there is an immediate danger or hazard, the vehicle should be moved to a safe location out of the way of traffic.

4. Drivers and/or the Drivers emergency contact, shall notify their supervisor as soon as possible of the accident and report on the required City form the extent of the injuries and property damage involved notifying the City Clerk in order to complete the applicable and required forms within five (5) working days, unless additional time is required due to the extent of the employee's injuries and inability to complete the required forms within five (5) working days. The supervisor may need to assist with completing the required forms.

5. Drivers should refer to the Drug and Alcohol Testing Policy as in the event of an accident drug and alcohol testing may be required.

6. Drivers shall cooperate fully with the City and the claims department of the City's insurer during the handling of the claim.

N. Traffic Violations - All fines and other criminal penalties resulting from violations of the law by the driver are the personal responsibility of the driver of any City vehicle. These costs are not reimbursable by the City and must be paid promptly by the driver.

O. Vehicle Registration, Maintenance and Repair

1. If the City vehicle needs repairs, the vehicle should be scheduled for repair.

2. Maintenance of the vehicle registration, license plates and inspections are the responsibility of the Street/Vehicle Maintenance Manager.

VI. Social Media

A. The City of Moscow's use of social networking is for the primary function of communicating and delivering information directly to the public about government matters.

B. Personal social media accounts should not be utilized for City business and is not approved to be utilized for City business. To the extent an employee, elected official, commission member, or anyone appointed to conduct City business utilizes a personal account for City business, they are responsible for maintaining those records and providing those records for public record requests or potential lawsuits or litigation.

C. In terms of personal use, it is not the intent of the City to restrict an employees', agents' or officers' First Amendment rights, but rather to ensure that Content posted by employees, agents or officers clearly reflect that those comments are personal and not being made on behalf of the City unless authorized by the City.

VII. Confidentiality

Supervisors and managers are responsible for and entrusted with all confidential information that is maintained by their respective departments or routed through their departments. Confidential information includes but is not limited to sensitive information pertaining to members of the city, community, and personnel records maintained by Human Resources. Confidential information must be maintained in secured files at all times when not in use, and may not be duplicated, shared, or distributed without prior written authorization from the assigned supervisor or department head, except where expressly provided for in City policy or written departmental rules or procedures.

Employees shall refrain from disclosing, requesting, or discussing information related to confidential internal meetings, work incidents, or other confidential information with the public or other employees who do not have a legitimate business need for the information. Confidential information will be shared only with employees or members of the public for legitimate business reasons, or as required by the Idaho Public Records Act or other state or federal laws, court orders, or subpoenas. Except where expressly provided for in City policy or written departmental rules or procedures, before disclosing any confidential information to another employee or the public, employees must obtain written authorization from their assigned department head or the City Attorney, or their designees, to release the requested confidential information. Violation of this policy may result in disciplinary action up to and including termination.

All employees and public officials are required to complete a Confidentiality Agreement at the time of hire and then every three (3) years. Unpaid interns, or volunteers may be required to complete a Confidentiality Agreement based on the nature of their role with the City.

Policy Section	Reason for Change
Chapter 2.IV Health Benefits	*Remove reference to specific % for dependent coverage *Add practice when both parents work for the City *Expand/Detail rules for benefits changes and define dependents based on medical benefit plans
Chapter 2.VI Overtime	*Add language specific to Paramedic/Firefighters *update/clarify language
Chapter 3.I Equal Employment Opportunity	*Updated based on updates to EEOC requirements related to Religious accommodations; 2023 Supreme Court decision in Groff v. DeJoy
Chapter 4.I Introductory Period	*Add language specific to Paramedic/Firefighters *update/clarify language for police officers and for extension of introductory period
Chapter 6.III Termination of Employment	*update/clarify language and consistency in use of the term "termination vs discharge" *Add language related to retirement
Chapter 7.II Work period	*Add language specific to Paramedic/Firefighters *update/clarify language
Chapter 7.IV Rest and Meal Periods	*update/clarify language and consistency in use of the term "break vs period" *Add language related to nursing mothers based on DOL/FLSA Protections under the Providing Urgent Maternal Protections for Nursing Mothers Act (PUMP Act)
Chapter 8.VI Floating Holiday	*Add language specific to Paramedic/Firefighters *update/clarify language
Chapter 8.VII Holidays	*Add language specific to Paramedic/Firefighters *update/clarify language
CHAPTER 8.IX Paid Parental Leave	*Add language specific to number of hours available for Paramedic/Firefighters based on their shifts
Chapter 8.X Bereavement Leave	*update/clarify language related to definition of immediate family member, household, and relative. (current reference are to definitions for neoptism)
Chapter 8.XII Vacation	*Add language specific to Paramedic/Firefighters *update/clarify language
Chapter 8.XIII Sick Leave	*Add language specific to Paramedic/Firefighters *update/clarify language *Update language related to VEBA payout
Chapter 8.XX Inclement Weather and Emergency Closures	*Add Section to formalize process
Chapter 10.VII Confidentiality	*Add Section to formalize confidentiality requirements for all employees

COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

City Shop Replacement Project Bid Award (ACTION ITEM) - Cody Riddle

RESPONSIBLE STAFF

Cody Riddle, Deputy City Supervisor - Community Development

ADDITIONAL PRESENTER(S)

DESCRIPTION

The deteriorating condition and deficiencies of the existing shop facility has been identified as one of the City's biggest challenges for years. To address the problem and ensure City Staff can continue to efficiently provide key services in a safe working environment, construction of a new shop was prioritized by City Council in both the FY 2024 and 2025 budgets. Working with Lombard/Conrad Architects (LCA), a design package for a new shop building, dry materials storage shed, and recladding of the existing shop was completed earlier this fall.

The project was subsequently advertised for bid on September 28th and October 5th, with a bid opening on November 6th. Seven bids were received. Wellens General Contractors from Enterprise, Oregon was the lowest bidder with a base bid of $6,567,000, Alternate #2 (dry materials storage shed) $177,000, and Alternate #3 (recladding of the existing shop) $504,000, for a total bid of $7,248,000. The bids included a deduct alternate for the exterior cladding system of the new building. While the Wellens proposal would result in a savings of $212,000, the finished product would be less durable and not as energy efficient as the system included in the base bid. Given that, Staff is not recommending acceptance of the deduct alternate.

The City recently worked with Wellens as the general contractor on the new police station. Their proposal for the shop has been reviewed and found to be complete and accurate by City Staff and the design architect. If awarded, construction is anticipated to commence in the spring of 2025 and be complete by March 1, 2026.

REVIEWED BY

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend acceptance of the low bid from Wellens General Contractors, Inc., award the contract for the bid amount of $7,248,000 (Base Bid and Alternates #2 and #3), and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount; or provide staff further direction.

STAFF RECOMMENDATION

Recommend acceptance of the low bid from Wellens General Contractors, Inc., award the contract for the bid amount of $7,248,000 (Base Bid and Alternates #2 and #3), and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount.

OTHER RESOURCES

FISCAL IMPACT

The project will be funded through a combination of General, Water, Sewer, and Storm Capital Funds.

PERSONNEL IMPACT

ATTACHMENTS

1. Bid Tabulation-Moscow City Shop
2. Wellens General Contractors Bid
3. Advertisement for Bid
4. Construction Agreement _Moscow City Shop_Final with attachments

Moscow City Shop Project
Bids Opened 11/6/2024

				Architect Estimate		Bid From: Kenaston		Bid From: Quality Construction		Bid From: Faber Construction		Bid From: Ginno Construction	
Item No.	**Item Description**	**Qty.**	**Unit**	**Unit Price**	**Amount**	**Price**	**Total**	**Price**	**Total**	**Price**	**Total**	**Price**	**Total**
1	Base Bid	1	LS	$5,494,552.00	$5,494,552.00	$7,041,000.00	$7,041,000.00	$9,077,000.00	$9,077,000.00	$7,800,000.00	$7,800,000.00	$6,895,000.00	$6,895,000.00
2	Alternate #1	1	LS	-$68,628.00	-$68,628.00	-$158,000.00	-$158,000.00	-$157,000.00	-$157,000.00	-$288,000.00	-$288,000.00	-$110,000.00	-$110,000.00
3	Alternate #2	1	LS	$213,018.00	$213,018.00	$231,000.00	$231,000.00	$419,000.00	$419,000.00	$405,000.00	$405,000.00	$216,000.00	$216,000.00
4	Alternate #3	1	LS	$403,000.00	$403,000.00	$1,630,000.00	$1,630,000.00	$1,778,000.00	$1,778,000.00	$377,000.00	$377,000.00	$800,000.00	$800,000.00
				TOTAL	**$6,041,942.00**	**TOTAL**	**$8,744,000.00**	**TOTAL**	**$11,117,000.00**	**TOTAL**	**$8,294,000.00**	**TOTAL**	**$7,801,000.00**

Bid From: Walker Construction		Bid From: Wellens Construction		Bid From: Wright Brothers	
Price	**Total**	**Price**	**Total**	**Price**	**Total**
$7,705,000.00	$7,705,000.00	$6,567,000.00	$6,567,000.00	$8,138,950.00	$8,138,950.00
-$108,000.00	-$108,000.00	-$212,000.00	-$212,000.00	-$147,000.00	-$147,000.00
$361,700.00	$361,700.00	$177,000.00	$177,000.00	$425,000.00	$425,000.00
$1,067,900.00	$1,067,900.00	$504,000.00	$504,000.00	$1,548,500.00	$1,548,500.00
TOTAL	**$9,026,600.00**	**TOTAL**	**$7,036,000.00**	**TOTAL**	**$9,965,450.00**

Moscow City Shop Facility

City of Moscow
206 E. Third Street
Moscow, ID 83843

RECEIVED
NOV 0 6 2024
@ 1:48pm

WELLENS GENERAL CONTRACTORS INC. 107 NW AIDER

ARTICLE 2

IN COMPLIANCE WITH THE NOTICE TO CONTRACTORS-INVITATION TO BID, AND IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS, THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS FOR THE PROJECT, THE UNDERSIGNED BIDDER, BEING DULY LICENSED TO PERFORM SUCH WORK BY THE STATE OF IDAHO AND BEING THOROUGHLY FAMILIAR WITH ALL LOCAL CONDITIONS AFFECTING THE COST OF THE PROJECT, HAVING CAREFULLY EXAMINED THE SITE, CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AND ANY ADDENDA THERETO PREPARED BY THE PROJECT ARCHITECT OR ENGINEER, PROPOSES TO PROVIDE, AND TO FURNISH FOR THE COSTS SET FORTH IN THE FOLLOWING BID SCHEDULE, ALL LABOR AND MATERIAL, TOOLS, UTILITIES, TRANSPORTATION, EQUIPMENT AND SERVICES REQUIRED TO PERFORM AND TO COMPLETE IN A WORKMANLIKE MANNER ALL THE WORK FROM THE DATE OF THE NOTICE TO PROCEED WITHIN THE ESTABLISHED CONSTRUCTION TIME, SUBJECT TO LIQUIDATED DAMAGES FOR EXCESS WORKING TIME AS ESTABLISHED UNDER ARTICLE 1.

ARTICLE 3 BID SCHEDULE

BASE BID **DESCRIPTION:** Base Bid.

FOR THE SUM OF:

Six Million Five hundred sixty-Seven thousand **DOLLARS ($** 6,567,000

ALTERNATE #1 **DESCRIPTION:** Pre-engineered Metal Building Envelope System.

FOR THE SUM OF:

-(Two hundred Twelve thousand) **DOLLARS ($** 212,000)

ALTERNATE #2 **DESCRIPTION:** Salt and Material Storage Building.

FOR THE SUM OF:

one Hundred seventy-seven thousand **DOLLARS ($** 177,000)

ALTERNATE #3 **DESCRIPTION:** Existing Shop Building Exterior Cladding.

FOR THE SUM OF:

Five Hundred Four thousand **DOLLARS ($** 504,000)

THE LOW BIDDER WILL BE DETERMINED ON THE BASIS OF THE BASE BID PLUS ANY ALTERNATES WHICH ARE ACCEPTED. ALTERNATES MAY BE ACCEPTED IN ANY ORDER AND ARE NOT REQUIRED TO BE ACCEPTED IN SEQUENTIAL ORDER AS THEY ARE LISTED ON THE BID PROPOSAL FORM.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good for a period of sixty (60) calendar days after the scheduled opening time for receiving bids.

Upon receipt of written Notice of Intent to Award of this bid, Bidder will execute the formal Contract within ten (10) calendar days and deliver a Surety Bond or Bonds as required by Article 7 "Performance and Payment Bonds" of the Instructions to Bidders.

ARTICLE 4 LIST OF SUBCONTRACTORS

Plumbing

(Name) K & G const.

(Address) 625 D st, Lewiston, ID 83501

Idaho Plumbing Contractors License No. RCE - 17115, PLB6 022528

Heating, Ventilating & Air Conditioning

(Name) Gropp Heating & Air & Elec

(Address) 225 west A Moscow ID 83843

Idaho Public Works Contractors License No. PWC-C-14557-AA-4

Idaho HVAC Contractors License No. HVC-C-1183

Electrical

(Name) Strom Electric Inc

(Address) 405 S. MAIN TROY ID. 83871-0370

Idaho Public Works Contractors License No. 022495 -AAA-4

Idaho Electrical Contractors License No. 021665

Should the listing of subcontractors change due to selection of alternates or other similar circumstances, attach explanation.

Bidder warrants that bid has been prepared and that any contract resulting from acceptance of this bid is subject to Executive Order 2009-10 and the Fixed Price Construction Contract.

The undersigned notifies that it is of this date duly licensed as an Idaho Contractor and further that it possesses Idaho Contractor's License No. RCE - 27040, and is domiciled in the State of OREGON.

Dated this 6TH (date) day of NOVEMBER (month), 2024 (year).

Respectfully submitted by:

WELLENS GENERAL CONTRACTORS
(Company)

(Seal - if bid is by a corporation)

107 NW ALDER ST
(Street or PO Address)

ENTERPRISE, OR 97828
(City, State and zip code)

(Authorized Signature)

OWNER
(Title)

541. 426. 4071
(Telephone Number)

541. 426. 6385
(FAX Number)

DZJXJSD3A496
(UEI Number)

Have you remembered to include bid security (bid bond or a certified or cashiers check), Contractor's Affidavit Concerning Alcohol and Drug-Free Workplace?

ALL BIDS SHALL BEAR THIS ADDRESS:
City of Moscow
206 East Third Street
Moscow, ID 83843

ARTICLE 1

PROJECT NAME AND LOCATION	Moscow City Shop Facility 650 N. Van Buren St. Moscow, ID 83843
ARCHITECT OR ENGINEER	Lombard-Conrad Architects (208) 780-0022 472 W. Washington St. Boise, Idaho 83702

CONTRACT TIME **CALENDAR DAYS:** 365 consecutive calendar days consecutive calendar days from commencement of construction, substantial completion by no later than 3/1/2026

LIQUID. DAMAGES **EACH EXCESS CALENDAR DAY:** $250.00

BID OPENING	**DATE:**	November 6, 2024
	TIME:	2:00 p.m.
	PLACE:	Bid opens at Council Chambers, Moscow City Hall 206 E. Third Street, Moscow, Idaho 83843

NAME AND ADDRESS OF BIDDER TELEPHONE NO.	WELLENS GENERAL CONTRACTORS 107 NW ALDER ST ENTERPRISE, OR 97828 541.426.4071
IF PARTNERSHIP NAMES OF PARTNERS	N/A
IF CORPORATION STATE OF INCORPORATION	OREGON
BID GUARANTEE Min. 5% of Bid	**UNDERLINE ONE:** BID BOND, CASH, CERTIFIED CHECK, CASHIER'S CHECK
ADDENDA RECEIPT ACKNOWLEDGED	**ADDENDA NUMBERED: 1** X **2** X **3** X **4**____ **(Check all that have been received)**
ALLOWANCE ACKNOWLEDGED	**NONE LISTED:** N/A

Execute and Submit with Bid

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF OREGON

COUNTY OF WALLOWA

Pursuant to the Section 72-1717, Idaho Code, I, the undersigned, being duly sworn, depose and certify that WEILENS GENERAL CONTRACTORS INC is in compliance with the provisions of Section 72-1717, Idaho Code; that WEILENS GENERAL CONTRACTORS INC provides a drug-free workplace program that complies with the provisions of Title 72, Chapter 17, Idaho Code, and will maintain such program throughout the life of a state construction contract; and that WEILENS GENERAL CONTRACTORS INC. shall subcontract Work only to subcontractors meeting the requirements of Section 72-1717(1)(a), Idaho Code.

KEITH WEILENS - WEILENS GENERAL CONTRACTORS INC.
Name of Contractor

PO BOX 658/107 NW ALDER ST.
Address

ENTERPRISE OREGON
City and State

By: _____
(Signature)

Subscribed and sworn to before me this 4th day of NOV, 2024.

Commission expires: OCT 18, 2025

OFFICIAL STAMP
SARA TIPPET
NOTARY PUBLIC - OREGON
COMMISSION NO. 1017940
MY COMMISSION EXPIRES OCTOBER 18, 2025

Sara Tippet
NOTARY PUBLIC, residing at

ENTERPRISE, OR

FAILURE TO EXECUTE THIS AFFIDAVIT AND SUBMIT IT ALONG WITH YOUR BID SHALL MAKE YOUR BID NON-RESPONSIVE.

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)
Wellens General Contractors, Inc.
P.O. Box 658
Enterprise, OR 97828

SURETY:
(Name, legal status and principal place of business)
Travelers Casualty and Surety Company of America
One Tower Square
Hartford, CT 06183

OWNER:
(Name, legal status and address)
Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

BOND AMOUNT: $ Five Percent of the Amount Bid (5%)

PROJECT:
(Name, location or address, and Project number, if any)
Moscow City Shop Facility
650 North Van Buren Street
Moscow, ID 83843

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Init.
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User Notes:

(1751533426)

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 6th day of November, 2024,

	Wellens General Contractors, Inc.
	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)* owner
	Travelers Casualty and Surety Company of America
	(Surety) *(Seal)*
(Witness) Sydney Schmidt, Witness	*(Title)* Travis Long, Attorney-in-Fact

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User Notes: (1751533426)

TRAVELERS	Travelers Casualty and Surety Company of America Travelers Casualty and Surety Company St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Travis Long** of **SPOKANE**, **Washington**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA — HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY — CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

State of Connecticut

By: _____
Robert L. Raney, Senior Vice President

City of Hartford ss.

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**

ANNA P. NOWIK — NOTARY PUBLIC — CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **6th** day of **November**, **2024**.

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA — HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY — CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

ADVERTISEMENT FOR BIDS

MOSCOW CITY SHOP

Sealed bids will be received at City Council Chambers of Moscow City Hall, 206 East Third Street Moscow, Idaho 83843 from 1:30 P.M. through 2:00 P.M. prevailing local time on November 6, 2024.

Bid proposals may be mailed prior to the opening to the attention of Britany Luft City of Moscow Community Development at 504 S. Washington Street, Moscow, ID 83843. All mailed proposals must be received prior to the bid opening time listed above and must be marked as “Moscow City Shop Facility” on the outside of the bid package.

Proposals will be opened and publicly read at the City Hall at 2:00 P.M. on November 6, 2024.
For additional information concerning drawings and specifications, contact Lombard-Conrad Architects, Matt Geserick (208) 780-0022.

Plans, specifications, bid proposal forms and other information are available for examination at:

Associated Builders and Contractors
1760 E Trent Ave.
Spokane Valley, WA 99216
(509) 534-0826
e-mail: admin@abcipc.com

Associated General Contractors
4935 E. Trent
Spokane, WA 99212
(509) 535-0391
e-mail: info@nwagc.com

Reed Construction Data
30 Technology Parkway South, Suite 500
Norcross, Georgia 30092
(800) 424-3996

Tri-Cities Construction Council
20 E Kennewick Ave.
Kennewick, WA 99336
(509) 582-7424/FAX: 582-6815
e-mail: shannonam@owt.com

Abadan Public Plan Room
603 E. 2nd Ave
Spokane, WA 99202
(509) 747-2964

Spokane Regional Plan Center
209 N. Havana St.
Spokane, WA 99202
(509) 328-9600/FAX: 328-7279
e-mail: projectinfo@plancenter.net

Idaho Associated General Contractors
1649 West Shoreline Dr., Suite 100
Boise, ID 83702
(208) 344-2531

Lewiston-Clarkston Plan Service
2117 - 12th Avenue
Lewiston, ID 83501
(208) 746-3591/FAX: 208-796-7018
e-mail: lcplancenter@gmail.com

Missoula Plans Exchange
201 N. Russell
Missoula, MT 59801
(406) 549-5002/FAX: 721-2941
e-mail: tbrooks@mpe.us

Blueprint Specialties
6205 W Overland Dr
Boise, ID 83709
(208) 377-0294

DESCRIPTION OF WORK: The work consists of 3 separate buildings to all be included in the bid and alternate costs. These buildings consist of a new shop, material storage building, and existing shop. All labor, materials, equipment and services necessary to provide the construction should be included in the bid.

New Shop: Construction of a new 18,800 square foot, single story, pre-engineered metal building in accordance with the plans and specifications with the steel support structure to be designed by the pre-engineered metal building manufacturer as a deferred submittal.

Material Shed: Construction of a new 4,400 square foot, single story, timber and wood truss framed building in accordance with the plans. Material specifications are included on the plan set.

Existing Shop: Re-cladding of the wall and roof assemblies of an existing 18,300 square foot, two-story, pre-engineered metal building in accordance with plans and specifications. Construction will include the removal of existing wall and roof panels, insulation, and vapor barrier and the installation of new insulated metal wall and roof panels in accordance with the plans and specifications.

BID BOND: A bid bond equal to 5% of the amount bid must accompany the bid proposal. (See instructions to bidders.)

PUBLIC WORKS CONTRACTOR'S LICENSE: Public Works Contractor's License for the State of Idaho is required to bid on this project. (See instructions to bidders and general conditions for further bidder qualifications.)

CONTRACT TIME: (365) calendar days (see instructions to bidders, bid proposal and agreement.)

ESTIMATED PROJECT COST: $6,135,000.00

PRE-BID CONFERENCE: The pre-bid conference and walk through will be held on October 16, 2024 at 1:00 P.M. The conference will be held at the existing Moscow City Shop at 650 Van Buren St. Please direct any questions related to the project to Lombard-Conrad Architects, Matt Geserick (208) 345-6677.

END OF ADVERTISEMENT FOR BIDS.

CONSTRUCTION AGREEMENT
FOR MOSCOW CITY SHOP PROJECT
BETWEEN CITY OF MOSCOW, IDAHO
AND WELLENS GENERAL CONTRACTORS, INC.

THIS CONSTRUCTION AGREEMENT FOR MOSCOW CITY SHOP PROJECT BETWEEN CITY OF MOSCOW, IDAHO, AND WELLENS GENERAL CONTRACTORS, INC. (hereinafter "Agreement"), dated this ____ day of _____, 2024, by and between City of Moscow, Idaho, a municipal corporation of the State of Idaho, 206 East Third Street, Moscow, Idaho, 83843 (hereinafter "CITY"), and Wellens General Contractors Inc., 107 NW Alder Street, Enterprise, Oregon, 97828 (hereinafter "CONTRACTOR"):

W I T N E S S E T H:

WHEREAS, pursuant to the invitation of CITY, extended through an "Invitation to Bid", see Attachments 'A' and 'B', CONTRACTOR submitted a Bid Proposal containing an offer invited by said invitation; and

WHEREAS, CITY has determined that said offer was the lowest responsive Bid Proposal; and

WHEREAS, CITY has accepted CONTRACTOR's Bid Proposal for the Base Bid, Alternate #2, and Alternate #3;

NOW THEREFORE, it is agreed that all matters stated above are found to be true and correct and are incorporated herein by this reference as if coped in their entirety and for and in consideration of the following mutual promise, the Parties to this Agreement hereby agree and covenant as follows:

ARTICLE 1.
CONTRACT DOCUMENTS

The Contract Documents which comprise the entire Agreement between CITY and CONTRACTOR concerning the work to be performed, are this Agreement, pages one (1) through seven (7) and the following:

1. Lombard Conrad Architects Specifications Volume 1 dated July 24, 2024, Attachment 'A' consisting of 598 pages;
2. Lombard Conrad Architects Specifications Volume 2 dated July 24, 2024, Attachment 'B', consisting of 338 pages;
3. Salt and Material Storage Shed Plans, Attachment 'C' consisting of 5 pages;
4. Existing Moscow City Shop Plans, Attachment 'D' consisting of 9 pages;
5. Moscow City Shop Permit Set, Attachment 'E' consisting of 98 pages;
2. Bid Proposal of CONTRACTOR, dated November 6, 2024, Attachment 'F', consisting of 10 pages;
3. Performance and Payment Bonds and Insurance Certificates;
4. Three (3) Addenda:
    a. Addendum #1, Attachment 'G', consisting of 17 pages
    b. Addendum #2, Attachment 'H', consisting of 80 pages

c. Addendum #3, Attachment 'I', consisting of 8 pages

5. Change Orders, which may be delivered or issued after the effective date of this Agreement.

There are no Contract Documents other than those listed in Article 1. This Agreement may only be amended by change order as provided in Attachment 'A'.

ARTICLE 2.
WORK

CONTRACTOR shall complete the entire work as specified, indicated and required under the Contract Documents, contained herein under Article 1. for CITY project (hereinafter "Project") titled:

MOSCOW CITY SHOP PROJECT

ARTICLE 3.
CONTRACT TIME/SUBSTANTIAL COMPLETION

The work to be performed pursuant to this Agreement shall be substantially complete within 365 consecutive calendar days after commencement of construction, but no later than March 1, 2026, unless adjustment of the Agreement time is made in accordance with the provisions of the Contract Documents. CONTRACTOR shall begin work in conformance with the Contract Documents.

CONTRACTOR and CITY recognize that time is of the essence and that CITY will suffer financial loss if the Project is not completed within the time specified above, unless approved extensions thereof are permitted in accordance with the terms of the Contract Documents. The Parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by CITY if the Project is not completed on time. Accordingly, instead of requiring any such proof, CITY and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty), CONTRACTOR shall pay CITY Two Hundred and Fifty Dollars ($250) for each day that expires after the time specified above for Substantial Completion until the Project is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Project within the Time of Completion or by any proper extension thereof granted by CITY, CONTRACTOR shall pay CITY Two Hundred and Fifty Dollars ($250) for each day that expires after the time specified above for completion, until the Project is completed and ready for final payment.

ARTICLE 4.
CONTRACT SUM

CITY shall pay CONTRACTOR for completion of the work for the Project in accordance with the Contract Documents for the Base Bid in the amount of Six Million, Five Hundred Sixty Seven Thousand Dollars ($6,567,000), Alternate #2 in the amount of One Hundred Seventy-Seven Thousand Dollars ($177,000), and Alternate #3 in the amount of Five Hundred Four Thousand ($504,000) in current funds for the total amount of Seven Million, Two Hundred Forty-Eight Thousand Dollars ($7,248,000), as submitted by CONTRACTOR. In no event shall the Contract amount exceed CONTRACTOR's bid amount of Seven Million Two Hundred Forty-Eight

Thousand Dollars ($7,248,000), unless otherwise authorized by CITY by written agreement. Said Contract Sum shall be paid in accordance with the Contract Documents.

ARTICLE 5.
TERMINATION

Termination provisions are governed by the attached Contract Documents.

ARTICLE 6.
INDEPENDENT CONTRACTOR

The Parties warrant by their signatures that no employer-employee relationship is established between CONTRACTOR and CITY by the terms of this Agreement. It is understood by the Parties hereto that CONTRACTOR is an independent contractor and, as such, neither CONTRACTOR nor CONTRACTOR's employees, agents, representatives or subcontractors, if any, are employees of CITY for purposes of tax, retirement system, or social security (FICA) withholding.

ARTICLE 7.
SCOPE OF SERVICES

CONTRACTOR shall perform all work required by the Contract Documents. All work shall be completed in accordance with the specifications and plans established for this Project.

ARTICLE 8.
HOLD HARMLESS/INDEMNIFICATION

In addition to other rights granted to CITY by the Contract Documents, CONTRACTOR agrees to indemnify, defend, and hold harmless CITY, its officers, agents, employees, and engineers, from and against any and all losses, lawsuits, actions, claims, judgements for damages, or any injuries or damages received or sustained by any person, persons, or property, and losses, expenses, and other costs, including litigation costs and attorney's fees, arising out of, resulting from, or in connection with the acts, performances, activities, errors or omissions by CONTRACTOR, CONTRACTOR's servants, agents, officers, employees, representatives, guests, business invitees or its subcontractors; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any claims or amounts recovered from any infringements of patent, trademark or copyright; or from any claims or amounts arising out of or recovered under the Workmen's Compensation Act or any other law, ordinance, order, or decree.

ARTICLE 9.
CONFLICT OF INTEREST

CONTRACTOR covenants that it presently has no interest and will not acquire any interest, direct or indirect, in the Project, which would conflict in any manner or degree with the performance of CONTRACTOR's services hereunder. CONTRACTOR further covenants that, in performing this Agreement, CONTRACTOR will employ no person who has any such interest. Should any conflict

DRAFT

of interest arise during the performance of this Agreement, CONTRACTOR shall immediately disclose such conflict to CITY.

ARTICLE 10.
ENTIRE AGREEMENT, MODIFICATION AND ASSIGNABILITY

This Agreement and the attachments hereto contain the entire Agreement between the Parties, and no statements, promises, or inducements made by either Party, or agents of either Party are valid or binding unless contained herein. This Agreement may not be enlarged, modified or altered except upon written agreement signed by the Parties hereto. CONTRACTOR may not subcontract or assign its rights (including the right to compensation) or duties arising hereunder, other than as provided within the Contract Documents, without the prior written consent and express authorization of CITY.

ARTICLE 11.
LICENSES AND ADHERENCE TO LAW REQUIRED

CONTRACTOR represents that it possesses the skill and experience necessary and all licenses required to perform the services under this Agreement. CONTRACTOR further agrees to comply with all applicable Federal, State and Local statutes and regulations in the performance of the services hereunder, and are hereby made a part of this Agreement and shall be adhered to at all times. Violation of any of these statutes or regulations by CONTRACTOR shall be deemed material and shall subject CONTRACTOR to termination of this Agreement for cause. No pleas of misunderstanding or ignorance on the part of CONTRACTOR will, in any way, serve to modify the provisions of this requirement. CONTRACTOR and its surety shall indemnify, defend and hold harmless CITY and its employees, agents, engineers and representatives against any claim or liability arising from or based on the violation of any such laws, codes, ordinances, or regulations, whether by CONTRACTOR, CONTRACTOR's employees, or its subcontractors.

Anti-Boycott Against Israel Act. CONTRACTOR certifies it is not currently engaged in, and will not for the duration of this Agreement engage in, a boycott of goods and services from Israel or territories under its control. Failure to comply with Idaho Code § 67-2346 will result in this Agreement being void as against public policy.

Ownership or Operation by China. Pursuant to Idaho Code § 67-2359, CONTRACTOR certifies that it is not currently owned or operated by the government of China and will not for the duration of this Agreement be owned or operated by the government of China. The terms in this section defined in Idaho Code § 67-2359 shall have the meaning defined therein.

Employment of Residents of Idaho. Pursuant to Idaho Code § 44-1001, CONTRACTOR certifies that it will employ ninety-five percent (95%) bona fide Idaho residents, as that term is defined in Idaho Code § 44-1003, as employees for the completion of the terms required in this Agreement. If CONTRACTOR employs less than fifty (50) employees on this Project, CONTRACTOR may employ up to ten percent (10%) nonresidents for the completion of the terms required in this Agreement. In all cases, CONTRACTOR agrees to give a preference to bona fide Idaho residents. The Parties agree that if Project involves the expenditure of federal aid funds, that this clause will not be enforced in a manner that conflicts with federal statutes prescribing a labor preference for veterans or prohibiting unlawful discrimination or preferences among United States citizens.

Not an Abortion Provider or Affiliate. Pursuant to Idaho Code Title 18 Chapter 87, CONTRACTOR certifies that it is not an abortion provider or an affiliate of any abortion provider and does not, and will not for the duration of this Agreement, authorize the use of state facilities or public funds for abortion related activity.

Anti-Boycott of Certain Sectors. Pursuant to Idaho Code § 67-2347A, CONTRACTOR certifies that it is not engaged in, and will not for the duration of this Agreement engage in, a boycott of any individual or company because the individual or company 1) engages in or supports the exploration, production, utilization, transportation, sale or manufacture of fossil fuel-based energy, timber, minerals, hydroelectric power, nuclear power, or agriculture or 2) engages in or supports the manufacture, distribution, sale, or use of firearms, as defined in Idaho Code § 18-3302 (2)(d).

ARTICLE 12.
EMPLOYMENT DISCRIMINATION

It is illegal under the U.S. Federal law to discriminate against an employee, either intentionally or through disparate impact, on account of race, color, gender, religion, sex (including pregnancy), national origin, physical or mental disability, age, marital or familial status, sexual orientation, and gender expression or identity. CONTRACTOR shall not discriminate against any employee or applicant for employment. CONTRACTOR's action under this Section shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. CONTRACTOR agrees to post in conspicuous places, available to employees and other applicants for employment, notices setting forth the provisions of this non-discrimination Section.

ARTICLE 13.
LEGAL FEES

In the event either Party incurs legal expenses to enforce the terms and conditions of this Agreement, the prevailing Party is entitled to recover reasonable attorney's fees and other costs and expenses, whether the same are incurred with or without a lawsuit.

ARTICLE 14.
JURISDICTION, VENUE AND NONWAIVER

It is agreed that this Agreement shall be construed under and governed by the laws of the State of Idaho. In the event of litigation concerning it, it is agreed that proper venue shall be the District Court of the Second Judicial District of the State of Idaho, in and for the County of Latah. Failure of CITY to exercise any of the rights under this Agreement, or breach thereof, shall not be deemed to be a waiver of such right or a waiver of any subsequent breach.

ARTICLE 15.
SPECIAL WARRANTY

CONTRACTOR warrants that nothing of monetary value has been given, promised or implied as remuneration or inducement to enter into this Agreement. CONTRACTOR declares that no improper personal, political or social activities have been used or attempted in an effort to influence the outcome of the competition, discussion, or negotiation leading to the award of this Agreement. Any such activity by CONTRACTOR shall make this Agreement null and void. CONTRACTOR further warrants that all materials and goods supplied under this Agreement shall be of good merchantable quality and that all services will be performed in a good workmanlike manner. CONTRACTOR acknowledges that it will be liable for any breach of this warranty.

ARTICLE 16.
COMMUNICATIONS

Such communications as are required by this Agreement shall be satisfied by mailing or by personal delivery to the Parties at the following address:

CONTRACTOR:

Wellens General Contractors, Inc.
Keith Wellens
107 NW Alder Street
Enterprise, OR 97828

CITY:

City of Moscow
Engineering Division
206 East Third Street
P O Box 9203
Moscow, Idaho 83843

ARTICLE 17.
NON-APPROPRIATIONS

This Agreement is contingent upon CITY receiving the necessary funding to cover the obligations of CITY. In the event that such funding is not received or appropriated, then, and in that event, CITY's obligations under this Agreement shall cease and each Party shall be released from further performance under this Agreement without any liability to the other Party, and CONTRACTOR shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.

ARTICLE 18.
APPROVAL REQUIRED AND SEVERABILITY

This Agreement shall not become effective or binding until approved by CITY. If any part of this Agreement is held unenforceable, the remaining portions of the Agreement will, nevertheless, remain in full force and effect so long as the remainder of this Agreement is capable of completion.

ARTICLE 19.
EXECUTION

IN WITNESS WHEREOF, said CONTRACTOR and CITY have caused this Agreement to be executed on the day and year first above written.

This Agreement may be executed by the use of electronic signatures pursuant to Idaho Code § 28-50-107. If electronic signatures are utilized, the acknowledgement before a notary is not required.

I, Keith Wellens, certify under penalty of perjury pursuant to the law of the State of Idaho, that the foregoing is true and correct and that I am an authorized agent to bind Wellens General Contractors, Inc. to this Agreement. If I am signing this document utilizing an electronic signature, I understand that my electronic signature is valid and binding upon me to the same force and effect as a handwritten signature.

CONTRACTOR:

Wellens General Contractors, Inc.

_____

Keith Wellens, Owner

CITY:

City of Moscow, Idaho

_____

Arthur D. Bettge, Mayor

ATTEST:

_____

Laurie M. Hopkins, City Clerk

Approved as to Form:

_____

Mia Bautista, City Attorney

DRAFT

ACKNOWLEDGMENT

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 2024, before me, a Notary Public in and for said State, appeared Keith Wellens, known to me to be the person named above and acknowledged that they executed the foregoing document as the duly authorized representative for Wellens General Contractors, Inc.

_____
Notary Public for the State of _____
Residing at_____
My commission expires_____

DRAFT

LOMBARD
CONRAD
ARCHITECTS

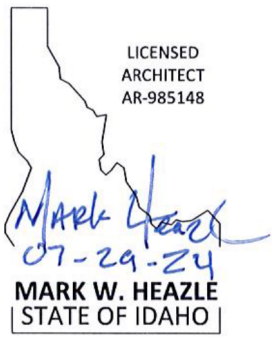
VOLUME 1

PROJECT: **Moscow City Shop**
650 N. Van Buren Street
Moscow, ID 83843

OWNER: **City of Moscow, Idaho**
504 S. Washington Street
Moscow, ID 83843

ARCHITECT: **Lombard-Conrad Architects**
472 W. Washington Street
Boise, ID 83702
208-345-6677

CONTACT: Principal in Charge: **Mark Heazle**
Project Architect: **Matt Geserick**



JOB NO.: 24000.01
DATE: July 24, 2024

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ADVERTISEMENT FOR BIDS

MOSCOW CITY SHOP

Sealed bids will be received at City Council Chambers of Moscow City Hall, 206 East Third Street Moscow, Idaho 83843 through 2:00 P.M. prevailing local time on November 6, 2024.

Bid proposals may be mailed prior to the opening to the attention of Britany Luft City of Moscow Community Development at 504 S. Washington Street, Moscow, ID 83843. All mailed proposal must be received prior to the bid opening time listed above and must be marked as “Moscow City Shop Facility” on the outside of the bid package.

Proposals will be opened and publicly read at the City Hall at 2:00 P.M. on November 6, 2024.
For additional information concerning drawings and specifications, contact Lombard-Conrad Architects, Matt Geserick (208) 780-0022.

Plans, specifications, bid proposal forms and other information are available for examination at:

Associated Builders and Contractors
1760 E Trent Ave.
Spokane Valley, WA 99216
(509) 534-0826
e-mail: admin@abcipc.org

Abadan Public Plan Room
603 E. 2nd Ave
Spokane, WA 99202
(509) 747-2964

Reed Construction Data
30 Technology Parkway South, Suite 500
Norcross, Georgia 30092
(800) 424-3996

Tri-Cities Construction Council
20 E Kennewick Ave.
Kennewick, WA 99336
(509) 582-7424/FAX: 582-6815
e-mail: shannonam@owt.com

Spokane Regional Plan Center
209 N. Havana St.
Spokane, WA 99202
(509) 328-9600/FAX: 328-7279
e-mail: projectinfo@plancenter.net

Idaho Associated General Contractors
1649 West Shoreline Dr., Suite 100
Boise, ID 83702
(208) 344-2531

Lewiston-Clarkston Plan Service
2117 - 12th Avenue
Lewiston, ID 83501
(208) 746-3591/FAX: 208-796-7018
e-mail: lcplancenter@gmail.com

Missoula Plans Exchange
201 N. Russell
Missoula, MT 59801
(406) 549-5002/FAX: 721-2941
e-mail: tbrooks@mpe.us

Blueprint Specialties
6205 W Overland Dr
Boise, ID 83709
(208) 377-0294

DESCRIPTION OF WORK: The work consists of 3 separate buildings to all be included in the bid and alternate costs. These buildings consist of a new shop, material storage building, and existing shop. All labor, materials, equipment and services necessary to provide the construction should be included in the bid.

Moscow City Shop: Construction of a new 18,800 square foot, single story, pre-engineered metal building in accordance with the plans and specifications with the steel support structure to be designed by the pre-engineered metal building manufacturer as a deferred submittal.

Salt and Materials Storage Building: Construction of a new 4,400 square foot, single story, timber and wood truss framed building in accordance with the plans. Material specifications are included on the plan set.

Existing Moscow City Shop: Re-cladding of the wall and roof assemblies of an existing 18,300 square foot, two-story, pre-engineered metal building in accordance with plans and specifications. Construction will include the removal of existing wall and roof panels, insulation, and vapor barrier and the installation of new insulated metal wall and roof panels in accordance with the plans and specifications.

BID BOND: A bid bond equal to 5% of the amount bid must accompany the bid proposal. (See instructions to bidders.)

PUBLIC WORKS CONTRACTOR'S LICENSE: Public Works Contractor's License for the State of Idaho is required to bid on this project. (See instructions to bidders and general conditions for further bidder qualifications.)

CONTRACT TIME: (365) calendar days from commencement of construction, substantial completion no later than 3/1/2026 (see instructions to bidders, bid proposal and agreement.)

ESTIMATED PROJECT COST: $6,135,000.00

PRE-BID CONFERENCE: The pre-bid conference and walk through will be held on October 16, 2024 at 1:00 P.M. The conference will be held at the existing Moscow City Shop at 650 Van Buren St. Please direct any questions related to the project to Lombard-Conrad Architects, Matt Geserick (208) 345-6677.

END OF ADVERTISEMENT FOR BIDS.

ALL BIDS SHALL BEAR THIS ADDRESS:
City of Moscow
206 East Third Street
Moscow, ID 83843

ARTICLE 1

PROJECT NAME AND LOCATION	Moscow City Shop Facility 650 N. Van Buren St. Moscow, ID 83843
ARCHITECT OR ENGINEER	Lombard-Conrad Architects (208) 780-0022 472 W. Washington St. Boise, Idaho 83702

CONTRACT TIME **CALENDAR DAYS:** 365 consecutive calendar days consecutive calendar days from commencement of construction, substantial completion by no later than 3/1/2026

LIQUID. DAMAGES **EACH EXCESS CALENDAR DAY:** $250.00

BID OPENING	**DATE:**	November 6, 2024
	TIME:	2:00 p.m.
	PLACE:	Bid opens at Council Chambers, Moscow City Hall 206 E. Third Street, Moscow, Idaho 83843

NAME AND ADDRESS OF BIDDER TELEPHONE NO.

IF PARTNERSHIP NAMES OF PARTNERS

IF CORPORATION STATE OF INCORPORATION

BID GUARANTEE **UNDERLINE ONE:**
Min. 5% of Bid BID BOND, CASH, CERTIFIED CHECK, CASHIER'S CHECK

ADDENDA RECEIPT ACKNOWLEDGED **ADDENDA NUMBERED: 1____ 2____ 3____ 4____**
(Check all that have been received)

ALLOWANCE ACKNOWLEDGED **NONE LISTED:**

ARTICLE 2

IN COMPLIANCE WITH THE NOTICE TO CONTRACTORS-INVITATION TO BID, AND IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS, THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS FOR THE PROJECT, THE UNDERSIGNED BIDDER, BEING DULY LICENSED TO PERFORM SUCH WORK BY THE STATE OF IDAHO AND BEING THOROUGHLY FAMILIAR WITH ALL LOCAL CONDITIONS AFFECTING THE COST OF THE PROJECT, HAVING CAREFULLY EXAMINED THE SITE, CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AND ANY ADDENDA THERETO PREPARED BY THE PROJECT ARCHITECT OR ENGINEER, PROPOSES TO PROVIDE, AND TO FURNISH FOR THE COSTS SET FORTH IN THE FOLLOWING BID SCHEDULE, ALL LABOR AND MATERIAL, TOOLS, UTILITIES, TRANSPORTATION, EQUIPMENT AND SERVICES REQUIRED TO PERFORM AND TO COMPLETE IN A WORKMANLIKE MANNER ALL THE WORK FROM THE DATE OF THE NOTICE TO PROCEED WITHIN THE ESTABLISHED CONSTRUCTION TIME, SUBJECT TO LIQUIDATED DAMAGES FOR EXCESS WORKING TIME AS ESTABLISHED UNDER ARTICLE 1.

ARTICLE 3 BID SCHEDULE

BASE BID **DESCRIPTION:** Base Bid.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #1 **DESCRIPTION:** Pre-engineered Metal Building Envelope System.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #2 **DESCRIPTION:** Salt and Material Storage Building.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #3 **DESCRIPTION:** Existing Shop Building Exterior Cladding.

FOR THE SUM OF:

_____**DOLLARS ($)**

THE LOW BIDDER WILL BE DETERMINED ON THE BASIS OF THE BASE BID PLUS ANY ALTERNATES WHICH ARE ACCEPTED. ALTERNATES MAY BE ACCEPTED IN ANY ORDER AND ARE NOT REQUIRED TO BE ACCEPTED IN SEQUENTIAL ORDER AS THEY ARE LISTED ON THE BID PROPOSAL FORM.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good for a period of sixty (60) calendar days after the scheduled opening time for receiving bids.

Upon receipt of written Notice of Intent to Award of this bid, Bidder will execute the formal Contract within ten (10) calendar days and deliver a Surety Bond or Bonds as required by Article 7 “Performance and Payment Bonds” of the Instructions to Bidders.

ARTICLE 4 LIST OF SUBCONTRACTORS

Plumbing

(Name) _____

(Address) _____

Idaho Plumbing Contractors License No. _____

Heating, Ventilating & Air Conditioning

(Name)_____

(Address)_____

Idaho Public Works Contractors License No._____

Idaho HVAC Contractors License No. _____

Electrical

(Name) _____

(Address) _____

Idaho Public Works Contractors License No. _____

Idaho Electrical Contractors License No. _____

Should the listing of subcontractors change due to selection of alternates or other similar circumstances, attach explanation.

Bidder warrants that bid has been prepared and that any contract resulting from acceptance of this bid is subject to Executive Order 2009-10 and the Fixed Price Construction Contract.

The undersigned notifies that it is of this date duly licensed as an Idaho Contractor and further that it possesses Idaho Contractor's License No. _____, and is domiciled in the State of _____.

Dated this _____ day of_____,_____.
(date) (month) (year)

Respectfully submitted by:

_____
(Company)

(Seal - if bid is by a corporation)

_____
(Street or PO Address)

_____
(City, State and zip code)

_____
(Authorized Signature)

_____
(Title)

_____
(Telephone Number)

_____
(FAX Number)

Have you remembered to include bid security (bid bond or a certified or cashiers check), Contractor's Affidavit Concerning Alcohol and Drug-Free Workplace?

Execute and Submit with Bid

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF _____

COUNTY OF _____

Pursuant to the Section 72-1717, Idaho Code, I, the undersigned, being duly sworn, depose and certify that _____ is in compliance with the provisions of Section 72-1717, Idaho Code; that _____ provides a drug-free workplace program that complies with the provisions of Title 72, Chapter 17, Idaho Code, and will maintain such program throughout the life of a state construction contract; and that _____ shall subcontract Work only to subcontractors meeting the requirements of Section 72-1717(1)(a), Idaho Code.

_____
Name of Contractor

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this _____ day of _____, _____.

Commission expires:

_____
NOTARY PUBLIC, residing at

_____

_____

FAILURE TO EXECUTE THIS AFFIDAVIT AND SUBMIT IT ALONG WITH YOUR BID SHALL MAKE YOUR BID NON-RESPONSIVE.

AIA® Document A701® – 2018

Instructions to Bidders

for the following Project:
(Name, location, and detailed description)

Moscow City Shop
650 N Van Buren Street
Moscow, ID 83843

THE OWNER:
(Name, legal status, address, and other information)

Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 S. Washington Street
Moscow, ID 83843

THE ARCHITECT:
(Name, legal status, address, and other information)

Lombard-Conrad Architects, Inc.
472 W. Washington Street
Boise, ID 83702

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ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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User Notes:

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- **.1** the Bidder has read and understands the Bidding Documents;
- **.2** the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- **.3** the Bid complies with the Bidding Documents;
- **.4** the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- **.5** the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- **.6** the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

See Bid Advertisement.

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper

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User Notes: (2050179377)

documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.
(Paragraph deleted)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

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§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

Via email.

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Paragraph deleted)

5% of bid.

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

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§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

See Bid Advertisement.

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:
(Paragraph deleted)
Bid rank.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law,

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the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

(Paragraphs deleted)

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- **.1** a designation of the Work to be performed with the Bidder's own forces;
- **.2** names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- **.3** names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(Paragraph deleted)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

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§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.

(Paragraphs deleted)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.

.5 Drawings

(Paragraphs deleted)

Title	Date
Moscow City Shop	July 24, 2024
Salt and Material Storage Building	May 27, 2020
Existing Moscow City Shop	September 27, 2024

.6 Specifications

Section	Title	Date	Pages
Volume 1		July 24, 2024	508
Volume 2		July 24, 2024	382

.7 Addenda:

Number	Date	Pages

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

(Paragraphs deleted)

[ ] The Sustainability Plan:

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(Table deleted)

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:
(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Moscow City Shop
650 North Van Buren Street
Moscow, ID 83843

THE OWNER:
(Name, legal status and address)

Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

THE ARCHITECT:
(Name, legal status and address)

Lombard Conrad Architects, Inc.
472 West Washington Street
Boise, ID 83702

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

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G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

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§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

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§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

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§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

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delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

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specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

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§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

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§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- **.1** The change in the Work;
- **.2** The amount of the adjustment, if any, in the Contract Sum; and
- **.3** The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

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§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

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.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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§ 9.7 Failure of Payment
If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion
§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use
§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

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§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

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.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

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promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

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or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

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approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

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§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

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§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

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§ 15.1.7 Waiver of Claims for Consequential Damages
The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision
§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

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§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

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§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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Supplemental Conditions

The terms and conditions contained herein are a Supplemental Conditions to which the Owner and Contractor agree are in addition to or replacement of the terms of the A201 -2017 AIA Document A201 General Conditions of the Contract for Construction.

In the event of any conflict between the terms and conditions of the AIA A201 and these Supplementary Conditions, these Supplemental Conditions shall control.

In the event of any conflict between the terms and conditions of AIA A201, the Supplementary Conditions, and the EDA Contracting Provisions for Construction Projects, the EDA Contracting Provisions for Construction Projects shall control.

With respect to all of the General Conditions, and all of the Contract Documents, and the entire contractual relationship between the Owner and the Contractor, no oral agreements, of any kind, type, or nature, shall be valid or binding in any manner upon the parties. The only Contract Documents, or agreements of any kind, type or nature, by and between the Owner and the Contractor which shall be valid and enforceable in any manner shall be those which are in writing, and signed by both parties by persons duly authorized, under the law, by both parties to execute said Agreements or Modifications.

With respect to the Contract Documents, any reference to the term “cost”, singular or plural, shall mean actual documented cost, without any markup on the part of the Contractor.

With respect to the Contract Documents, any reference to the term “agreement” shall only mean, an agreement in writing, signed by the parties to be charged by the terms of the agreement.

The Contractor, by reason of its expertise and status as a Licensed Public Works General Contractor in the State of Idaho, and by its entry into the agreement and Contract Documents with the Owner, shall be considered in a position of trust and confidence as a fiduciary to the Owner, and the taxpayers as such, and in particular with respect to acting as a guardian of the taxpayer funds used to fund the construction of the Project.

The following Articles of the A201 General Conditions shall be amended as follows:

§1.1.1 The Contract Documents include the Instructions to Bidders, the Contractor’s Bid, including that portion of the Contractor’s Bid which satisfies Idaho Code Section 67-2310. The Contract Documents shall also include any and all Shop Drawings and Submittals which are approved by the Architect, and which shall be deemed to be authorized by the Contractor even though submitted by any Subcontractor, Sub-Subcontractor or Materials Supplier.

§1.1.2.1 Neither the Architect nor the Architect’s consultants shall be considered third party beneficiaries of the Contract or the Contract Documents in the relationship between the Owner and the Contractor. This provision does not affect the Architect’s entitlement to performance and enforcement of obligations under the contract as specified in 1.1.2 of the General Conditions. No failure in performance by neither the Owner nor the Contractor shall relieve, in any way, the Architect from the full and complete performance of the duties enumerated herein which duties are, by reference, included within the Agreement for Professional Services dated November 3, 2011, between the Owner and the Architect.

§1.2.1.1 All Contract Documents are intended to be consistent. However, anything provided in one document but not provided in another shall be of like effect as if shown or mentioned in both. This does not constitute a conflict, discrepancy, or error between the two. In the event of directly conflicting provisions, precedence shall be given as follows: (1) Modifications of the Agreement, with those of later date having precedence over those of earlier date; (2) the Agreement; (3) Addenda to the Bid Documents; (4) the General Conditions of the Contract for Construction; (5) the Specifications; (6) the

Drawings, with precedence given to figures in the event of any conflict between figures and scaled measurements, and precedence given to large scale drawings in the event of any conflict between large scale drawings and small scale drawings.

§1.2.1.2 Inconsistencies within any one Contract Document, or inconsistencies not otherwise resolved by the above prioritization, shall be resolved in favor of Owner receiving (a) the greater quality or greater quantity of goods, services or performance, or (b) the greater obligation to Owner in the terms and conditions. Both (a) and (b) shall be resolved in Owner's sole discretion without a change in the contract sum.

§1.2.1.3 Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and (1) the provisions of any standard, specification, manufacturer's specifications, manual, code, or instruction (collectively, "standards"), whether or not specifically incorporated by reference in the Contract Documents, unless the standards provide the better quality or greater quantity of Work to Owner, in which case the standards shall take precedence; or (2) unless local conditions prevent installation in the prescribed manner, in which case, the approval of the Architect and Owner shall be obtained before proceeding with this part of the Work; or (3) the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

§1.2.4 All Work shall be the best of the respective kinds specified or indicated. Should workmanship or materials be required which are not directly or indirectly called for in the Specifications or shown on the Drawings, but are consistent with the Contract Documents and reasonably inferable by them or standard industry practice, said workmanship or materials shall be the same as similar parts that are detailed, indicated or specified, or shall match or exceed the quality of existing improvements, and Contractor shall understand the same to be implied and provide for the same as fully as if it were particularly described or delineated.

§1.2.5 Contractor has included within the Contract Sum all labor, materials, equipment, and services that are likely to be required for the Project in accordance with the requirements of state laws, local building codes, local building officials, manufacturer's recommendations, building standards, and trade practices. To the extent, if at all, that the Contract Documents contain ambiguities, discrepancies, errors, or omissions, and to the extent, if at all, that there are discrepancies between the Contract Documents and the Project site and surveys (collectively referred to hereafter in this Section as "errors and omissions"), Contractor hereby waives any claims for additional compensation or damages or additional time resulting from any such errors and omissions to the extent Contractor has actually observed, or with the exercise of reasonable care should have observed, those errors and omissions and failed to report them to Owner and Architect/Engineer prior to executing the Agreement.

§1.2.6 All of the Work shall conform strictly to the Contract Documents. No change there from shall be made without Contract Modification. Where detailed information is lacking, or should discrepancies appear among the Contract Documents, Contractor shall, in writing, with a copy to the Owner, a request for interpretation or information from Architect/Engineer before proceeding with the Work.

§1.2.7 Reference in the Specifications to an article, device, or piece of equipment in the singular number shall apply to as many such articles as are shown on Drawings or required to complete the installation. Mention in the Specifications or indication of the Drawings of articles, products, materials, operations or methods requires Contractor to provide and install such items.

§1.2.8 Conditions of the Contract shall be read by all prime contractors and by each subcontractors or sub-subcontractor and shall be considered a part of each section of the technical Specifications. Provisions of Contract Documents are binding on contractors, subcontractor and sub-

subcontractors for all work shown or indicated on the original Contract Documents plus any additional work authorized by change order, interpretation or field orders.

§1.2.9 The Contractor shall notify the Architect of any condition he finds where, in his judgment, it will be desirable to modify the requirements to produce the best results. If the Contractor fails to make such request, he is deemed to have accepted the specified and/or detailed method of installation as being adequate to produce first class, satisfactory work.

§1.2.10 Requests by the Contractor for written interpretations and/or detail drawings shall be made to the Architect, and copied to the Owner, in a timely manner such as will allow ample time for their preparation and delivery without causing delays in the work. Failure of the Contractor to request needed clarifications and/or his proceeding with affected work prior to receiving same shall indicate his acceptance of any and all costs and/or delays required on account of necessary corrections.

§1.4.1 The Specifications are of the abbreviated or streamlined type and include incomplete sentences. Omission of words or phrases such as “the Contractor shall”, “in conformity therewith”, “shall be”, “as noted on the Drawings”, and “according to the plans” are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the Drawings. The misplacement, addition or omission of any letter, word, or punctuation mark shall in no way affect the true spirit, intent, or meaning of the Contract Documents. The words “shown,” “indicated,” “noted,” “scheduled,” or words of like effect, shall be understood to mean that reference is made to the Drawings accompanying the Specifications.

§1.4.2 Where the word “similar” or “typical” occurs on the drawings, it shall be used in this general sense and not as meaning identical or exact, and all details shall be worked out in relation to their location and their connection to other parts of the Work. Where there is a question of intent, notify the Architect regarding interpretation.

§1.4.3 Where on any Drawings a portion of the Work is drawn out and the remainder is indicated in outline, the drawn out parts shall apply also to other like portions of the Work. Where ornament or other detail is indicated by starting only, such details shall also apply to other similar parts of the Work, to properly complete the Work in full, unless specifically indicated otherwise.

§1.4.4 Where reference herein is made to products or materials “as approved” or “as selected,” selection or approval shall be by Architect/Engineer and Owner.

§1.6.3 The Owner’s Representative shall be copied by electronic means on any and all electronic or written communications by and/or between the Contractor, the Contractor’s Subcontractors and the Architect.

§1.9 <u>Execution of Contract Documents</u>

§1.9.1 Execution of the Contract by Contractor is a representation by Contractor that the Contract Documents are full and complete, are sufficient to have enabled Contractor to determine the Cost of the Work and Contract Sum, and to enable Contractor to construct the Work described therein, and otherwise to fulfill all its obligations hereunder, including, but not limited to, Contractor’s obligation to construct the Work for an amount not in excess of the Contract Sum on or before the Contract time established in the Agreement. Contractor further acknowledges and declares that it and its subcontractors have visited and examined the site, examined all physical, legal and other conditions affecting the Work, and is fully familiar with all of the conditions thereon and there under affecting the same. In connection therewith, Contractor specifically represents and warrants to Owner that it has, by careful examination, satisfied itself as to (1) the nature, location, and character of the Project and the site, including, without limitation, the ground conditions and all structures and obstructions thereon and there under, both natural and man-made, and the surrounding area; (2) the nature, location and character of the general area in which the Project is located, including, without limitation, its climactic conditions, available labor supply and labor

costs, and available equipment supply and equipment costs; and (3) the available quality and quantity of all materials, supplies, tools, equipment, labor and professional services necessary to complete the Work.

§1.9.2 Contractor recognizes the degree of care required for the specific site construction circumstances with respect to safety, protection of pedestrians, cleanliness of the site, health and other laws, and protection of existing utilities, adjacent streets, and property. In arriving at the contract Sum and the Contract Time, contractor has, as an experienced and prudent contractor, exercised its best judgment and expertise to include the impact of such circumstances upon the Contract Sum and the Contract time.

§2.2.1 THIS SECTION IS VOID.

§2.2.2 THIS SECTION IS VOID.

§2.2.3 THIS SECTION IS VOID.

§2.2.4 THIS SECTION IS VOID.

§2.3.4 Add the following to the first sentence of paragraph 2.2.3: "...to the extent that such information is readily available to the Owner."

§2.3.7 Copies of data furnished by Owner or Architect/Engineer to Contractor, or Contractor to Owner or Architect/Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

§2.3.8 Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within sixty (60) days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the sixty (60) day acceptance period will be corrected by the transferring party. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data creator.

§2.4.1 The term "repeatedly" in this Article, shall mean on more than two (2) occasions after receipt of not less than twenty four (24) hours written notice from either, the Owner, or the Architect. The Contractor agrees that in addition to the Owner's Right to Stop the Work, that any such repeated failure shall be agreed to be sufficient grounds for termination as provided in the Contract Documents.

§3.2.1 Add the following after the first sentence: If document conflicts are not raised in a timely manner, (so that Work can proceed without delay), the Contractor will be deemed to choose the more costly method unless otherwise provided for which shall be at the Contractor's expense.

§3.2.1.1 Within sixty (60) days from the Notice to Proceed, the Contractor shall certify in writing to the Architect that it has made the review required under Subparagraph 3.2.2 and that it has discovered no errors, omissions or inconsistencies or identifying in as much detail as possible all errors, omissions, or inconsistencies the Contractor has discovered. Contractor shall have a continuing obligation during the Project to advise the Architect and Owner's Representative of any errors, omissions or inconsistencies it discovers.

§3.3.1.1 Where construction means, methods, techniques, sequences and procedures are specified, either directly, by reference to industry standards, or otherwise, the Contractor shall review specified procedures and, if they will not produce the intended results, cannot be warranted, or otherwise

are objectionable to the Contractor, the Contractor shall propose alternative procedures. Where no proposal is received in timely manner, the Contractor, by signing the Agreement, has agreed that the specified procedures are acceptable, warrantable and will be used to produce the intended results. The Contractor is responsible for all coordination of all changes, created as a result of shop drawings, with the various subcontractors and suppliers under Contract for work of the Contractor.

§3.4.1.1 Contractor's obligations under Paragraph 3.4.1 shall include, without limitation, the obligation to pay all subcontractors and any other person or entity having bond rights regarding the Project due to their performance of Contractor's obligations under the Contract. Contractor agrees to keep the Project and the Project site free and clear of any and all subcontractor claims (bond claims or otherwise) filed or served by any person or entity at any tier performing the Work or Contractor's obligations under the Contract.

§3.4.1.2 Contractor agrees to indemnify, defend, reimburse and hold harmless (with counsel approved by Owner) Owner and Architect/Engineer from, for, and against any and all claims referenced in Paragraph 3.4.1.1, and actions, suits, or proceedings relating to such claims and any and all related costs and expenses incurred by Owner, including, without limitation, attorneys' fees and expert/consultant fees.

§3.4.3.1 Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Contractor shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts, and any other individuals associated with the Project. Contractor shall be responsible for labor peace on the Project and shall at all times make its best efforts and judgment as an experienced contractor to adopt and implement policies and practices designed to avoid work stoppages, slowdowns, disputes, or strikes where reasonably possible and practical under the circumstance and shall at all times maintain Project-wide labor harmony. Except as specifically provided in Paragraph 8.3.1, Contractor shall be liable to Owner for all damages suffered by Owner occurring as a result of work stoppages, slowdowns, disputes, or strikes.

§3.4.3.2 The Contractor shall insure, that neither the Contractor, nor any Subcontractor, nor any Sub-Subcontractor shall employ any illegal alien personnel on the Project.

§3.4.4 Subcontractors whose Work is unsatisfactory to Owner or Architect/Engineer, or is considered by Owner or Architect/Engineer to be careless, incompetent, unskilled or otherwise objectionable, shall be dismissed from Work under the Contract upon written notice from Owner or Architect/Engineer. No additional compensation shall be provided to Contractor due to the proper dismissal of a subcontractor by Owner or Architect/Engineer.

§3.4.5 Contractor shall coordinate all Work of like material in order to produce harmony of matching finishes, textures, colors, etc., throughout the various components of the Project.

§3.9.1 Change to read: The Contractor shall employ a competent, full time Superintendent during performance of the Work. Any change in the Superintendent personnel shall be reviewed and approved by the Architect and Owner. The Superintendent shall have full authority to represent the Contractor and communications given to the Superintendent shall be a binding as if given to the Contractor. Important communications shall be confirmed in writing. All other communications shall be similarly confirmed on written request in each case. The name and qualifications of the Superintendent will be submitted before the start of Construction. The Superintendent shall have a thorough understanding of the following:

.1 A complete understanding of the administrative procedures of the project.

.2 Project scheduling, sequencing of self-performed and subcontractor work.

.3 Layout and oversee the installation of each trade involved in the Work.

.4 Be knowledgeable of the installation procedures for each trade involved in the Work.

.5 Applicable building codes.

§3.10.1.1 The Contractor's construction schedule shall be revised and updated not less than every two (2) weeks during the course of the Work on the Project. The Contractor shall deliver each updated construction schedule to both the Architect and the Owner's Representative in a timely manner. The Contractor shall be responsible to notify the Owner's Representative and the Architect, in writing, if and when any element of the Work as planned, is in any way delayed, as reflected or not in the Contractor's construction schedule. It is the intent of this Article that the Owner and the Architect be kept fully informed as to any performance issues in any way affecting the achievement of the construction schedule as planned, in order that any issues relating to the performance of the Work by the Contractor, any Subcontractor, or any Sub-Subcontractor may be addressed in a timely and expeditious manner to avoid delay and cost to the Owner.

§3.10.1.2 It is specifically understood and agreed that the "float" or "slack" time for the whole or any part of the Work as provided in Contractor's construction schedule shall belong solely to Owner.

§3.11.1 In addition, the Contractor shall prepare, keep, and maintain at the site As Built Drawings of all of the Work. At the conclusion of the Project, the Contractor shall deliver one set of As Built Drawings to the Owner and one set of As Built Drawings to the Architect.

§3.12.7.1 All approvals required by this Article shall be in writing.

§3.12.10.1 Owner shall be entitled to deduct from the Contract Sum amounts paid to Architect/Engineer for evaluation of any additional resubmittals by Contractor to the extent such resubmittals by Contractor are not the fault of Owner or Architect/Engineer.

§3.15.1.1 The Contractor shall also be responsible for and shall complete a final clean up prior to turning the Project over to the Owner for beneficial occupancy and use by the Owner.

§3.19 <u>Maintenance and Inspection of Contractor's Books and Records</u>

§3.19 <u>Nondiscrimination</u>

§3.19.1 Contractor shall not discriminate based on race, religion, color, sex, marital status, familial status, national origin, age, mental or physical disability, sexual orientation, gender identity, source of income, or political affiliation in programs, activities, services, benefits or employment. Contractor shall not discriminate against minority-owned, women-owned, or emerging small businesses. Contractor shall include a provision in each subcontract requiring subcontractors to comply with the requirements of this Paragraph.

§7.1.4 Owner will not be responsible for additional costs, fees, or time associated with any altered or additional Work unless a Modification is properly and timely prepared and executed as required in the Contact Documents. Contractor hereby waives any argument that Owner's conduct (including, but not limited to, orally approving changes) amounts to a waiver of the prior, written change requirements of the Contract Documents.

§7.2.2 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor, materials, and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over One Thousand Dollars ($1,000.00) be approved without such itemization.

§7.2.2.1 No administrative time (at the job site, home office, or any other location) shall be allowed as a line item of the estimated cost of a change order, including the Superintendent's time. Administrative costs are considered to be part of the overhead and profit of the Contractor.

§7.2.2.2 Construction Equipment Usage Costs: For rental cost for materials for machinery and equipment rented from others, the actual rental costs paid plus compensation for furnishing all fuel, oil, lubrication, repairs, maintenance and insurance to the extent that such amounts are not included in the outside rental rate.

.1 Contractor's own equipment and small tools are considered part of the Contractors overhead and profit and no allowance charge will be permitted as part of any change in the Work.

§7.2.3 The amount allowed for overhead and profit on any change order is limited to the amounts indicated in subparagraph 7.2.4 of these Supplementary Conditions.

§7.2.4 For purposes of paragraphs 7.2 and 7.3 of these Supplementary Conditions, the allowance for combined overhead and profit shall be limited as follows, unless otherwise provided in the Contract Documents:

.1 for total changes of $10,000 or less in direct cost, the amount allowed for overhead, profit, bonds and insurance for the Contractor and all subcontractors of any tier, combined shall not exceed fifteen percent (15%) of direct costs.

.2 for total changes exceeding $10,000 in direct cost, the amount allowed for overhead, profit, bonds and insurance for the Contractor and all subcontractors of any tier, combined shall not exceed ten percent (10%) of direct costs.

.3 the Contractor will determine the apportionment between the Contractor and its subcontractors of allowable amounts of overhead, profit, bonds and insurance.

§7.2.5 Any Change Order prepared, including but not limited to those arising by reason of the parties'mutual agreement or by mediation, shall constitute a final and full settlement of all matters relating to or affected by the change in the work, including, but not limited to, all direct, indirect and consequential costs associated with such change and any and all adjustments to the Contract Sum and Contract Time. In the event a Change Order increases the Contract Sum, the Contractor shall include the work covered by such Change Order in the Application for Payment as if such work were originally part of the Project and Contract Documents.

§7.2.6 By the execution of a Change Order, the Contractor agrees and acknowledges that he has had sufficient time and opportunity to examine the change in work which is the subject of the Change Order and that he has undertaken all reasonable efforts to discover and disclose any concealed or unknown conditions which may to any extent affect the Contractor's ability to perform in accordance with the Change Order. Aside from those matters specifically set forth in the Change Order, the Owner shall not be obligated to make any adjustments to either the Contract Sum or Contract Time by reason of any conditions affecting the change in work addressed by the Change Order, which could have reasonably been discovered or disclosed by the Contractor's examination.

§8.1.2.1 The date indicated of commencement will be established in a Notice to Proceed.

§8.1.3.1 The Contractor shall substantially complete the work within **365 consecutive calendar days** after commencement of construction, but no later than March 1, 2026.

§8.3.2.1 Extension of time shall be Contractor's sole remedy for delay unless the same shall have been caused by acts constituting intentional interference by the Owner with Contractor's performance of the Work where and to the extent that such acts continue after Contractor's notice to Owner of such

interference. Owner's exercise of any of its rights under Article 7 Changes in Work regardless of the extent or number of such changes, or Owner exercise of any of its remedies of suspension of Work, or requirement of correction or re-execution of any defective Work, shall not under any circumstances be constructed as intentional interference with Contractors performance of the Work.

§8.3.3.1 In no event shall a claim for damages for delay be construed to effect, in any way, the waiver of damages provided for in Article §15.1.6.

§8.3.4 No extension of time for completion will be allowed for delays or suspensions caused by or contributed to by the fault or negligence of Contractor.

.1 To make a request for a change to the Contract time, the Contractor must identify the trades involved, provide a statement from each trade indicating the man hours involved by each, and a statement from the Contractor indicating how the change effects the critical path of the construction.

.2 No change will be granted if the change in Work does not affect the critical construction path as identified on the construction schedule submitted by the Contractor and approved by the Architect.

.3 work that deviates from the Contract Documents and the Architect requires to be corrected, are not grounds for time extensions.

.4 Extreme weather conditions are not necessarily grounds for delay.

§8.3.5 Contractor will be entitled to no delay damages, wage escalation, material escalation, extended overhead, or additional compensation of any kind for any delay except for such delays as may be caused solely by a default of Owner in this Agreement.

§8.3.6 The cost for delay construed to be caused by the Owner, the Architect or their agents must be identified in writing within 7 days of occurrence. Failure to promptly identify delays in writing waives any and all claims of the Contractor to collect for damages arising there from.

§9.2.1 The schedule of values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single line item on AIA Document G703, Application and Certification for Payment, Continuation Sheet. Provide a labor and material breakdown for each general and subcontracted item of Work including mechanical and electrical. All subcontractors of $50,000 or more must include sub-contract breakdown. Update breakdown with each application for payment.

§9.3.1.3 The form of Application for Payment shall be AIA Document G702, Application and Certificate for Payment supported by AIA Document G703 or Architect's Standard Form, Continuation Sheet; notarized.

§9.3.1.4 Prior to the release of funds (first progress payment); the Contractor shall submit a list of subcontractors, construction schedule, list of all products and materials to be incorporated in the Work, and schedules of values.

§9.3.1.5 Retainage: A sum not to exceed five percent (5%) of the monies earned by the Contractor on estimates during the progress of the improvement or Work shall be reserved by the Owner. Said sum is to be retained by the Owner as a trust fund for the protection and payment of any person or persons, mechanic, subcontractor or material supplier who shall perform any labor upon such Contract or the doing of said work.

9.3.2.1 Off-site storage will not be approved at locations more than thirty (30) miles from the Project site or outside the State of Idaho and any payment for any off-site storage is subject to the following:

.1 The Contractor must provide at least thirty (30) days' advance written notice of its request to store off-site. Such notice must include a description of the type, quantities, locations and values of materials involved for the next billing cycle. All invoices must indicate the type, quantities and value of materials or equipment for which payment is requested;

.2 All materials stored off-site must be segregated and clearly marked as being the "Property of the Moscow Police Services Facility"

.3 The Architect and/or the Owner's Representative must have unrestricted access to the stored materials during all business hours and may physically inventory all invoiced materials and equipment and may physically inspect the storage conditions;

.4 The Contractor must provide written Consent of Surety to off-site storage of materials and equipment and to payment for such materials and equipment prior to incorporation in the Work. Consent must be from the Surety. Consent of local broker or agent is not acceptable;

.5 The Contractor must maintain and must provide to the Architect, upon request, a current log of stored materials and equipment, which reflects when materials and equipment are used or added;

.6 The Contractor must obtain and maintain all risk property insurance at replacement cost, with the College of Southern Idaho listed as loss payee on all materials and equipment stored off-site and in transit.

§9.6.1.1 The Owner shall pay progress payments, following receipt of the Architect's Certificate for Payment, in accord with the usual and ordinary time frame for processing payments and bills by the Owner, and in accordance with law.

§9.6.4.1 The Owner hereby requires, and the Contractor hereby agrees, that the Contractor shall obtain and shall require each Subcontractor to provide to the Contractor, for delivery to the Owner, the Owner's Representative, and the Architect, lien waivers as proof of payment, from each and every Subcontractor, Sub-Subcontractor, material man and supplier. Said lien waivers as proof of payment shall be provided with seven days of the date of each payment to the Contractor. In the event that the Contractor fails to obtain and provide the lien waivers within the time frames provided herein, said failure shall be considered a material breach of the Contract Documents, grounds for termination, and the further exercise of any legal or equitable right the Owner shall choose to exercise.

§9.6.8 With each Application for Payment, Contractor shall furnish a conditional waiver and release of claims for itself and each first-tier subcontractor who furnished labor, equipment, materials or services to the Project during the period covered by the Application for Payment. Upon each payment by Owner, Contractor shall execute and cause first-tier subcontractors to execute an unconditional waiver and release of claim acknowledging receipt of all payments due through the period covered by the previous Application for Payment. The conditional and unconditional claim releases shall be on forms agreed to by the owner, and Contractor shall deliver the executed releases to Owner with its next succeeding Application for Payment, including the Final Application for Payment.

§9.6.9 In addition to the retainage specified in the Agreement, Owner may withhold progress payments or final payment or any portion thereof on account of (1) defective or nonconforming Work not remedied, (2) claims filed or a reasonable basis to believe that such claims will be filed, (3) failure of Contractor to make payments properly for labor, materials, equipment, or subcontracts, (4) failure of Contractor to submit to Owner claim waivers and releases, or (5) significant failure to carry out the Work in strict accordance with this Agreement. Owner may withhold from a progress payment or final payment up to one hundred fifty percent (150%) of the estimated or actual costs associated with the above items.

§9.8.1.1 For Substantial Completion to be achieved, Owner must have received a temporary or final certificate of occupancy and all other governmental approvals as necessary and required for Owner

to occupy or utilize the Work or designated portion thereof for its intended purpose. All Work other than incidental or corrective or punch

list work and final cleaning shall have been completed. The Work is not Substantially Complete if all systems and parts are not useable, if utilities are not connected and operating normally, or if the Work is not accessible by normal vehicular and pedestrian traffic routes. The fact that the Owner may occupy the Work or designated portion thereof does not indicate that the Work is Substantially Complete or is acceptable in whole or in part, nor does such occupation toll or change any liquidated damages from the Owner.

§9.8.2.1 The Contractor, in conjunction and cooperation with the Owner's Representative and the Architect, shall prepare and submit the list of items to be completed, also known as a punch-list, for every segment of the Work, prior to it being covered by other construction Work, in order to allow the Owner, the Owner's Representative and the Architect to inspect and evaluate each segment of the Work.

§9.8.2.2 Upon execution of Certificate of Substantial Completion, the Contractor shall attach a list of each outstanding and unresolved Claim or Lien; any Claim or Lien not so attached and identified, other than retainage and the undisputed balance of the Contract Sum, shall be deemed waived and abandoned.

§9.8.3.1 The Architect, in conjunction, coordination, and simultaneously with the Owner's Representative and the Contractor, shall make the inspection(s) required by this Article.

§9.8.3.2 If the Owner or Architect determines that the Work or designated portion is not substantially complete, the Contractor shall expeditiously complete the Work or designated portion, again request an inspection, and pay the costs associated with the reinspection, including fees of the Architect and consultants of the Architect or Owner.

§9.8.4.1 A Certificate of Substantial Completion shall only be issued after the Architect timely seeks, and obtains, the Owner's review and written approval that the Work is substantially complete.

§9.8.4.2 The Contractor's warranties, and that of all Subcontractor's and Sub-Subcontractors, shall not commence until final completion and final payment by the Owner. The Contractor shall specially warrant all of the Work on the Project for a period of one (1) year from the date of Final Payment, as defined in the Contract Documents.

§9.8.6 Liquidated damages. The Owner will suffer financial loss if the project is not Substantially Complete on the date set forth in the Contract Document. Inasmuch as the actual loss due to the lost use of the facility and inconvenience to Owner and the public are difficult to ascertain, The contractor shall agree, as a condition of the Contract that the Contractor (and his Surety) shall be liable for and shall pay to the Owner the sum hereinafter stipulated as fixed, agreed and liquidated damages for each calendar day of delay until the Work is Substantially Complete: **Two Hundred and Fifty Dollars ($250.00)**.

§9.10.1.1 If the Architect determines that some or all of the punch list items are not accomplished, the Contractor shall be responsible to the Owner for all costs, including reinspection fees, for any subsequent inspections to determine compliance with the punch list.

§9.10.1.2 The Architect's approval of the final Certificate for Payment shall establish the date of Final Completion upon its execution by the Owner.

§9.10.2.1 Final payment shall not become due until after the Owner has formally accepted the Project (Final Acceptance). To achieve Final Acceptance, the Architect must issue a final Certificate for Payment under subparagraph 9.10.1, an occupancy permit must have been issued, Final Completion must have occurred and the Contractor must have submitted all warranties, guarantees, manuals,

operation instructions, certificates, spare parts, maintenance stock, specified excess material, and other documents or items required by the Contract Documents to the Architect.

§11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits:

1. Workers' Compensation:

   (a) State: Statutory

   (b) Employer's Liability: $100,000 per Accident
   $500,000 Disease, Policy Limit
   $100,000 Disease, Each Employee

2. Comprehensive or commercial general liability including premises operation; owners and contractors protective liability, products and completed operations liability, personal injury liability (including employee acts), broad form property damage liability and blanket contractual liability:

   (a) For any claim for bodily injury, property damage, personal injury or due to a contractual liability, limits of not less than $1 million per occurrence.

   (b) For products and completed operations coverage, coverage is to be maintained for a period of two (2) years following final payment.

   (c) For the hazards of explosion, collapse, and underground, commonly referred to as XCU, coverage shall be required if the exposures exist. This coverage may be provided by the subcontractor if the State and prime contractor are named as additional insured.

3. Business auto liability (including owned, non-owned and hired vehicles) in an amount of not less than $1 million combined single limit.

4. If the General Liability coverage is provided by a Commercial Liability policy, the:

   (a) General Aggregate shall be not less than $2,000,000.

   (b) Fire legal liability shall be provided in an amount not less than $500,000 per occurrence.

5. Umbrella Excess Liability: An umbrella policy may be used in combination with other policies to provide a minimum coverage of $1,000,000.

§11.1.2.2 The Owner shall be named as an additional insured on the insurance required in 11.1.2.1 items 2, 3 and 5 above.

§11.3.1 Change the first sentence to read: Unless otherwise provided, The Contractor, at its sole expense, shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder’s risk “all-risk” or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles.

§11.4.1.1 The Contractor shall furnish separate performance and payment bonds to the Owner. Each bond shall set forth a penal sum in an amount not less than the Fixed Price Contract Amount and shall include a power of attorney attached to each bond. The signature of both the Contractor (principal) and the Surety are required. If the Surety is incorporated, both bonds must have the corporate seal. Each bond furnished by the Contractor shall incorporate by reference the terms of this Contract as fully as though they were set forth verbatim in such bonds. In the event the Fixed Price Contract Amount is

adjusted by Change Order executed by the Contractor, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amount. The performance and payment bonds furnished by the Contractor shall be AIA Document A312, or a standard surety form certified approved to be the same as the AIA Document A312, and shall be executed by a Surety, or Sureties, reasonably acceptable to the Owner, listed as acceptable by the U.S. Treasury, and authorized to do business in the State of Idaho. Such surety or sureties shall be within the bonding limits listed in the U.S. Treasury circular 570.

§11.4.1.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

§ 11.4.1.3 It is the Contractor's obligation to notify the Surety in the event of changes in the Contract Documents, which in the absence of notification might serve to discharge the Surety's obligations, duties, or liability under bonds or the Contract.

§12.3.1 Nothing contained in this Article shall be considered a contractual duty or requirement for the Owner to accept nonconforming Work, nor shall anything contained herein relieve the Contractor in any way from the requirement to provide the Work in conformance with the Contract Documents.

§13.1.1 The Contract and all interpretation of the Contract Documents shall be governed by the law of the State of Idaho, and the U.S. Government (appropriate regulations).

§13.1.2 Each Contractor and his subcontractors and sub-subcontractors shall comply with all Idaho Statutes with specific reference to Public Works Contractor's State License Law, Title 54, Chapter 19, Idaho Code, as amended.

§15.1.2.1 Claims must be initiated by written notice to the Architect and the other party. An additional claim made after the initial Claim has been implemented by Change Order will not be considered.

§15.1.2.2 Contractor shall cooperate with Architect/Engineer and Owner in an effort to mitigate the alleged or potential damages, delay, or other adverse consequences arising out of the condition which is the cause of such a Claim. Failure to make a Claim within the twenty-one (21) day timeframe will result in Contractor's waiver of the Claim and all related damage. Claims must be made by written notice. Claims must contain reasonably detailed information (including all supporting documents) sufficient to allow meaningful review by Owner and Architect/Engineer. Contractor must provide all impacts to the Contract Time and Contract Sum at the time the Claim is submitted. Failure to do so will result in Contractor's waiver of the Claim and all related damage.

§15.1.5.1 Such notice shall include detailed documentation of the cause or event resulting in the need for the extension of time and a critical path schedule analysis based upon the approved Contractor's construction schedule showing the impact of the cause or event on the critical path of the approved Contractor's schedule. Failure to do so will result in Contractor's waiver of the Claim and all related damages.

§15.1.5.2 A notice of Claim for additional time due to adverse weather conditions shall include the monthly issue of *Local Climatological Data* for the months involved, plus the "Normal, Means and Extremes" table from the latest *Annual Summary of Local Climatological Data*, both of which are published by the US Department of Commerce, National Oceanic and Atmospheric Administration, national Climatic Data Center located in Asheville, NC 28801. Failure to do so will result in Contractor's waiver of the Claim and all related damages. Unless otherwise agreed by Owner and Contractor, the "Normal, Means and Extremes" table shall be the basis for determining the number of adverse weather days and the effect on the Work resulting there from which Contractor should have expected to encounter.

§15.1.8 Concealed or Unknown Conditions. If conditions are encountered at the site which are subsurface or are otherwise concealed or unknown physical conditions which differ materially from those indicated in the Contract Documents or which were not reasonably susceptible of being disclosed by the Contractor's examination of the site in accordance with Subparagraph 3.2.1 of these Supplementary Conditions, then notice by the observing party shall promptly be given to the Architect and the other party before the conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially from the Contract Documents or if they were not reasonably susceptible of being disclosed by the Contractor's examination of the site, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both, if the conditions cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Contract. If the Architect determined that the conditions at the site do not warranty an adjustment in the Contract terms, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. If the Owner and the Contractor cannot agree on an equitable adjustment to the Contract terms or otherwise disagree with the determination of the Architect, the matter shall be subject to further proceedings in accordance with Paragraph 15.2.

§15.1.9 The Contractor agrees and acknowledges that he has had sufficient time and opportunity to examine the Contract Documents and the site of the work in order to undertake any necessary actions to determine the character of the subsurface materials and site conditions to be encountered. No adjustment in the Contract Time or Contract Sum shall be permitted in connection with a subsurface, concealed or unknown site condition, which does not differ in any material respect from those conditions, disclosed or which reasonably should have been disclosed or identified by the Contractor's examination of the Contract Documents and the site of the work.

§15.1.10 The Contractor shall not be entitled to an adjustment in Contract Time or in contract Sum for any delay or failure of performance to the extent such delay or failure was caused by the Contractor or anyone for whose acts the Contractor is responsible. The Contractor shall be entitled to an equitable adjustment in Contract Time, and may be entitled to an equitable adjustment in Contract Sum, if the cost or time of failure of performance is delayed or changed due to the fault of the Owner. To the extent any delay or failure of performance was concurrently caused by the Owner and Contractor, the Contractor shall be entitled to an adjustment in the Contract Time for that portion of the delay or failure of performance that was concurrently caused, but shall not be entitled to an adjustment in Contract Sum. In the event that the Contractor is entitled to an adjustment in the Contract Sum, the Owner will pay only for the following verifiable costs directly associated with the time extension or delay: 1) the actual labor costs, fringe benefits, employment taxes and insurance related to the project Superintendent; 2) the cost associated with the fair rental value of the Project Superintendent's vehicle directly related to the time extension; 3) the direct costs attributable to the extension for the field office facility, including telephone lines, utilities, power, lights, water, and sewer (toilets). Mark-up on these costs will not be allowed. The Contractor shall make all reasonable efforts to prevent and mitigate the effects of any delay regardless of cause.

END OF SUPPLEMENTAL CONDITIONS

LOMBARD CONRAD ARCHITECTS

CERTIFICATE OF SUBSTANTIAL COMPLETION

Date:	**Architect:**
Project Name:	**L/C Project #:**
Owner:	**Contractor:**
Date of Issuance:	**Contract Date:**

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The work performed under this Contract has been reviewed and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby established as

Which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

Definition of Date of Substantial Completion

The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the Contractor and verified and amended by the Architect, is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. The date of commencement of warranties for items on the attached list will be the date of final payment unless otherwise agreed to in writing.

Lombard Conrad Architects, Inc.	BY _____	_____
Architect	Architect / Project Manager	Date

The Contractor will complete or correct the Work on the list of items attached hereto within _____ days from the above Date of Substantial Completion.

_____	BY _____	_____
Contractor	Contractor's Representative	Date

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at

_____ Local Time on _____ (Date).

_____	BY _____	_____
Owner	Owner's Representative	Date

The responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows: (Note – Owner's and Contractor's legal and insurance counsel should determine and review insurance requirements and coverage; Contractor shall secure consent of surety company, if any.

STANDARD FORM OF GUARANTEE

Each Prime Contractor shall unconditionally guarantee the workmanship and materials of the entire contract to be free of defects and remain free of defects in workmanship and materials for a period of one (1) year(s) from date of Notice of Substantial Completion, Notice of Completion or acceptance of the final payment by the Contractor on the Contract, as called for in the specifications.

Each subcontractor shall unconditionally guarantee the workmanship and materials of his portion of the Contract to be free of defects and remain free of defects in workmanship and materials for a period of one (1) year(s) from the date of Notice of Substantial Completion, Notice of Completion or acceptance of the final payment by the Contractor on the Contract as called for in the specifications. Such guarantees shall be signed by the Subcontractor and shall be countersigned by the Prime Contractor who shall be responsible for the entire work.

ALL Contract Bonds shall remain in full force and effect during the guarantee period.

GUARANTEE

GUARANTEE Under Specification Section No._____

By:_____
Prime Contractor, Subcontractor or Supplier

_____
Address

We hereby guarantee that the_____
(Description of work or material)

_____

which we have installed at the_____
(Name and location of project)

_____

has been completed in accordance with the plans and specifications and that the work as installed will fulfill the requirements of the guarantee included in the specifications. We agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced in so doing, that may prove to be defective in its workmanship or material within a period of one (1) year from the date of the filing of the Substantial Completion, Notice of Completion or acceptance of the final payment by the Contractor, on the above-named work for the College of Southern Idaho, without any expense whatsoever to the College of Southern Idaho, ordinary wear and tear and unusual abuse or neglect excepted. Any architectural or engineering work required for such repairs and replacements shall be paid in full by the contractor or subcontractor.

Under the terms of this guarantee, the making of repairs under the guarantee may result in extending the guarantee for a like period dating from the completion of the repair work.

In the event the Prime Contractor or the Subcontractor fails to comply with the above-mentioned conditions within five (5) calendar days after being notified of the defect, in writing, by the College of Southern Idaho, we, the Prime Contractor or Subcontractor collectively or separately, do hereby authorize said College of Southern Idaho to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefore upon demand. When correction work has been started it shall be carried through to completion.

CONTRACTOR:

_____
Prime Contractor

By:_____ _____
Signed by Prime Contractor Date

SUBCONTRACTOR:

_____
Subcontractor

By:_____ _____
Signed by Subcontractor Date

_____
EFFECTIVE DATE OF THIS GUARANTEE

Contractor/Subcontractor Information List

It is the responsibility of the general contractor to provide to the City of Moscow at least a minimum ten (10) days prior to the Pre-Construction Conference the following information for the general contractor and all associated sub-contractors working on said project:

- Legal business name and assumed business name
- Physical and mailing address
- Company officer names and titles
- Federal/State of Idaho Tax ID Numbers
- DUNS Number
- Awarded contact amount
- Type of Trade (i.e. electrician, plumber, etc.)
- Name and title of a person legally authorized to sign documents on behalf of the business entity
- Name of employee appointed to sign and submit Certified Payroll Reports (CPR) on behalf of the business entity.

If the general contractor/subcontractor anticipates paying fringe benefits in the wage decision towards any part and/or fully to bona fide fringe benefit plan(s), an hourly contribution rate for each employee must be determined. It is required the fridge benefit plan and hourly contribution rate be calculated and submitted with the first CPR submittal. Although it is not required, it is *highly recommended* that these fringe benefit plans be submitted to the City prior to the start of construction so fringe benefit plans can be reviewed for eligibly and an hourly contribution rate can be determined for each participating employee. This can help reduce CPR corrections and costly violations.

CONSENT OF SURETY COMPANY FOR FINAL PAYMENT

PROJECT NAME: Moscow City Shop Facility

TO: Cody Riddle
Deputy City Supervisor
City of Moscow – Community Development
504 S Washington Street
Moscow, ID 83843

CONTRACTOR: _____

_____

_____

In accordance with the provisions of the General Conditions, in the Contract between the Owner and the Contractor as indicated above, the Surety Company,

_____

_____

_____

hereby approves of the final payment to the Contractor,_____, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the Owner as set forth in said Surety Company's bond, Number_____

IN WITNESS WHEREOF,
the Surety Company has hereunto set its hand this_____ day of_____, _____.

_____
Surety Company

Attest:_____
(Seal)

_____
Signature of Authorized Rep.

_____
The Attorney-in-Fac

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Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*

Signature: _____
Name and Title:

SURETY
Company: *(Corporate Seal)*

Signature: _____
Name and Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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User Notes:

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- **.1** the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- **.2** the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- **.3** the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- **.1** After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- **.2** Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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User Notes: (929721969)

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

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User Notes:

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)
Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)
Moscow City Shop Facility
650 North Van Buren Street
Moscow, ID 83843

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*

Signature: _____
Name and Title:

SURETY
Company: *(Corporate Seal)*

Signature: _____
Name and Title:

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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User Notes:

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- **.1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- **.2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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User Notes:

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)
Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

BOND AMOUNT: $

PROJECT:
(Name, location or address, and Project number, if any)
Moscow City Shop Facility
650 North Van Buren Street
Moscow, ID 83843

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

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furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of ,

	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)*
	(Surety) *(Seal)*
(Witness)	*(Title)*

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work performed by Owner.
5. Owner's product purchase contracts.
6. Owner-furnished/Contractor-installed (OFCI) products.
7. Owner-furnished/Owner-installed (OFOI) products.
8. Contractor's use of site and premises.
9. Work restrictions.
10. Specification and Drawing conventions.
11. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
2. Section 017300 "Execution" for coordination of Owner-installed products.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: Moscow City Shop

1. Project Location: 650 N. Van Buren Street, Moscow, ID 83843.

B. Owner: City of Moscow .

1. Owner's Representative: Cody Riddle, 504 S. Washington Street, Moscow, ID 83843.

C. Architect: Mark Heazle - Lombard Conrad Architects.

1. Architect's Representative: Matt Geserick.

D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Structural Engineer : Rob Butterfield, LOCHSA Engineers

2. Mechanical Engineer: Todd Nelson, Musgrove Engineering, PA

3. Electrical Engineer: Geoff Johnson, Eidam and Associates

4. Civil Engineer: Scott Becker, Hodge and Associates

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. New Construction of a 18,824 sf pre-engineered metal building shown in the Work indicated in the Contract Documents.

2. New Construction of a 4,400 square foot, single story, timber and wood truss framed building.

3. Re-cladding of the wall and roof assemblies of an existing 18,300 square foot, two-story, pre-engineered metal building. Construction will include the removal of existing wall and roof panels, insulation, and vapor barrier.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.6 PHASED CONSTRUCTION

A. Construct the Work in phases, with each phase substantially complete as indicated below.

1. Schedule of Work:

Notice to Proceed	3/1/2025
East Entrance Construction and Temp Gate Install	3/15/2025
South Gate Closure	3/17/2025
New Shop Construction Commencement	3/18/2025
New Shop - Area B Occupancy	9/1/2025
Existing Shop Cladding Commencement	9/8/2025
Salt and Material Storage Building Completion	10/15/2025
New Shop - Area A Occupancy	10/31/2025
Existing Shop Open Storage Cladding Completion	10/31/2025
Project Final Completion	3/1/2026

B. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule, showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's personnel for all phases of the Work.

1.7 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.8 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:

1. Provide to Contractor Owner-reviewed Product Data.
2. Provide for delivery of Owner-furnished products to Project site.
3. Upon delivery, inspect, with Contractor present, delivered items.

   a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.

4. Obtain manufacturer's inspections, service, and warranties.
5. Inform Contractor of earliest available delivery date for Owner-furnished products.

B. Contractor's Responsibilities: The Work includes the following, as applicable:

1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
2. Review Owner-reviewed Product Data, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
3. Receive, unload, handle, store, protect, and install Owner-furnished products.
4. Make building services connections for Owner-furnished products.
5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
6. Repair or replace Owner-furnished products damaged following receipt.
7. Contractor will pay use tax for OFCI items, tax estimated at $2,000, this amount will be adjusted by change order based on the actual value of what is supplied.

1.9 CONTRACTOR'S USE OF SITE AND PREMISES

A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.10 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: There are no work hour restrictions the contractor shall adhere to the City’s noise ordinance, which can be found at:
https://www.ci.moscow.id.us/DocumentCenter/View/1352/Chapter-11---Noise-Regulations-PDF

C. On-Site Work Day Restrictions: Shall adhere to the City's ordinance, which can be found at: https://www.ci.moscow.id.us/DocumentCenter/View/1352/Chapter-11---Noise-Regulations-PDF

D. Smoking and Controlled Substance Restrictions: Use of tobacco products , alcoholic beverages, and other controlled substances within the existing building] [**on Project site**] on Owner's property is not permitted.

E. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

1.1 DOCUMENT 011120 - GEOTECHNICAL INVESTIGATION SUMMARY

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.

C. This section includes the geotechnical investigation report for the Project, prepared by GeoProfessional Innovation, dated July 24, 2024.

1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.

GeoProfessional Innovation.

July 24, 2024
File: MO24085A

Mr. Cody Riddle
Deputy City Supervisor
City of Moscow
504 S. Washington Street
Moscow, ID 83843

RE: Geotechnical Engineering Evaluation
Proposed City Shop Building
650 North Van Buren Street
Moscow, Idaho

Greetings, Cody:

GeoProfessional Innovation Corporation (GPI) has performed the authorized geotechnical engineering evaluation for the City of Moscow's (City's) proposed "Shop Building" to be located at 650 North Van Buren Street, Moscow, Idaho. GPI's purpose was to explore subsurface conditions in the proposed improvement area and to provide geotechnical recommendations to assist project planning, design, and construction. Herein we summarize our field exploration, laboratory test results as well as our geotechnical opinions and recommendations.

The site of the planned City shop building was previously graded and maintains significant deposits of uncontrolled fill at various depths and locations. These uncontrolled fill deposits as well as the moisture sensitive native soil are the primary geotechnical concerns for this site. These conditions can impact design and construction of the planned improvements.

Please read and implement the report in its entirety. Report portions or attachments cannot be relied upon individually without the remaining sections, attachments, or plates. Our opinion is the proposed construction's success will depend, in part, on following the report recommendations, good construction practices, constructing during good weather, and providing the necessary construction monitoring, testing, and consultation to verify earthwork has been conducted as specified.

We recommend GPI be retained by the City to provide monitoring, testing, and consultation services as part of the geotechnical design process to confirm the subsurface conditions exposed at the time of construction and to document our geotechnical recommendations are incorporated into final construction and that design is verified. With our local presence, and experience on numerous recent City of Moscow projects, we can provide efficient, effective service to aid you throughout this project's completion. Please contact us should you have any questions regarding our services or this report.

Sincerely,
GPI

Andrew J. Abrams, P.E.
Senior Engineer

PROFESSIONAL ENGINEER REGISTERED 12481 7/24/24 STATE OF IDAHO ANDREW J. ABRAMS

Travis J. Wambeke, P.E.
Principal

TJW/mg

Geotechnical Engineering Evaluation
City of Moscow Shop Building
650 North Van Buren Street
Moscow, Idaho

PREPARED FOR:
Mr. Cody Riddle
Deputy City Supervisor
City of Moscow
504 S. Washington Street
Moscow, ID 83843

PREPARED BY:
GeoProfessional Innovation Corporation
6 O'Donnell Rd.
Pullman, WA 99163
(509) 339-2000

July 24, 2024

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Geotechnical Engineering Evaluation

Proposed City Shop Building
650 North Van Buren Street
Moscow, Idaho

INTRODUCTION

GeoProfessional Innovation Corporation (GPI) explored subsurface conditions within the City of Moscow's (City's) proposed shop building improvement area and prepared this report summarizing our geotechnical recommendations to assist planning, design, and construction. Our geotechnical exploration and evaluation services were performed in reference to the authorized proposal dated March 4, 2024. To accomplish our evaluation, we performed the following scope of work:

Exploration

1. Coordinated exploration with City personnel and the Idaho Dig Line to reduce the risk of damaging existing utilities during exploration.

2. Observed excavation of 5 exploratory test pits extending 5 to 10 feet below the adjacent ground surface. Exploration was performed by City equipment and personnel. Our geotechnical engineer visually described, classified, and logged the soil encountered in the test pit locations referencing the *Unified Soil Classification System* (USCS). The USCS and our exploration logs are provided in Appendix A.

Laboratory Testing

3. Performed laboratory testing in reference to *ASTM International* (ASTM) standards to assess soil engineering characteristics. Laboratory test results are provided in Appendix B.

Engineering Analyses & Deliverable Preparation

4. Performed engineering analyses and provided geotechnical opinions and recommendations to aid project planning, design, and construction.

5. Provided this electronic deliverable including our exploration logs, laboratory test results and our geotechnical opinions and recommendations.

PROJECT UNDERSTANDING

Existing Site Conditions

The existing City Shop facility is located at 650 North Van Buren Street in Moscow, Idaho. The existing facility comprises the City's current shop building, a recently constructed well house (Well House #6), and several other structures and equipment storage buildings. The existing ground surface throughout the improvement area is partially gravel-surfaced with isolated asphalt pavement drive lanes. Existing surface grades at the site rise in elevation to the west and north sides of the planned shop building footprint, creating approximately 20 to 25 feet of elevation change across the improvement area. Portions of the improvement area are also covered with moderate to significant surface vegetation including isolated trees and brush. Some isolated stockpiles of debris and gravel exist in various locations across the planned improvement area.

From our discussion with Mr. Steve Schulte with the City, and reviewing historic photographs of the site he provided, we understand the site was previously graded in the 1990's, to facilitate vehicular access and equipment storage on parts of the City's property north and west of the existing shop building. This work

resulted in substantial fill placed where the new shop building will be situated. We understand no documentation regarding this fill's compaction exists.

Proposed Construction

From preliminary plan drawings prepared by Lombard Conrad Architects (LCA) dated April 12, 2024, we understand the new shop will comprise a 20,000-square-foot, single-story, pre-engineered metal building. The new shop building will be located north and west of the existing shop building, just east of the western perimeter access road. The new structure will bear on conventional shallow foundations and a concrete slab-on-grade floor. No below-grade spaces are planned, though site grading will require cuts extending 14 to 16 feet below existing grade into the existing hillside west and north of the planned building. These cuts will be supported via cast-in-place concrete cantilevered retaining walls along the north and west sides of the building. Cuts for site grading outside of the building footprint will be supported by a segmental block retaining wall up to 16-feet-tall located west of the planned building. Mr. Cody Riddle with the City reports this segmental block retaining wall will be designed by Hodge & Associates, Inc. (Hodge) the project's civil designer.

The new shop building will be supported on typical shallow spread footings and slab-on-grade floors. LCA reports that structural loads throughout much of the planned building are expected to be relatively light at 2 to 3 kips per linear foot along walls and 40 to 45 kips per column. However, higher loads will be realized along the cantilever retaining wall footings within the building footprint, ranging from 12 to 15 kips per linear foot associated with overturning moments along the wall. Relatively high slab loads may be realized due to the planned equipment storage that may require thicker concrete sections.

The planned building finished floor elevation will be established within 1 to 2 feet of the ground surface elevation within the existing parking area and access drives throughout the current shop facility. Therefore, we do not anticipate significant fill embankments or slope construction will be required to achieve finished grades for building or infrastructure construction. The shop building will be accessed via new asphalt pavement access drives and parking areas with concrete aprons at service bay entries. New utilities will extend to the new building from existing utility alignments within the City's property. Stormwater will be collected and directed to the existing facility's stormwater system. No other improvements are planned for this project.

SUBSURFACE AND LABORATORY EVALUATION

Subsurface Exploration

GPI observed subsurface exploration at this site via 5 test pits on April 5, 2024. Test pit excavation was performed by a Bobcat 1-37 mini-excavator and operator provided by the City. The approximate test pit locations are illustrated on Plate 1. Disturbed and relatively undisturbed soil samples were obtained from various depths and locations during exploration and transported to our laboratory for testing. During exploration our geotechnical engineer visually classified, described, and logged the soil encountered according to the USCS. Test pits were loosely backfilled by city personnel upon completing exploration.

Laboratory Testing

We selected soil samples retained from subsurface exploration for laboratory testing to assess various engineering characteristics of the soil profile encountered. Tests were performed in reference to ASTM testing procedures and are presented in Appendix B.

Subsurface Conditions

Exploration encountered either topsoil with vegetation and organics or silty gravel base course at the ground surface in each test pit. These surface layers extend 0.3 to 1.0 foot below the existing ground surface in the locations explored. We expect topsoil containing vegetation and organics will vary in thickness across the site, specifically where stockpiles of organic material are present or trees and brush exist at the site.

Beneath these surficial layers, we encountered uncontrolled fill in 4 of the 5 test pits (excluding TP-24085A-1). Uncontrolled fill comprised heterogeneous mixtures of silt, clay, gravel, and debris including concrete, metal, plastic, and organic material. Uncontrolled fill was described as dark brown to reddish brown, soft or loose, and moist, extending 3.0 to 5.0 feet below the existing ground surface in the locations explored. We expect uncontrolled fill thickness will vary across the site associated with existing stockpiles of loose material, and landscaping supplies, as well as previous site grading activities performed within the planned building footprint.

Beneath surficial base course, topsoil or uncontrolled fill, we encountered clay loess to the termination depth of each test pit. Loess is the predominant native soil type in the Palouse region. Loess encountered in our test pits was described as reddish brown, stiff, and moist. We did not encounter bedrock within the depths or locations explored. We encountered groundwater at 3 to 3.5 feet below the ground surface as seeps in the sidewalls of test pits TP-24085A-2, -3 and -5. It should be noted that groundwater levels can change drastically with seasons on the Palouse. Groundwater levels at the site will be influenced by changes in precipitation, irrigation, infiltration, as well as changes to the project site grades and drainage patterns. Our experience in the area suggests that groundwater is commonly encountered at the interface between differing soil materials such as fill and native soil. We expect groundwater may be encountered as seeps or springs in excavation sidewalls at any depth or location site in the future.

GEOTECHNICAL CONSIDERATIONS

The primary geotechnical concern for this site is the presence of variable uncontrolled fill across the planned improvement area. In our explorations, the fill was soft and contained various debris that can degrade over time and under loads from the new building, pavements, or other improvements. GPI cannot predict how the fill will perform beneath new improvements, and we consider it to be uncontrolled. Consistent with geotechnical practice standards, we recommend all fill be removed from beneath planned improvements, including building foundations, retaining walls and slabs, exterior pavements, and hardscapes.

In addition to the presence of uncontrolled fill, the native soil at the site comprises moisture sensitive clay loess. This soil can be difficult to work with during certain seasons and requires diligent effort by experienced earthwork contractors to preclude disturbance than can impact building performance. In the following report sections, we provide our opinions and recommendations to help address these and other geotechnical project aspects.

GEOTECHNICAL OPINIONS AND RECOMMENDATIONS

The following geotechnical opinions and recommendations are provided to assist project design and construction for the new shop building to be located at the City's existing facility at 650 North Van Buren Street in Moscow, Idaho. We base our analysis and recommendations on our site observations, specific exploration and laboratory results, engineering analyses, and experience with similar soil conditions. If design plans change substantially or subsurface conditions encountered during construction vary from what was observed in our field evaluation, we must be notified and review the report recommendations to make necessary revisions.

Earthwork

Test Pit Remediation

Test pits located beneath the planned building, pavements or other improvements must be remediated at the onset of earthwork construction. Test pits shall be remediated by removing loose backfill and replacing it with *General Structural Fill* meeting the requirements stated in this report. If authorized, GPI can review test pit areas with the selected contractor following site stripping and evaluate whether full-depth remediation is necessary based on conditions observed during construction and planned improvements overlying test pit areas.

Site Stripping

Remove surface soil containing vegetation and organics to at least 5 feet horizontally outside the planned grading limits. In the exploration locations, GPI generally observed 0.5 to 1 foot of surface topsoil containing vegetation and organics. However, topsoil thickness will vary across the site. Strip and stockpile topsoil for landscaping purposes or remove it from the site. For bidding purposes, we recommend an average stripping depth of 1.0 foot be applied across the improvement area that is not currently covered with gravel base course.

Existing gravel base course at the ground surface must be removed from beneath the planned improvements, to allow the identification and removal of uncontrolled fill. However, excavated base course material may be stockpiled for re-use as *General Structural Fill* provided it meets the *Structural Fill* requirements in this report.

Uncontrolled Fill

Uncontrolled fill containing deleterious debris was encountered in 4 of the 5 test pits on site, extending 3.0 to 5.0 below the existing ground surface. Remove uncontrolled fill from below planned improvements to expose undisturbed native soil, prior to placing fill or concrete for new improvements. Uncontrolled fill is not expected to be suitable for reuse as structural fill, given the presence of debris, including organic material. Therefore, excavated uncontrolled fill shall be removed from the site or reused as landscaping material, pending approval by the landscape architect for the project.

Excavation Characteristics

We expect silt and clay soil encountered within our explorations may be excavated using conventional excavation equipment. Excavation equipment should maintain mechanical thumbs to manipulate and remove debris. Zones of stiff to very stiff silt loess should be expected that may require ripping prior to excavation with scrapers. Scrapers may not be appropriate for excavation where soft, wet soil conditions are prevalent. These conditions will vary with the season that construction is initiated as well as precipitation and other factors beyond our control. We recommend contractors visit the site prior to bidding to assess moisture conditions, which can impact their planned earthwork and mass grading equipment usage on the site.

Soil excavations must be sloped in accordance with *Occupational Safety and Health Administration (OSHA)*. The site native soil, in an undisturbed and dry condition, classifies as Type B soil, which can be sloped as steep as 1H:1V under temporary and dry conditions. Uncontrolled fill or disturbed soil is classified as Type C sol, which must be sloped at 1.5H:1V or flatter per OSHA regulations. Specifically, where soft and wet soil exists in low-lying site areas, excavations may require flatter slopes to maintain temporary stability. Earthwork contractors must evaluate each excavation configuration specific to WISHA guidelines and seek appropriate professional guidance to help ensure the excavation safety and stability.

Establishing Subgrades

Following stripping, test pit remediation and uncontrolled fill removal, but prior to placing structural fill or concrete, prepare subgrades to meet the requirements outlined below:

- Expose undisturbed, native clay soil excavated with smooth blade equipment and having a pocket penetrometer (PP) measurement of at least 3.0 tsf.
- Where native soil becomes disturbed or is soft and wet: scarify, moisture-condition, and recompact subgrades to *Structural Fill* requirements to at least 0.7 feet below the subgrade elevation.

The site's existing fine-grained soil is extremely moisture sensitive and subject to disturbance due to construction traffic, varying weather conditions, and other factors. Disturbance will negatively impact the soil's performance below pavements, foundations, slabs, and other improvements. Careful earthwork construction procedures and proactive measures are critical to achieving adequate subgrade preparation and reducing over-excavation and rework. Specifically, these procedures could include, but are not limited to:

- Carefully staging equipment and/or stockpiles
- Routing construction equipment away from subgrades
- Scheduling subgrade preparations during good weather

It is the contractor's responsibility to protect subgrades throughout construction. Subgrade disturbance that occurs due to the contractor's means and methods must be repaired at no cost to the City. We expect subgrades will be exposed to various weather conditions that will result in some rework. To reduce rework, we recommend the City and LCA incorporate provisions into the project specifications to require contractors implement subgrade protection measures between construction seasons and between construction staging/activities. These measures could include but are not limited to implementing aggressive site surface and subsurface drainage procedures to help reduce saturating subgrades during wet weather conditions. See the *Site Drainage* report section herein for additional recommendations.

Wet Weather/Wet Soil Construction

It is important that earthwork construction take place during dry weather conditions. Successful earthwork operations can be difficult or impossible during wet or freezing seasons on the Palouse (typically November through June). The fine-grained site soil will be susceptible to pumping or rutting from heavy loads such as rubber-tired equipment or vehicles any time of the year. Recompacting site soil to structural fill conditions requires considerable moisture conditioning and soil processing during warm, dry weather. Where pumping or rutting at the subgrade exists and adequate moisture conditioning does not remedy these conditions, remove soft and wet areas with smooth blade equipment at the City's direction. Over-excavation depths will vary with site moisture conditions, and could extend 1 to 3-feet-deep in some areas. Replace these over-excavations with *Granular Structural Fill* or *Crushed Aggregate* atop non-woven geosynthetic fabric as described in subsequent *Structural Fill* report sections. Where soft, disturbed soil is not removed and replaced in this manner, additional settlement and instability is possible.

Earthwork should not be performed immediately after rainfall or until soil can dry sufficiently to allow construction traffic without disturbing the subgrade. Accomplish earthwork by track-mounted equipment that reduces vehicular pressure applied to the soil if construction commences in wet areas and/or before soil can dry. Depending on precipitation, runoff, and perched groundwater conditions encountered during construction, we anticipate the soil will be slightly to moderately over optimum moisture content. In some locations such as low-lying site areas, and where seeps and springs are encountered in cuts, soil may be over-optimum moisture content. These conditions will require substantial effort to collect and direct water away from work areas, and preclude it from impacting soil to be used for earthwork construction. Contractors

should expect these conditions and be prepared to install runoff management facilities and to replace wet or disturbed soil with *Granular Structural Fill*. Drying can be accomplished by ripping and aerating the wet soil during dry weather conditions. Depending on conditions encountered at the time of construction, ripping and aeration site soil can require several days or weeks to dry it to a moisture content suitable for compaction.

Structural Fill Criteria

All fill for this project must be placed and compacted as structural fill. Various imported fill materials will be required throughout construction. Our recommended material requirements for structural fill are provided, referencing the latest Idaho Standards for Public Works Construction (ISPWC). Project structural fill products are described in Table 1.

Table 1. Structural Fill Specifications and Allowable Use

Soil Fill Product	Allowable Use	Material Specifications
General Structural Fill (SF-1)	• Miscellaneous alignment grading • General site grading • Utility trench backfill • Below-grade wall backfill	• Soil classified as GP, GM, GW, SP, SM, SW, CL or ML according to the USCS. • Soil may not contain particles larger than 0.7 feet in median diameter. • Ground and processed asphalt and concrete are suitable for reuse as General Structural Fill below the pavement section subgrade. • Soil consisting of inert earth materials with less than 3-percent organics or other deleterious substances (wood, metal, plastic, waste, etc.).
Granular Structural Fill (SF-2)	• Backfilling over-excavations • SF-1 applications	• Soil meeting requirements stated in Section 801 – Uncrushed Aggregates in the latest ISPWC Specifications.
Crushed Aggregate (CA-1)	• Granular soil improvements beneath foundations • Slab, & pavement support aggregate • SF-2 applications	• Soil meeting requirements stated in Section 802 – Crushed Aggregates in the latest ISPWC Specifications.
Unsatisfactory Soil	NONE	• Soil classified as CH, MH, OH, CH, OL, or PT may not be used at the project site. • Any soil containing more than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances. • Excess moisture does not render a soil unsatisfactory. Contractors must attempt moisture conditioning (i.e. drying) prior to soil disposal. Alternatively, subcontractors may elect to remove and replace over-optimum soil prior to moisture conditioning at no expense to the City.

Site Soil Reuse

Uncontrolled fill is not expected to be suitable for re-use as structural fill due to the presence of debris and organics within the fill. The native loess soil and existing base course at the site is suitable for reuse as *SF-1*, providing it can meet the criteria presented in Table 1 in this report.

Required Compaction

Place structural fill only over approved subgrades. Never place structural fill over frozen, saturated, or soft subgrades. Fill placed outside the building footprint, pavement, hardscape envelopes, and outside wall backfill zones can be placed as non-structural fill (i.e. landscape fill), providing there are no structures (sidewalk, curbs, utilities, signs, etc.) planned directly above or adjacent the landscape fill. Structural fill products must be moisture conditioned to near optimum moisture content and compacted using equipment with an energy rating of at least 5 tons. If smaller or lighter compaction equipment is used, reduce the lift thickness to meet the compaction requirements presented in Tabe 2.

Table 2. Required Compaction and Products for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement[1]
Subgrades beneath all improvements	Native soil	3 tsf PP reading
Structural fill for site grading, wall backfill, utility trench backfill outside the building footprint	SF-1	95%
Structural fill for site grading, utility trench backfill within the building footprint (+5 feet laterally)	SF-2 or CA-1	95%
Pavement, hardscape & slab support aggregate, granular soil improvements beneath foundations	CA-1	95%

1. Relative compaction requirement compared to the maximum dry density of the soil as determined by ASTM D1557 (modified Proctor).
2. PP = Pocket penetrometer.

Structural fill products and existing subgrades must be moisture conditioned to near optimum moisture content and placed in maximum 1-foot-thick, loose lifts. This assumes large, appropriate compaction equipment is used to attempt compaction. If smaller or lighter compaction equipment is provided, reduce the lift thickness to meet the compaction requirements presented herein.

Coarse Fill

Coarse gravel and cobble mixtures locally known as "shotrock" imported to the site for structural fill must meet *Granular Structural Fill* requirements outlined in Table 1. Such coarse material, and any material with greater than 30 percent retained above the ¾-inch sieve is too coarse for Proctor density testing. Compact coarse fill using a "method specification" developed during construction, based on the material characteristics and the contractor's means and methods. A method specification exists in *Section 205 "Excavation and Embankment"* of the latest edition of the *ITD Standards*. It is common that method specifications are developed during construction, specific to the materials and conditions encountered.

At a minimum, GPI recommends coarse granular fill be placed in maximum 1.5-foot lifts and compacted with 5 complete passes of a 10-ton, vibratory or grid roller. Vibratory rollers must have a dynamic force of at least 30,000 pounds per impact per vibration, and at least 1,000 vibrations per minute. Coarse fill must be

compacted to a dense, interlocking, and unyielding surface. GPI must review the soil and aggregate material planned for fill use and monitor compaction effort full time during construction.

Utility Trench Construction

Loose soil must be removed from the base of utility trenches prior to placing pipe bedding. If encountered, groundwater and soft, saturated soil must be removed from the bottom of the utility trench before placing pipe bedding. We recommend utility pipes be placed and supported according to the pipe manufacturer's specifications and the City's utility construction requirements.

After bedding the pipe, place and compact backfill from the pipe invert to 1 foot above the top of the pipe with tamping bars and plate compactors to render the backfill in a firm and unyielding condition. Backfill must also be thoroughly placed and compacted below pipe haunches or the zone between the pipe invert and the spring line. To accomplish backfilling, the distance between the side of the pipe at the spring line and the trench wall should be at least 1 foot. The remainder of the utility trench should be backfilled in accordance with this report's *Structural Fill* section. It is important to key backfill into trench sidewalls creating a uniform transition between structural fill and adjoining native or embankment soil. We recommend all fill placed within 5 feet (laterally) of manholes positioned in a soil profile consist of crushed surfacing and be separated from native or fill soil with a non-woven geosynthetic fabric.

Compaction Documentation

Successful earthwork activities are important to the project's long-term performance. Retaining experienced earthwork contractors is the first step in having confidence that earthwork will be performed referencing this report's requirements. Providing the necessary testing and engineering documentation of earthwork activities is the second step. The criteria below outline the minimum testing and observation frequencies to implement during earthwork and infrastructure construction.

1. Subgrades exposed prior to structural fill placement: observed by geotechnical engineer retained for construction to confirm exposed subgrade conditions meet project design requirements. Also, 1 PP test every 10,000 square feet (sf) to document stiff (min. 3.0 tsf PP), undisturbed subgrade conditions pending the selected subgrade preparation approach.

2. Mass grading/structural fill placement: 1 compaction test every 10,000 sf, per fill lift, minimum 3 tests per testing event.

3. Utility trench backfill: 1 compaction test every 100 linear feet (lf) of trench, per fill lift; minimum 3 tests per lift, per utility alignment, whichever results in the greater number of tests, per each fill lift.

4. Foundation and slab subgrades prior to granular soil improvement & aggregate placement:
   a. 2 PP tests per isolated column footing
   b. 2 PP tests per 100-feet along wall foundations
   c. 2 PP tests per 5,000 sf of slab area
   d. All PP tests must exceed 3.0 tsf PP to confirm undisturbed native soil conditions.

5. Foundation granular soil improvement construction: minimum 1 test per 100 feet along wall lines, or at least 2 compaction tests per wall line and 2 compaction tests per isolated footing, per 1-foot lift.

6. Slab and pavement support aggregate: minimum 1 compaction test per 5,000 square feet, or at least 2 compaction tests per prepared area, per 1-foot lift.

7. Roadway construction: 1 compaction test every 100 linear feet (lf) per lane, per fill lift; minimum 3 tests per lift, whichever results in the greater number of tests, per each fill lift.

8. Asphalt pavement construction: 1 compaction test every 100 lf, per paving lift, minimum 3 tests per testing event. One laboratory test suite on a bulk sample of hot mix asphalt per each day's paving, including oil content, gradation and maximum theoretical (Rice) specific gravity.

9. Exterior concrete pavement construction: 1 sample per 150 cubic yards (or once per day's placement). Field tests on sample include temperature, slump, air content, unit weight. Cast 1 set of 4 compressive strength test specimens per sample.

Geosynthetics

Non-woven geotextile separation fabrics are recommended for granular soil improvements and pavement construction. Geogrid reinforcement is not specifically required for any project aspect, but can be beneficial for site access locations, soft spot repair areas, or remediating persistent soft, wet conditions. Geosynthetics shall meet the minimum requirements in the latest ISPWC Section 2050, *Construction Geotextiles - 2.3 Subgrade Separation Geotextiles*. Geosynthetic uses and material requirements are provided in the following Table 3:

Table 3: Geosynthetic Requirements

Geosynthetic Type	Use	Minimum Material Specifications
Non-Woven Geotextile Stabilization Fabric	• Granular soil improvements • Pavement subgrade separation • Soft spot repair and over-excavations	• Apparent opening size: US Sieve #70 (ASTM D4751) • Min. 270-pound grab tensile strength • Min. 100-pound puncture strength • Permittivity: 0.7 seconds-1 (ASTM D4491)
Geogrid Reinforcement	• Soft spot repair and over-excavations • Extremely soft subgrade conditions	• 93 percent junction efficiency (GRI-GG2-05) • 3.0 kg-cm/degree Aperture Stability (U.S. Army Corp of Engineers Ref. 3.3.1.2000) • Extruded polypropylene • Minimum Tensile Strength of 700 lb/ft at 5.0% Strain (ASTM D6637) • Minimum Radial Stiffness of 15,075 lb/ft at 0.5% Strain (ASTM D6637), applies only to triaxial grid

Consult GPI to review geosynthetic applications or other subgrade improvement alternatives. To aid construction and increase pavement longevity, apply geosynthetics directly on approved subgrade, taut, free of wrinkles, and overlapped at least 1 foot.

Shallow Foundations

Shallow foundation design must incorporate the subgrade preparation, granular soil improvement and perimeter drainage requirements in this report as well as applicable City standards. Our opinion is bearing foundations on at least 1-foot of crushed aggregate placed as granular soil improvements can help to facilitate consistent bearing conditions beneath the planned building. This will be critical as portions of the building will bear over cuts into native soil, while others will bear over areas that have been over-excavated

to remove uncontrolled fill. The following items delineate our recommended foundation design and construction criteria:

1. Allowable bearing pressure: 3,000 pounds per square foot (psf). This requires:
   a. Frost protection embedment depth: Minimum 2.5 feet below finished exterior surface.
   b. Minimum 1.0 foot of granular soil improvements constructed over stiff native soil prepared per the *Establishing Subgrades* report section. See the *Granular Soil Improvements* report section and Plate 2 for additional construction requirements.
   c. Maintaining drained conditions via a perimeter foundation drain, installed at the lowest point possible to maintain gravity drainage. See the *Site Drainage* report section for additional requirements for foundation drain construction.
   d. All foundation bearing surfaces must be free of loose soil and debris and conform to the requirements presented in the *Compaction* report section.
   e. Allowable bearing pressure may be increased by 33 percent for temporary loads such as wind or seismic accelerations.
   f. Thickened slab sections should be avoided or incorporate additional reinforcing and/or strategic jointing to help control cracking along the transition in slab thickness.

2. Estimated vertical settlement due to new footing loads:
   a. Total settlement: 1.0 inch
   b. Differential settlement: 0.7 inches in 30-foot, horizontal span

3. Lateral load resistance:
   a. Foundation base friction coefficient:
      i. 0.5 for foundations cast on compacted CA-1 granular soil improvements
      ii. Reduce friction by ⅔ for precast elements
   b. Lateral passive resistance is available on foundation sides equal to 350 pounds per cubic foot (pcf) equivalent fluid weight (EFW) where *SF-1* is used as exterior stem wall backfill.
      i. ¾ inches of lateral movement is required to mobilize passive pressure.

<u>Granular Soil Improvements</u>

The foundation design criteria herein is based on supporting shallow foundations on a minimum 1.0 foot of granular soil improvements installed in stiff, undisturbed native soil. Construct granular soil improvements according to the following steps:

1. Excavate foundation alignments, extending at least 2.5 feet below the planned foundation bearing elevation, or to expose stiff (min. PP > 3 tsf), undisturbed native soil.

2. Place non-woven geosynthetic fabric over the subgrade and extend it up the sidewalls to the foundation bearing elevation. Geosynthetic fabric must meet the *Geosynthetics* section requirements.

3. Place 4-inch-diameter, fabric-wrapped, perforated drain pipe in perimeter foundation alignments, at the base of granular soil improvements, sloped to daylight via gravity drainage at a location established through civil design.

4. Backfill over-excavations with CA-1 placed and compacted to achieve the foundation bearing surface referencing the *Structural Fill* report section.

Granular soil improvement construction is illustrated on Plate 2, *Granular Soil Improvement Schematic* attached to this report.

Site Seismicity and Liquefaction Potential

Significant seismic activity has not been recorded in the project area in geologically recent time. The presence of faults, fault rupture, or other such features were not observed via our field reconnaissance and is not mapped or known to exist in the Moscow area. Seismic activity resulting in significant ground movement or damage to structures has not been recorded in the Palouse region within geologically recent time. The only fault system mapped within 50 miles of the project site is the Hite fault system, located south and west of Moscow.[1] Our research on the United States Geological Survey (USGS), and Pacific Northwest Seismic Network (PNSN) websites indicate the Hite fault system and other mapped faults that are located within 50 miles of the project site have not exhibited significant seismic events greater than magnitude 4.0 within the last 100 years.

GPI utilized soil and geologic data from the site location to establish a Seismic Site Class "D" at the project site referencing the ASCE 7-16 Chapter 20 criteria. We recommend seismic design reference the parameters provided in Table 4, based on the soil conditions and project location. The risk-targeted maximum considered earthquake (MCER) spectral response acceleration parameters provided in Table 4 have been modified from a Site Class B to a Site Class D. The design spectral acceleration parameters provided in Table 4 are equal to 2/3 of the Risk Targeted MCE acceleration parameters.

Table 4. Seismic Response Criteria (ASCE 7-16)[1]

Period (seconds)	Standard Acceleration Coefficients (g)[2] for Site Class B	Site Factor for Site Class D	MCE_R Spectral Acceleration Parameters for Site Class D (g)[3]	Design Spectral Acceleration Parameters for Site Class D (g)
0.0 (Peak)	PGA = 0.131	F_{PGA} = 1.538	PGA_M = 0.202 ($PGA*F_{PGA}$)	-
0.2(Short)	S_S = 0.293	F_a = 1.565	S_{MS} = 0.459 (F_a*S_S)	S_{DS} = 0.306 (⅔ S_{MS})
1.0	S_1 = 0.106	F_v = 2.388	S_{M1} = 0.253 (F_v*S_1)	S_{D1} = 0.169 (⅔ S_{M1})

1. Values for location Latitude 46.741213°, and Longitude -116.995733°.
2. Acceleration coefficients based on 2% probability of exceedance in 50 years.
3. Values for an ASCE Risk Category III

Liquefaction Evaluation

We used our exploration data comprising soil stratigraphy, laboratory test results and groundwater observations from explorations to evaluate liquefaction potential within the soil profile beneath the planned improvement area. In our evaluation, we used equations that estimate the safety factor against liquefaction based on these data, developed by Idriss and Boulanger[2]. These equations estimate the soil's resistance to liquefaction, based on density or consistency, effective overburden pressure, groundwater conditions, fines content, and other factors; as well as the seismic forces driving the soil towards liquefaction.

Considering the site conditions and regional seismicity, our analyses indicate the safety factor against liquefaction within the depths explored beneath the site will remain above 1.0 during the characteristic 2,475-year seismic event. This is primarily due to the relatively stiff consistency and high fines content in the

1 Reference: https://geologyportal.dnr.wa.gov/

2 Soil Liquefaction During Earthquakes. Idriss, I.M., Boulanger, R.W. Earthquake Engineering Research Institute (EERI). 2008 Oakland, California.

native soil at the site. These conditions bolster the soil's ability to resist generating excess pore water pressures during ground shaking. The estimated safety factor against liquefaction provided by our analysis exceeds 1.0; the standard of care for public infrastructure performance during seismic events. It is possible the subsurface soil at the site contains isolated saturated sand lenses at depth. These isolated lenses may be subject to liquefaction during a significant seismic event, but are unlikely to manifest at the ground surface.

Lateral Earth Pressures

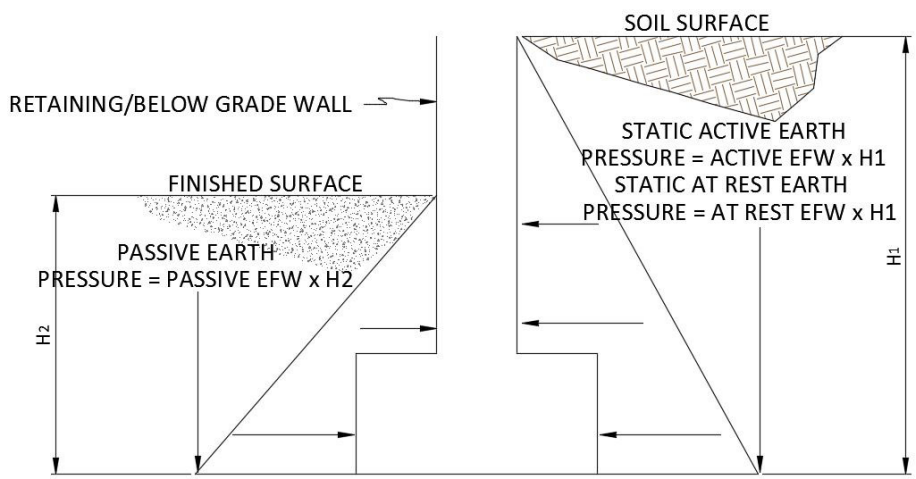
Structurally design stem walls and cantilevered retaining walls which retain soil to resist lateral earth pressures realized from retained soil, as well as any surcharge from equipment, footings, or vehicles adjacent to walls. We recommend static lateral earth pressures for non-anchored walls be estimated using the following equivalent fluid weights (EFWs) from Table 6. We provide EFW estimates for SF-1 material which we anticipate will be used for backfill within the entire active zone (extending from the heel of the footing). Figure 1 illustrates the static EFW distributions. These EFW's assume fully drained conditions and no hydrostatic forces acting on the wall. The EFW values provided in Table 5 are not applicable to segmental retaining wall design. Segmental block walls should be designed by Hodge referencing typical standards for internal and global stability.

Table 5. Static Equivalent Fluid Weight (EFW)

Rankine Lateral Earth Pressure Case *General Structural Fill (Φ=28° γ = 125 pcf)*	EFW
At-rest case (no wall movement)	65 pcf
Active case (wall movement away from soil mass)	45 pcf
Passive case (wall movement toward soil mass)	350 pcf[1]

1. Assumes ¾-inch lateral movement to fully mobilize passive resistance.

Figure 1. Static EFWs on Below-Grade Walls



Surcharge Load Considerations

Lateral surcharge pressures due to equipment, traffic, storage loads, etc., are not included in the above lateral earth pressure recommendations. A lateral pressure coefficient of 0.5 should be applied to any surface surcharge pressure to estimate the lateral surcharge loads applied to below grade walls from equipment, adjacent foundations, and slopes behind and above walls.

Slab-On-Grade Support

Minimum Slab Support Section

We recommend concrete slab-on-grade floors be supported by a minimum 0.7 feet of CA-1 meeting the requirements shown in Table 1. This assumes soil subgrades beneath slabs are prepared per the *Establishing Subgrades* and *Structural Fill* report sections. Compact the CA-1 supporting layer to 95 percent of the maximum dry density estimated by modified Proctor ASTM D1557. Slabs must be designed for the anticipated use, traffic, and equipment or storage loading conditions. Loads from heavy equipment or stored material on the slab may require thicker aggregate support sections, additional reinforcing, or strategic jointing to reduce the risk of differential performance.

Modulus of Subgrade Reaction (k)

Our opinion is concrete slab design may utilize an allowable modulus of subgrade reaction (k) of 210 pounds per cubic inch (pci). To realize the designed subgrade modulus, drained conditions and a minimum 0.7 feet of CA-1 must be provided over the subgrades prepared per the *Establishing Subgrades* requirements. Higher subgrade modulus values are available with thicker CA-1 sections beneath the slab-on-grade floors.

Vapor Retarder Applications

We anticipate the new shop building will be primarily a warehouse and industrial space. Floors are expected to be exposed concrete slabs without floor coverings and without polishing and sealants. Also, moisture sensitive equipment or materials may not be present in large portions of the building. Therefore, vapor protection may not be necessary beneath much of the planned floors. However, where floor coverings and moisture sensitive materials are present, we strongly recommend a vapor retarder be installed. The project design team and the City should evaluate the risks of moisture vapor transmission beneath the building slabs and apply vapor retarders accordingly.

Where floor coverings or moisture sensitive features are planned, install vapor retarders atop the prepared CA-1 layer prior to slab section construction. Vapor retarders must consist of thick, puncture-proof polyethylene sheeting. An example of this material is Stego® Wrap, a 15-mil retarder. Form stakes, piping, or other sub-slab penetrations must never penetrate the vapor retarder. Carefully design and construct any vapor retarder penetrations to reduce vapor transport through such penetrations. Even if these recommendations are used, water vapor migration through the concrete floor slab is still possible. Floor coverings should be selected accordingly and, when practical, flooring manufacturers should be consulted regarding moisture barriers, their location and product warranties. Manufacturer's recommendations should be strictly followed. Where vapor retarders are utilized, the flooring and concrete slab contractors, as well as the plastic sheeting manufacturer, should be consulted regarding additional slab cure time requirements and/or the potential for slab curling.

Exterior Slab Sections and Frost Protection

Exterior slabs at building entryways, loading/unloading areas, dumpster enclosures, and other exterior improvements are often susceptible to frost action, which can heave during freezing conditions and cause misalignment or damage for exterior hardscapes. The potential for frost heave may not be acceptable at building entries or other critical areas One approach to provide partial frost protection requires removing 65 percent of the frost depth (1.6 feet at this site) and replacement with CA-1 or SF-2. If partial frost protection is unacceptable, over-excavation and SF-2 replacement must be accomplished to the anticipated frost depth (2.5 feet). Adequate site drainage and surface water management are critical to reducing frost jacking and negative frost impacts to exterior flatwork.

Site Drainage

Surface Grading

Site grading must allow for positive drainage of surface runoff water away from the proposed building, pavements and hardscapes. All surfaces within 10 feet of the structure should slope away at 5 percent. The remaining sidewalks and paved surfaces should slope at least 2 percent away from the structure. This reduces the risk of subsurface soil near the below foundations and slabs becoming saturated due to water ponding near the structure. *Americans with Disabilities Act* (ADA) requirements for slopes near entryways supersede GPI's recommendations. However, positive slopes away from the addition should be maintained, even in ADA compliant areas.

Provide gutters and roof downspouts and connect them to solid pipes directed away from structures and not allowed to infiltrate into the soil adjacent to or beneath the structure. Do not connect roof drains to foundation drains. Allowing downspouts to deposit water onto pavement surrounding the building will create hazards during freezing temperatures and can accelerate pavement weathering. Stormwater should be diverted to the existing City stormwater disposal system in a location approved by the City. The near-surface soil encountered in our test pits was classified as fine-grained silt and clay in the locations explored. This soil is not suitable for infiltration disposal methods for stormwater management, such as drywells or swales.

Foundation Drainage

Maintaining uniformly drained conditions is critical to long-term foundation performance. Foundation drains must be installed around the building perimeter to route water away from foundation subgrades to dedicated stormwater disposal areas. This remains the standard of care for collecting water seeping along or adjacent to foundations that can ultimately pose issues if it is allowed to migrate below structures. We recommend foundation drain disposal points be established at least 25 feet (horizontal) away and 1 foot down gradient from the foundation bearing elevation. Foundation drains should be constructed in reference to the characteristics shown on Plate 2.

Asphalt Pavement Section Thickness

We evaluated asphalt pavement section thickness using the methodologies outlined in the *American Association of State Highway and Transportation Officials* (AASHTO) *Guide for Design of Pavement Structures* (1993) and material requirements outlined in the latest *ISPWC Standards*. The estimated traffic loading, analysis parameters, subgrade conditions and design life requirements used in our analysis are outlined in Table 6 below.

Table 6: Pavement Section Design Parameter Summary

Design Parameter	Value Used	References
Reliability (R)	85%	Assumed
Standard Deviation (S)	0.45	AASHTO 1993
Initial Serviceability (PSI_i)	4.2	Typical northern Idaho area values
Terminal Serviceability (PSI_z)	2.2	Typical northern Idaho area values
Estimated Traffic Loading	139,800 ESALs[1]	Anticipated Traffic: - 100 passenger vehicles, cycled 3 times daily - 100 refuse/delivery trucks per week - 50 dump trucks per week - 2 Fire trucks per year
Full Depth Reconstruction Design Life	20 years[2]	Estimated pavement design life
Resilient Modulus (M_r)	5,000 psi[3]	Based on index testing and Mr correlations for fine grained fill soil prepared per the *Establishing Subgrade* report section. Requires drained subgrade conditions. See the *Site Drainage* section below.
Asphalt Layer Coefficient (a_1)	0.42	Figure 2.5 AASHTO 1993
Crushed Aggregate Layer Coefficient (a_2)	0.14	Figure 2.6 AASHTO 1993
Drainage Coefficient (m_2)	0.9	Table 2.4 AASHTO 1993 for "fair" drainage, 5 percent saturation

1. Equivalent Single Axle Loads (ESALs)
2. Includes estimated 5% annual growth factor
3. Pounds per square inch (psi)

Our traffic loading estimates assume *no construction traffic* will access pavements. Please note that significant pavement damage can occur after just a single pass with heavily loaded construction equipment or unintended traffic. Based on the above pavement design parameters, Table 6 below provides our flexible pavement design recommendations.

Table 6: Asphalt Pavement Section Thickness

Pavement Section Material	Section Thickness (feet)	Material Specifications
Asphalt Pavement	0.29	Hot-mix asphalt (HMA) conforming to ISPWC Section 810 – Plant Mix Pavement – (Superpave SP-1 or higher)
Crushed Aggregate	0.92	Conforming to Section 802 – Crushed Aggregates
Non-woven Geotextile Fabric	Recommended	Non-woven geotextile fabric conforming to Section 2050 – Construction Geotextiles – 2.3 Subgrade Separation Geotextiles

Pavement Maintenance and Drainage

Crack maintenance should be accomplished on all pavement surfaces every 3 to 5 years to reduce the potential for surface water infiltration into the underlying pavement subgrade. Surface and subgrade drainage are extremely important to the performance of the pavement section. Therefore, the subgrade, crushed surfacing, and paved surfaces should slope at no less than 2 percent to an appropriate stormwater disposal system or other appropriate location that does not impact adjacent buildings or properties. This applies to gravel-surfaced roadways as well.

Pavement performance will depend upon achieving adequate drainage throughout the section and especially at the subgrade. Water ponding at the pavement subgrade surface can induce heaving during the freeze-thaw process, which can readily damage pavement. The City should annually review pavement surface performance to help identify and address any pavement maintenance issues. Slurry seal applications are a common maintenance procedure for owners of asphalt pavement systems. If desired for pavement maintenance or preservation, we provide recommendations for slurry seal applications in the following items.

1. Cleaning: ensure that cracks are thoroughly clean, dry, and free of all loose and foreign material when filling with crack sealant material. Use a hot compressed air lance to dry and warm the pavement surfaces within the crack immediately prior to filling a crack with the sealant material. Do not overheat pavement. Flame dryers are not allowed.

2. Sand Slurry: for cracks greater than 1 inch in width, fill with sand slurry by thoroughly mixing the components and pour the mixture into the cracks until full. Add additional CSS-1 cationic emulsified asphalt to the sand slurry as needed for workability to ensure the mixture will completely fill the cracks. Strike off the sand slurry, flush with the existing pavement surface, and allow the mixture to cure.

3. Hot Poured Sealant: for cracks less than 1-inch-wide, fill with hot poured sealant by applying the material in accordance with these requirements and the manufacturer's recommendations. Confine hot poured sealant material within the crack. Clean any overflow sealant from the pavement surface.

GEOTECHNICAL CONTINUITY

The information contained in this report is based on our knowledge of planned mass grading, building construction and development plans. Changes in planned grading, drainage, site configurations, loading conditions, and geometry can significantly alter our opinions and recommendations. Therefore, it is critical GPI provide geotechnical continuity through final planning and design for the project.

We recommend the City retain GPI to observe and document the foundation construction activities, to confirm that our report recommendations are incorporated into the actual construction. Such observation is an important part of the geotechnical design process and can help reduce the potential for soil engineering or construction related errors or omissions. This is specifically important on this site where variable uncontrolled fill deposits can impact construction.

If for some reason we are not retained to provide the recommended construction monitoring and design verification services, we cannot be responsible for soil-engineering-related construction errors or omissions. Further, the selected firm must be required to document in writing to the City that they have read and will implement this report and its recommendations in their entirety as the project geotechnical engineer-of-record for construction.

EVALUATION LIMITATIONS

This evaluation is limited to only geotechnical project aspects of the City of Moscow shop building located at 650 North Van Buren Street in Moscow, Idaho. Our evaluation does not include civil or structural design, building construction, seismic analysis, or evaluation, segmental retaining wall design or evaluation, erosion control, stormwater management or monitoring, environmental evaluation or any other services not explicitly discussed herein. If this information or any additional services are desired, GPI can provide them under a separate scope and fee estimate specific to those project aspects.

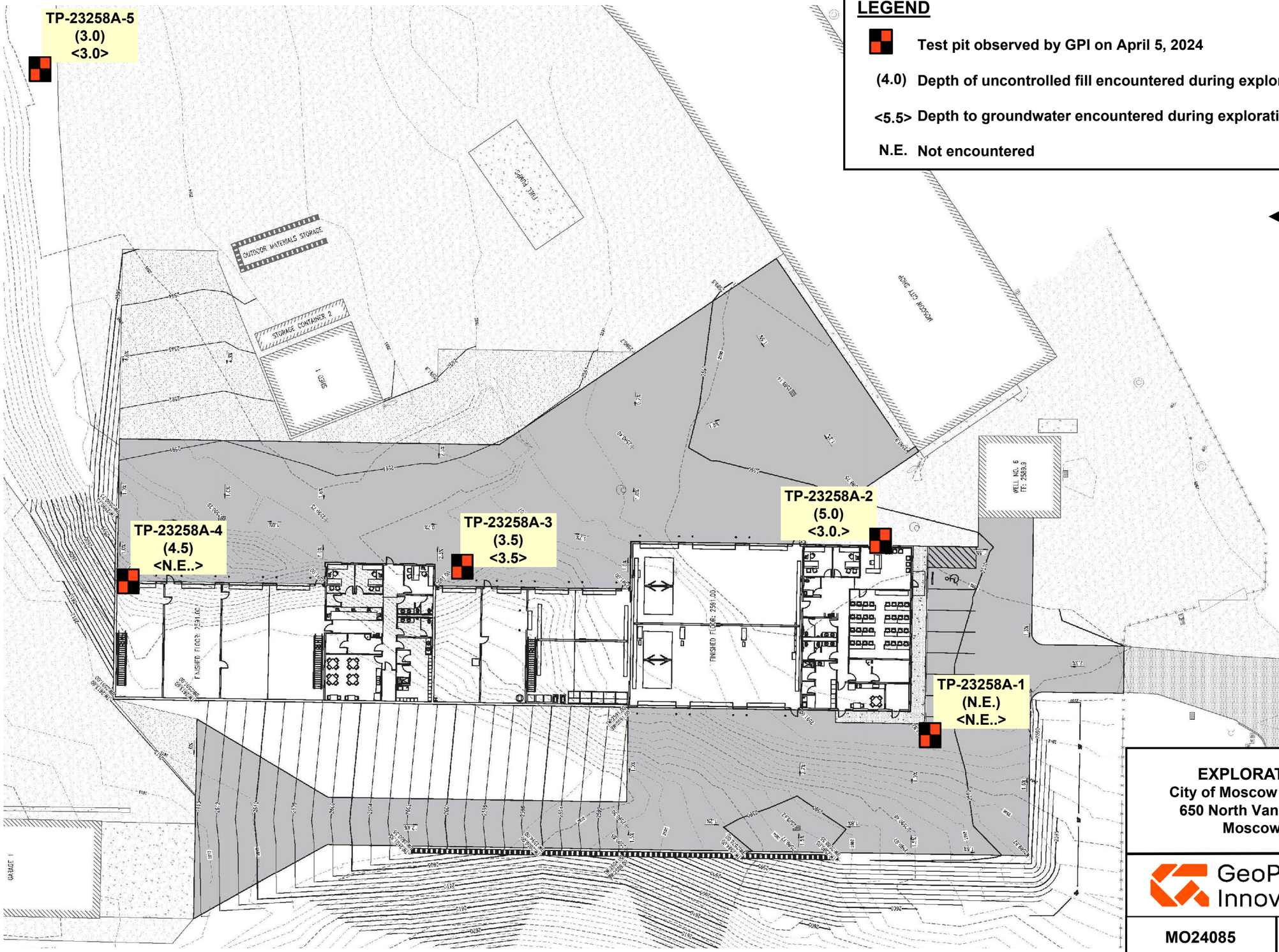
If unforeseen conditions are encountered during earthwork, GPI must be afforded the opportunity to review our recommendations and provide necessary consultation, revision, or modifications to information contained herein. Subsurface conditions may vary from the locations explored and the extent of variation may only be known at the time of construction. Where variations occur, it is critical GPI be afforded the opportunity to modify our report to reflect the site conditions exposed. Specifically, previously placed fill deposits can change drastically in short lateral distances. If GPI is not retained to observe conditions exposed during construction, we cannot be responsible for project impacts associated with varying site conditions, or extrapolations of the information in this report. This acknowledgment is in lieu of all warranties either express or implied.

This report was prepared for the exclusive use by the City of Moscow, their design team members, and contractors for the specific project referenced herein. GPI cannot be held responsible for unauthorized duplication or reliance upon this report or its contents without written authorization. The geotechnical recommendations provided herein are based on the premise that an adequate program of tests and observations will be conducted by GPI during construction in order to verify compliance with our recommendations and to confirm conditions between exploration locations.

The following plates and appendices accompany this report:

Plate 1: Exploration Map
Plate 2: Granular Soil Improvement Schematic

Appendix A: Unified Soil Classification System (USCS) and Exploration Logs
Appendix B: Laboratory Test Results



LEGEND

- Test pit observed by GPI on April 5, 2024
- (4.0) Depth of uncontrolled fill encountered during exploration (feet)
- <5.5> Depth to groundwater encountered during exploration (feet)
- N.E. Not encountered

NORTH

EXPLORATION MAP
City of Moscow Shop Building
650 North Van Buren Street
Moscow, Idaho

GeoProfessional Innovation.

MO24085	PLATE 1

Reference: Base site drawing from Sheet C.2 dated 4/12/2024 prepared by Lombard Conrad Architects. No Scale Intended.

Granular Soil Improvement Construction

Construct granular soil improvements according to the following steps:

A. Excavate minimum 1.0 feet below the planed foundation bearing elevation and laterally at least 0.5 feet outside the foundation extents.

B. Expose stiff, unyielding subgrade (Min PP>3.0 tsf) soil free of loose soil, debris, ice and standing water.

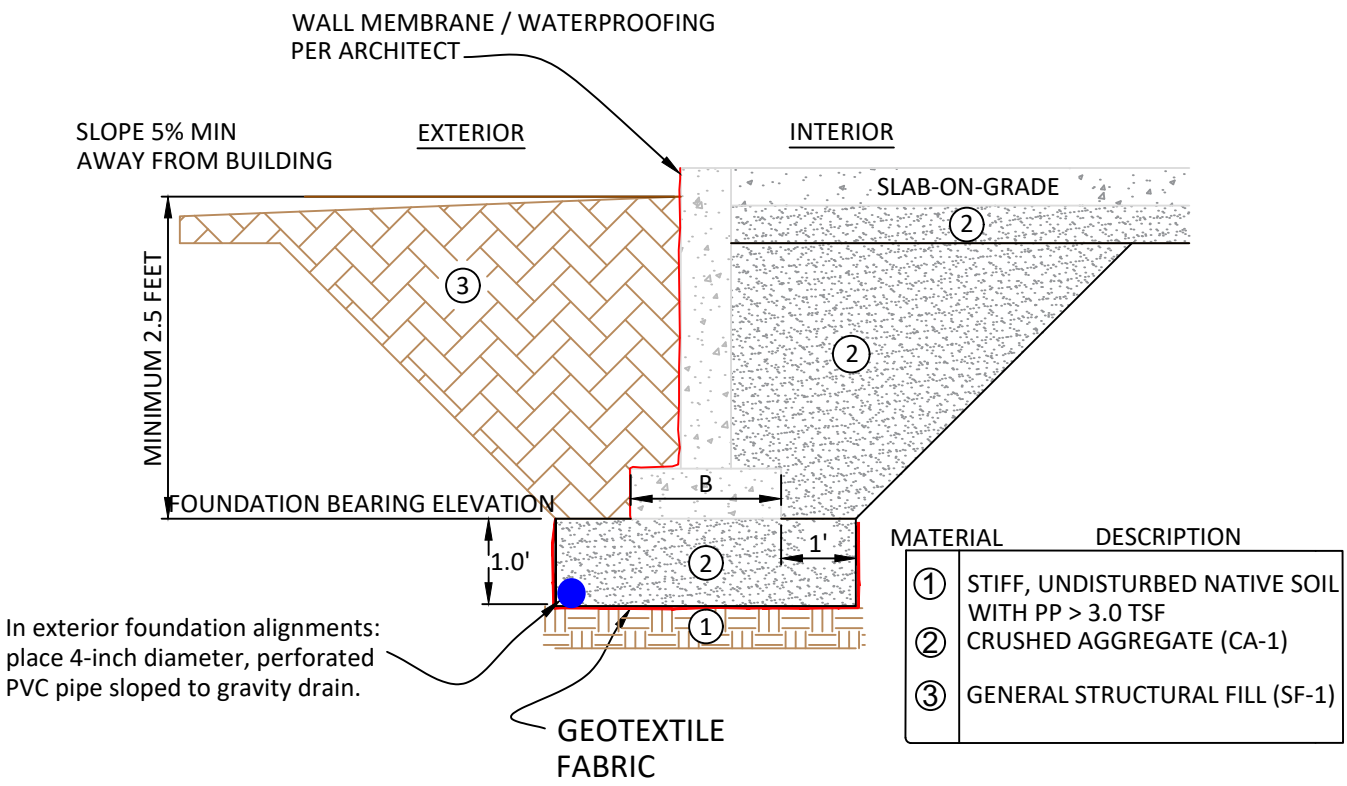
C. Cover subgrade with non woven geotextile fabric, extending up the sidewalls of the foundation bearing elevation.

D. In exterior (perimeter) foundation alignments, place 4-inch diameter, fabric-wrapped, perforated PVC pipe at lowest possible elevation to maintain gravity drainage, sloped to gravity drain towards daylight or an approved discharge facility.

E. Backfill over-excavations to the foundation bearing elevation with CA-1, compacted referencing the *Structural Fill* report section.

F. After foundation construction, backfill stem walls with CA-1 or SF-2 placed and compacted referencing the *Structural Fill* report section.

This drawing is intended for shallow foundations supporting isolated columns and walls. Foundation stemwall height may vary. This is not a structural detail.



GRANULAR SOIL IMPROVEMENT SCHEMATIC
City of Moscow Shop Building
Moscow, Idaho

GeoProfessional Innovation.

NOT TO SCALE

MO24085A	PLATE: 2
DRAWN BY: NJP	CHECKED BY: AJA

THIS FIGURE COMPROMISES A PORTION OF GPI'S REPORT AND THE TEXT OF THE REPORT CONTAINS ESSENTIAL INFORMATION: BEFORE UTILIZING THIS PLAN FOR ANY PURPOSE WHATSOEVER, THE REPORT SHOULD BE READ COMPLETELY. THIS FIGURE IS INTENDED TO HELP VISUALIZE THE INFORMATION PROVIDED BY OTHERS AND NO CHECK OF ACCURACY, CURRENCY, APPROPRIATENESS, ETC., OF INFORMATION PROVIDED BY OTHERS WAS PERFORMED, SINCE SUCH CHECKS WERE NOT PART OF GPI'S SCOPE OF SERVICES.

APPENDIX A

Unified Soil Classification System (USCS) and Exploration Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
				GP	POORLY-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
		GRAVEL WITH FINES		GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES.
				GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES.
	SAND	CLEAN SAND		SW	WELL-GRADED SAND, GRAVELLY SAND.
				SP	POORLY-GRADED SAND, GRAVELLY SAND.
		SAND WITH FINES		SM	SILTY SAND, SAND-SILT MIXTURES.
				SC	CLAYEY SAND, SAND-CLAY MIXTURES.
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILT, SANDY OR CLAYEY SILT.
				CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, SANDY OR SILTY CLAY.
				CL-ML	INORGANIC MIXED CLAY AND SILT.
				OL	ORGANIC SILT AND CLAY OF LOW PLASTICITY.
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILT, MICA- CEOUS SILT, PLASTIC SILT.
				CH	INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY.
				OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY.
				PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

BORING LOG SYMBOLS

STANDARD 2 INCH OD SPLIT SPOON SAMPLE

CALIFORNIA MODIFIED 3 INCH OD SPLIT SPOON SAMPLE

ROCK CORE

SHELBY TUBE 3 INCH OD UNDISTURBED SAMPLE

TEST PIT LOG SYMBOLS

GRAB BAG SAMPLE

BG

BULK SAMPLE

BK

RING SAMPLE

RG

GROUNDWATER SYMBOLS

GROUNDWATER AFTER 24 HOURS

GROUNDWATER AT TIME OF EXPLORATION

GROUNDWATER AT THE END OF EXPLORATION

GeoProfessional Innovation®

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
FILL - SILTY GRAVEL, (GM) gray, loose, wet	0.0	GM								No vegetation or organics at the ground surface.
LOESS - CLAY, (CL) reddish brown, stiff, moist		CL		BK BG				2.0		
	2.5							4.5+		
	5.0							4.5+		

Test Pit Terminated at 6.5 Feet.

Loosely backfilled upon completion.

Client: City of Moscow	**Test Pit Number:** TP24085A-1	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: 24085A	**Date Excavated:** 04-05-2024		
Backhoe: BOBCAT1-37	**Bucket Width:** 1.5'		
Depth to Groundwater: N.E.	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/17/24 15:35 - V:\ENGINEERING\GINT FILES\2024\MO24085 CITY OF MOSCOW.GPJ

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
UNCONTROLLED FILL - SILTY GRAVEL, (GM) dark gray, loose to medium dense, saturated	0.0									No vegetation or organics at the ground surface. Plastic, natural and organic debris encountered from 0.5 to 5.0 feet BGS.
	2.5	GM								Seeps at 3.0 to 5.0 feet BGS.
LOESS - CLAY, (CL) reddish brown with gray mottling, soft to firm, moist	5.0	CL						0.5-1.0		
				BG				1.5-2.0		
Test Pit Terminated at 7.5 Feet.	7.5									Loosely backfilled upon completion

Client: City of Moscow	**Test Pit Number:** TP24085A-2	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: 24085A	**Date Excavated:** 04-05-2024		
Backhoe: BOBCAT1-37	**Bucket Width:** 1.5'		
Depth to Groundwater: 3'	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/17/24 15:35 - V:\ENGINEERING\GINT FILES\2024\MO24085 CITY OF MOSCOW.GPJ

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
UNCONTROLLED FILL - MIXED SILT AND CLAY, (ML) dark brown, soft, saturated	0.0	ML						0.5		Significant vegetation and organics from 0 to 3.5' BGS.
	2.5									
LOESS - CLAY, (CL) reddish brown, stiff, moist										Seeps at 3.5'.
	5.0	CL		BK				4.5+		
	7.5									
Test Pit Terminated at 9.0 Feet.										Loosely backfilled upon completion.

Client: City of Moscow	**Test Pit Number:** TP24085A-3	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: 24085A	**Date Excavated:** 04-05-2024		
Backhoe: BOBCAT1-37	**Bucket Width:** 1.5'		
Depth to Groundwater: 3.5'	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/17/24 15:35 - V:\ENGINEERING\GINT FILES\2024\MO24085 CITY OF MOSCOW.GPJ

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
UNCONTROLLED FILL - MIXED SILT AND CLAY, (ML) reddish brown to dark brown, firm to stiff, moist	0.0									Vegetation and organics from 0 to 4.5' BGS.
								1.0-2.0		
	2.5	ML								
										6-inch thick layer of crushed basalt gravel at 4-4.5' BGS.
LOSS - CLAY, (CL) reddish brown, stiff, moist	5.0							3.0-4.0		
		CL								
	7.5									
Test Pit Terminated at 9.0 Feet.										Loosely backfilled upon completion.

Client: City of Moscow	**Test Pit Number:** TP24085A-4	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: 24085A	**Date Excavated:** 04-05-2024		
Backhoe: BOBCAT1-37	**Bucket Width:** 1.5'		
Depth to Groundwater: N.E.	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/17/24 15:35 - V:\ENGINEERING\GINT FILES\2024\MO24085 CITY OF MOSCOW.GPJ

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
UNCONTROLLED FILL - MIXED SILT AND CLAY, (ML) dark brown, soft, saturated	0.0	ML								Significant organics and debris encountered from 0 to 3 feet BGS. Concrete, pipe, plastic.
LOESS - CLAY, (CL) dark brown to black, soft, saturated	2.5	CL						0.5-1.0		Seeps at 3' BGS.
LOESS - CLAY, (CL) reddish brown, stiff, moist	5.0	CL		BG				4.5+		

Test Pit Terminated at 7.0 Feet.

Loosely backfilled upon completion.

Client: City of Moscow	**Test Pit Number:** TP24085A-5	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: 24085A	**Date Excavated:** 04-05-2024		
Backhoe: BOBCAT1-37	**Bucket Width:** 1.5'		
Depth to Groundwater: 3'	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/17/24 15:36 - V:\ENGINEERING\GINT FILES\2024\MO24085 CITY OF MOSCOW.GPJ

APPENDIX B

Laboratory Test Results

GeoProfessional Innovation.

Project Name.: City of Moscow Shop
Project Number: MO24085A
Client: City of Moscow

Laboratory Test Results Summary

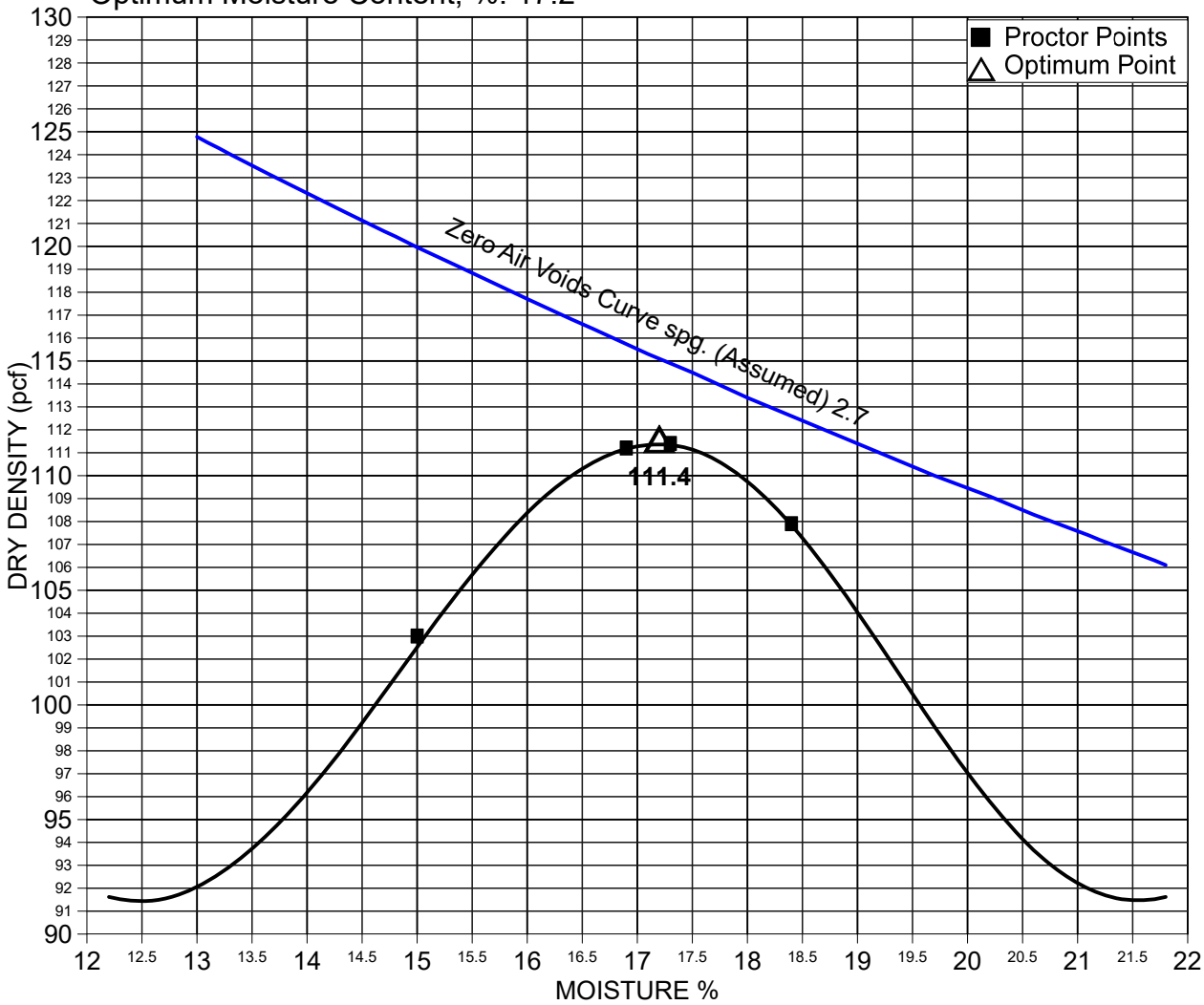
Test Pit	Depth (feet)	Lab Number	Description (U.S.C.S. Classification)	In situ Moisture, %	In situ Dry Density, pcf	Max Dry Density, pcf	Optimum Moisture, %	Atterberg Limits Liquid Limit	Atterberg Limits Plasticity Index	#200 Sieve Passing, %
TP-24085A-3	2.0-2.5	17382	Clay (CL)	20.7	97.4	-	-	30	8	77
TP-24085A-1	5.0-5.5	16540	Clay (CL)	24.8	-	111.4	17.2	-	-	-
TP-24085A-5	6.0-6.5	17383	Clay (CL)	32.6	-	-	-	-	-	-

Reviewed By: Campbell

MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D 1557
Method A

Project Name: City of Moscow Shop
Project Number: MO24085A
Client: City of Moscow
Lab Number: 16540
Sample Location: TP-24085A-3 @ 5.0-6.0 feet BGS
Sample Classification: Clay (CL)
Date Tested: 4/10/2024 By: AS
Rammer Type: Manual

Maximum Dry Density, pcf : 111.4
Optimum Moisture Content, %: 17.2

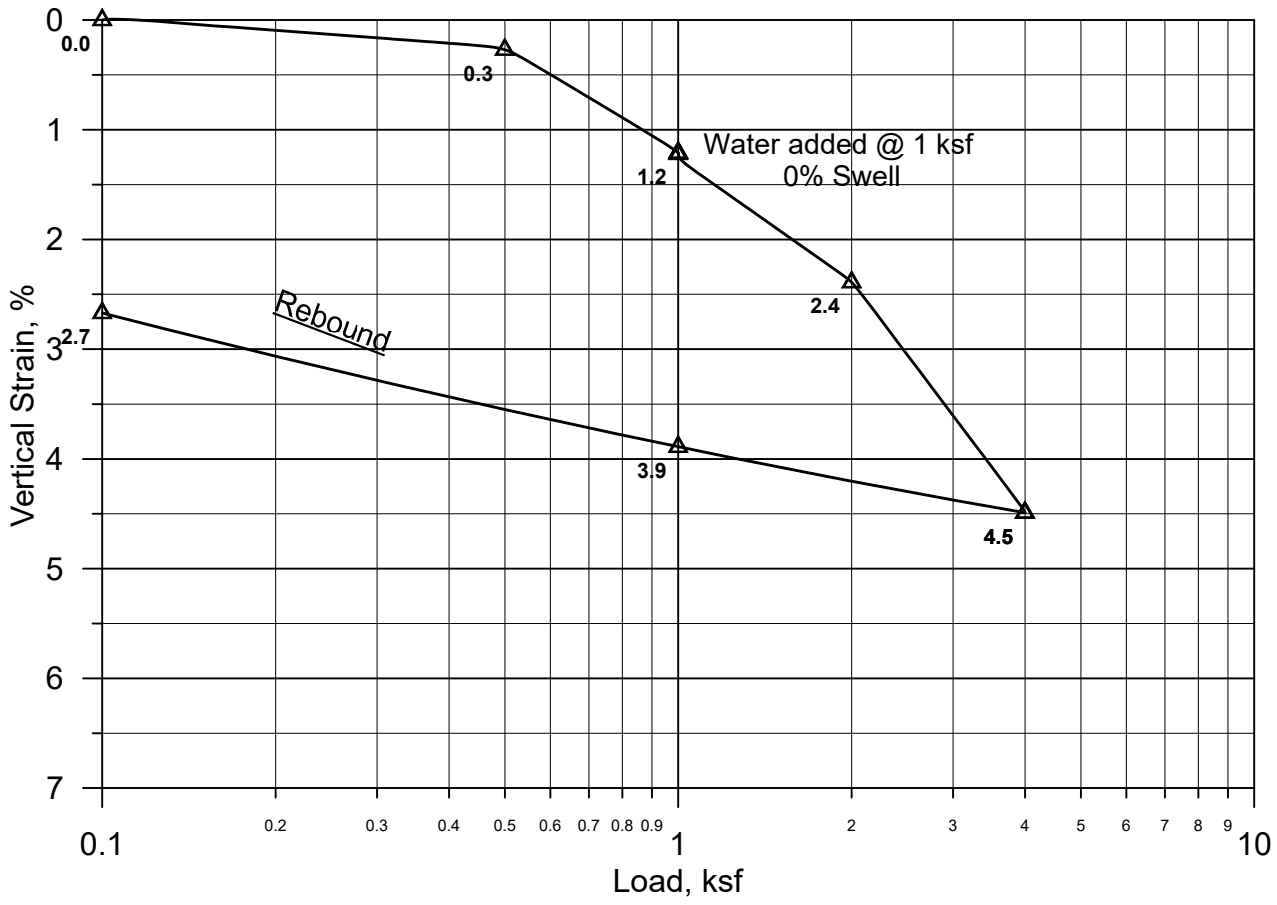


Reviewed By: _____

GeoProfessional Innovation.

CONSOLIDATION TEST RESULTS
ASTM D 2435 (Method A)

Project Name: City of Moscow Shop
Client: City of Moscow
Project Number: MO24085A
Lab Number: 17382
Sample Location: B-24085A-1 @ 2.5-3.0 feet BGS
Sample Classification: Clay (CL)
Sample: In-Situ Tube (Condition: Good)
Date Tested: 4/10/2024 By: LMC
Sample Dry Unit Weight: 97.4 pcf
In-Situ Moisture Content: 20.7%
Atterberg Limits: LL=30, PI=8
Passing #200: 77%



Reviewed By: _____

GeoProfessional Innovation.

0142

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: Removal, hauling, and disposal of unsatisfactory soil (Per CY).

1. Description: Unsatisfactory soil excavation, hauling, and disposal off-site, as required, according to Section 310000 "Earthwork."
2. Unit of Measurement: Cubic yard of soil excavated, based on in-place surveys of volume before and after removal.

B. Unit Price No. 2: Import, placement, and compaction of structural engineered fill and satisfactory soil material (Per CY).

1. Description: Import, placement, and compaction of satisfactory fill material or engineered fill from off-site, as required, according to Section 310000 "Earthwork."
2. Unit of Measurement: Cubic yard of soil imported, based on in-place surveys of volume before and after replacement.

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Pre-engineered metal building envelope system.

1. Base Bid: Provide Insulated metal panels as detailed by wall and roof types on Sheet A3.20 and Section 133419.
2. Alternate: Provide metal siding with loose insulation and vapor barrier as detailed by wall and roof types on Sheet A3.20 and Section 133419, noted as “Alternate”.

B. Alternate No. 2: Salt and Material Storage Building.

1. Alternate: Provide Salt and Materials Storage Building as indicated in the documents dated 05/27/2020.

C. Alternate No. 3: Existing Shop Building Exterior Cladding.

1. Alternate: Remove the existing shop building cladding and provide new cladding as indicated in the Existing Shop Building Exterior Cladding document set dated 9/27/2024 and the specifications dated 7/24/2024.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
2. Section 012300 "Alternates" for products selected under an alternate.
3. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use the attached form at the end of this section.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form included in Project Manual.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form included in Project Manual.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on form included in Project Manual. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

   1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date, but no later than days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

   1. Identification: Include the following Project identification on the schedule of values:

      a. Project name and location.
      b. Owner's name.
      c. Owner's Project number.
      d. Name of Architect.
      e. Architect's Project number.
      f. Contractor's name and address.
      g. Date of submittal.

2. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

    a. Related Specification Section or division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

        1) Labor.
        2) Materials.
        3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site.

5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
7. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
8. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
9. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
10. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the **25th day** of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

   a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
   b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
   c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit Insert number-one signed and notarized original copyies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required. Electronic copy is acceptable.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Schedule of unit prices.
6. Submittal schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.
13. Certificates of insurance and insurance policies.
14. Performance and payment bonds.
15. Data needed to acquire Owner's insurance.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

    a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.

9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.
4. Section 019113 "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    e. Indicate required installation sequences.
    f. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling, raised access floor, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Submittal Format: Submit or post coordination drawing files using PDF format.

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.

3. Owner's Project number.
4. Name of Architect.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect and Construction Manager will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly Insert time. Use software log that is part of web-based Project management software.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Architect's Data Files Not Available: Architect will not provide Architect's BIM model CAD drawing digital data files for Contractor's use during construction.

B. Web-Based Project Management Software Package: Contractor to provide Procore web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project management software includes, at a minimum, the following features:

   a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
   b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
   c. Document workflow planning, allowing customization of workflow between project entities.
   d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
   e. Track status of each Project communication in real time, and log time and date when responses are provided.
   f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
   g. Processing and tracking of payment applications.
   h. Processing and tracking of contract modifications.
   i. Creating and distributing meeting minutes.
   j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
   k. Management of construction progress photographs.
   l. Mobile device compatibility, including smartphones and tablets.
   m. Contractor to provide web-based Project Management Software: Procore.

2. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.
j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Sustainable design requirements.
o. Preparation of Record Documents.
p. Use of the premises.
q. Work restrictions.
r. Working hours.
s. Owner's occupancy requirements.
t. Responsibility for temporary facilities and controls.
u. Procedures for moisture and mold control.
v. Procedures for disruptions and shutdowns.
w. Construction waste management and recycling.
x. Parking availability.

y. Office, work, and storage areas.
z. Equipment deliveries and priorities.
aa. First aid.
bb. Security.
cc. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect , and Owner's Commissioning Authority of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Sustainable design requirements.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

    a. Preparation of Record Documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Procedures for completing and archiving web-based Project software site data files.
    d. Submittal of written warranties.
    e. Requirements for completing sustainable design documentation.
    f. Requirements for preparing operations and maintenance data.
    g. Requirements for delivery of material samples, attic stock, and spare parts.
    h. Requirements for demonstration and training.
    i. Preparation of Contractor's punch list.
    j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    k. Submittal procedures.
    l. Coordination of separate contracts.
    m. Owner's partial occupancy requirements.
    n. Installation of Owner's furniture, fixtures, and equipment.
    o. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Status of sustainable design documentation.
6) Deliveries.
7) Off-site fabrication.
8) Access.
9) Site use.
10) Temporary facilities and controls.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Status of RFIs.
16) Status of Proposal Requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

B. Related Requirements:
1. Section 014000 "Quality Requirements" for schedule of tests and inspections.
2. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Startup construction schedule.

1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Unusual Event Reports: Submit at time of unusual event.

1.5 QUALITY ASSURANCE

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

a. Securing of approvals and permits required for performance of the Work.
b. Temporary facilities.
c. Construction of mock-ups, prototypes and samples.
d. Owner interfaces and furnishing of items.
e. Interfaces with Separate Contracts.
f. Regulatory agency approvals.
g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

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4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Commissioning Time: Include no fewer than 15 days for commissioning.

7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.
    l. Building flush-out.
    m. Startup and placement into final use and operation.
    n. Commissioning.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion
1. .

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.

5. Pending modifications affecting the Work and the Contract Time.

G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

I. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Construction Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.

20. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

C. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
5. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
8. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.

16. Remarks.
17. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
4. Additional Copies: Unless additional copies are required for final submittal, and unless Architect] observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
5. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using transmittal form.

E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.

   a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.
3. Paper: Prepare submittals in paper form and deliver to Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.

4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's] action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.

f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal, including complete submittal information indicated.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample sets; remainder will be returned.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.

d. Product and manufacturers' names.
e. Description of product.
f. Test procedures and results.
g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

3. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

B. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

D. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."

G. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

H. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.

2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.7 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
5. Build laboratory mockups at testing facility, using personnel, products, and methods of construction indicated for the completed Work.
6. When testing is complete, remove test specimens and test assemblies, and mockups[**,** do not reuse products on Project.
7. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents-Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.9 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

F. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

C. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.

D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of

authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

F. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

G. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
3. Maintain and touch up signs, so they are legible at all times.

D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

F. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

G. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

H. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

H. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

I. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

L. The Contractor will be responsible to provide site fencing and screening in order to maintain a secure site during construction in order to maintain the safety of the general public.

3.5 MOISTURE AND MOLD CONTROL

A. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

B. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

C. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.

2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
    c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

END OF SECTION 015000

SECTION 015400 - SECURITY

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDE

A. Personnel Identification.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PERSONNEL IDENTIFICATION

A. Background Checks

1. Background Checks:
2. Contractor shall have City of Moscow conduct background checks on all employees, that will have regular and full access to the sites. Forms will be provided.
3. Personnel shall have a valid government issued ID.

B. Security Photo identification/access cards:

1. Only personnel that have passed the specified background check shall be present at the work site.
2. NOTE: Any issued card that is not used within 6 months will be automatically deactivated.

C. Security

1. Contractor will be responsible for compliance with all City security requirements. Under no circumstances shall Contractor's employees be let into building or onto site or bring in any persons not authorized by the City. Each Contracted employee will be required to have an active City issued identification/access card.
2. No later than seven (7) day after notification of Intent to Award, the Contractor shall provide the City with a list of the contractor’s personnel that will be providing service in the building(s) by location, including personnel assigned to perform tasks that occur on a less frequent basis.

D. The Contractor shall also provide the City with prior notification of any changes to the Contractor’s personnel listing, including removal and addition of personnel.

E. The City reserves the right to approve or disapprove appointment of any of the Contractor’s personnel to provide services required by the contract. The City also reserves the right to request replacement of any person assigned to provide services.

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
2. Section 012300 "Alternates" for products selected under an alternate.
3. Section 012500 "Substitution Procedures" for requests for substitutions.
4. Section 014200 "References" for applicable industry standards for products specified.
5. Section 01770 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

C. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

D. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

E. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.

5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

2. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.

    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

3. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

4. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

    a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."

1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

D. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Coordination of Owner-installed products.
7. Progress cleaning.
8. Starting and adjusting.
9. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of Owner-furnished products, and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

1.5 QUALITY ASSURANCE

Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.4 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel and Owner's separate contractors.

1. Provide temporary facilities required for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products.
2. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Contractor-installed and Owner-furnished, Owner-installed products

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel and Owner's separate contractors.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

3.6 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.

b. Date.
c. Name of Architect .
d. Name of Contractor.
e. Page number.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit by uploading to web-based project software site.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.
m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Section 019113 "General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect and Commissioning Authority will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit by uploading to web-based project software site. Enable reviewer comments on draft submittals.
2. Submit three paper copies. Architect return two copies.

C. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in

manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

   a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.
3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Final Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Submit Record Digital Data Files and one set(s) of Record Digital Data File plots.
3) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Reports: Submit written report weekly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.

b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect
e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file.

1.6 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
4. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:

   a. Emergency manuals.
   b. Systems and equipment operation manuals.
   c. Systems and equipment maintenance manuals.
   d. Product maintenance manuals.
   e. Project Record Documents.
   f. Identification systems.
   g. Warranties and bonds.
   h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.

l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.

2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral performance-based test.

F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.

1. Submit video recordings on CD-ROM or thumb drive and [by uploading to web-based Project software site.
2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

a. Name of Contractor/Installer.
b. Business address.
c. Business phone number.
d. Point of contact.
e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

a. Produce segments to present a single significant piece of equipment per segment.
b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017900

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Epoxy repair coating.
3. Zinc repair material.
4. Bar supports.
5. Mechanical splice couplers.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Architect.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:

a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.

2. Mechanical splice couplers.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Store reinforcement to avoid contact with earth.
2. Do not allow epoxy-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
3. Do not allow dual-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
4. Do not allow stainless steel reinforcement to come into contact with uncoated reinforcement.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: As indicated on drawings ASTM A615/A615M,, deformed.

B. Low-Alloy Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C. Headed-Steel Reinforcing Bars: ASTM A970/A970M.

2.2 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

    a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.

C. Mechanical Splice Couplers: ACI 318 , same material of reinforcing bar being spliced; Type as indicated..

D. Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

2.3 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.
2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars as indicated on drawings..

D. Provide concrete coverage in accordance with ACI 318and as indicated on drawings.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped and as indicated.
2. Stagger splices in accordance with ACI 318.
3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.

4. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.
2. Continue reinforcement across construction joints unless otherwise indicated.
3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel-reinforcement placement.
2. Steel-reinforcement mechanical splice couplers.
3. Steel-reinforcement welding.

END OF SECTION 032000

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, vapor barriers and finishes.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mix water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

1. Cementitious materials and aggregates.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing materials.
5. Vapor retarders.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in

construction with a record of successful in-service performance. Installer must have minimum 5 years' experience in finishing concrete work where concrete is placed directly on vapor barrier, without sand bed.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:

1. ACI 301, "Specification for Structural Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1. Before submitting design mixes, review concrete mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixes.
c. Ready-mix concrete producer.
d. Concrete subcontractor.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.7 ADDING WATER TO CONCRETE

A. Do not add water to concrete without the approval of the Architect.

B. Account for all water added to the concrete mix.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82, as drawn.

2.2 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

1. Fly Ash: ASTM C 618, Class Corf.

B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Nominal Maximum Aggregate Size: 1-1/2 inches, footings and foundation walls.
2. Nominal Maximum Aggregate Size: 3/4 inch, slabs on grade or deck.

C. Water: Potable and complying with ASTM C 94.

2.4 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

B. Water-Reducing Admixture: ASTM C 494, Type A.

C. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

D. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

E. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.5 VAPOR RETARDERS

A. Vapor Retarder:

1. Griffolyn: T-85
2. Raven Industries: Vapor Block 15
3. Fortifiber: Moiststop Ultra ‘A’
4. Stego Wrap: 15 mil
5. Or pre-approved equal

B. Fine-Graded Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; with 100 percent passing a 1-1/2 inch sieve and with less than 5% passing the 200 sieve, meeting deleterious substance limits of ASTM C 33 for fine aggregates.

2.6 CURING MATERIALS (NO FLOOD MOISTURE CURING)

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

F. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Evaporation Retarder:

a. Cimfilm; Axim Concrete Technologies.
b. Finishing Aid Concentrate; Burke Group, LLC (The).
c. Spray-Film; ChemMasters.
d. Aquafilm; Conspec Marketing & Manufacturing Co., Inc.
e. Sure Film; Dayton Superior Corporation.
f. Eucobar; Euclid Chemical Co.
g. Vapor Aid; Kaufman Products, Inc.
h. Lambco Skin; Lambert Corporation.
i. E-Con; L&M Construction Chemicals, Inc.
j. Confilm; Master Builders, Inc.
k. Waterhold; Metalcrete Industries.
l. Rich Film; Richmond Screw Anchor Co.
m. SikaFilm; Sika Corporation.
n. Finishing Aid; Symons Corporation.
o. Certi-Vex EnvioAssist; Vexcon Chemicals, Inc.

2. Clear, Waterborne, Membrane-Forming Curing Compound:

a. AH Clear Cure WB; Anti-Hydro International, Inc.
b. Klear Kote WB II Regular; Burke Chemicals.
c. Safe-Cure & Seal 20; ChemMasters.
d. High Seal; Conspec Marketing & Manufacturing Co., Inc.
e. Safe Cure and Seal; Dayton Superior Corporation.
f. Aqua Cure VOX; Euclid Chemical Co.
g. Cure & Seal 309 Emulsion; Kaufman Products Inc.
h. Glazecote Sealer-20; Lambert Corporation.
i. Dress & Seal WB; L&M Construction Chemicals, Inc.
j. Vocomp-20; W. R. Meadows, Inc.
k. Metcure; Metalcrete Industries.
l. Cure & Seal 150E; Nox-Crete Products Group, Kinsman Corporation.

m. Rich Seal 14 percent E; Richmond Screw Anchor Co.
n. Kure-N-Seal WB; Sonneborn, Div. of ChemRex, Inc.
o. Florseal W.B.; Sternson Group.
p. Cure & Seal 14 percent E; Symons Corporation.
q. Seal Cure WB 150; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
r. Hydro Seal; Unitex.
s. Starseal 309; Vexcon Chemicals, Inc.

2.7 RELATED MATERIALS

A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Reglets: Fabricate reglets of not less than 0.0217-inch- thick galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

2.8 CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

C. Footings and Foundation Walls: Proportion normal-weight concrete mix as follows:

1. Compressive Strength (28 Days): As indicated on plan, w/c ratio = .48, maximum.
2. Maximum Slump: As indicated on plan.
3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches after admixture is added to concrete with maximum slump as indicated on plan.

D. Slab-on-Grade: Proportion normal-weight concrete mix as follows:

1. Compressive Strength (28 Days): As indicated on plan, w/c ratio = .40, maximum
2. Minimum Cementitious Materials Content: 560 lb/cu. yd..
3. Maximum Slump: 3 inches prior to plasticizer.
4. Water cement ratio will be monitored by testing agency. Addition of “job-site” water will not be allowed unless approved by the Testing Agency, but will not exceed 0.40 ratio. Testing Agency is to reject all non-conforming concrete.

E. Suspended Slabs: Proportion normal-weight concrete mix as follows:

1. Compressive Strength (28 Days): As indicated on plans, w/c ratio .40, maximum.
2. Maximum Slump: 3 inches.

F. Cementitious Materials: For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements.

G. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 15 percent.
2. Combined Fly Ash and Pozzolan: 15 percent.

H. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

I. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class D, 1/4 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 VAPOR RETARDERS

A. Granular Fill: Compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch. A sand and gravel mixture complying with ASTM D 1241 Type I Gradation A aggregate. Not less than 100% of this aggregate shall pass the 1” screen and no more than 5%

of the aggregate shall pass the #4 screen. For a total granular fill of the following thickness: 6 inches.

B. Vapor Retarder: Place vapor retarder on compacted granular fill, protect, and repair vapor-retarder sheets according to manufacturer's written instructions. Use only manufacturers supplied tape at all laps, plumbing and conduit penetrations. Turn up vapor retarders 4 inches at edges of all slabs.

C. The vapor retarders' manufacturers' representative shall inspect the installation of the product and provide a written field report to the Architect. All defects shall be corrected prior to concrete pour.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

1. The vapor retarders' manufacturers' representative shall inspect the installation of the product and provide a written field report to the Architect. All defects shall be corrected prior to concrete pour.
2. The Architect/Owner must inspect the installation of the vapor barrier prior to concrete placement.

B. Do not add water to concrete during delivery, at Project site, or during placement.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

D. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 BLOCKOUTS FOR PIPE AND CONDUIT

A. Where pipe or conduit passes into or through concrete walls, floors, or roof slabs, the Contractor may, to facilitate proper alignment, leave holes through the concrete and pour the concrete opening after the pipe or conduit is in place. The size of such openings shall be two inches (2") larger than the outside diameter of the bell, flange or coupling and shall conform to the special details for pipe openings shown on the Plans. When the piping or conduit is entirely placed and securely anchored, the concrete openings through the walls will be poured in accordance with the requirements for bonding new concrete to old as set forth herein. Concrete used to pour these openings shall consist of one part cement, one part fine aggregate, one part non-shrinking aggregate and one and one-half parts course aggregate of maximum size of one-half inch (½") when the concrete is part of a basin which must hold liquids. Otherwise, the non-shrinking aggregate in these proportions shall be replaced by fine aggregate. Concrete poured in these openings shall be thoroughly vibrated or rodded to insure a watertight joint between the new and old concrete and the new concrete and the pipe or conduit. The form for the closure shall be constructed with a pouring funnel. A plug of concrete shall be left in the pouring funnel. After the concrete has taken its initial set, the plug shall be removed and the exposed, broken face ground smooth. Pouring of blockout holes shall be done from the pressure side whenever possible. Such joints shall be thoroughly cured by keeping them constantly wet for not less than seven days.

B. Where approved by the Engineer, blockout holes may be dry packed using non-shrink grout for basins which must hold liquid, and normal grout in other places. Only sufficient water shall be added to make a dry, crumbling mass. When the mixture is pressed tightly together into a ball with the hands, there should not be sufficient water in the mixture to stain the hands, and when such a ball is broken, it should crumble. This mixture shall be tamped or rodded solidly into the space, preferably from the pressure side. A backing board or stop shall be provided at the back side of this space against which the mixture can be tamped. Curing shall be as specified above.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system

2. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot-long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:

   a. 1/8 inch for floors to receive sheet goods or VCT or rubber flooring ¼ inch for floors to receive carpet.

D. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.12 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the methods identified in Article 2.7 and Item D below.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing. Do not use gypsum based products.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

   a. Cast and field cure one set of four standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.

   a. Test two field-cured specimens at 7 days and two at 28 days.
   b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.

C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 033000

SECTION 033543 - POLISHED CONCRETE FINISHING

1.1 QUALITY ASSURANCE

A. Polished Concrete Standards: Comply with ACI 310.1.

B. Mockups.

1.2 LIQUID FLOOR TREATMENTS

A. Penetrating liquid floor treatments for polished concrete finish.
   1. Liquid concrete repair material.
      a. Filler for micro-cracks, pinholes, and other flaws.
   2. Pre-densifier concrete cleaner.
   3. Penetrating liquid densifier/hardener.
   4. General purpose premium sealer top coat.

1.3 POLISHED CONCRETE SURFACE FINISH REQUIREMENTS

A. Aggregate Exposure Class: Class B Fine Aggregate 85 to 95 percent fine aggregate; 5 to 15 percent blend of fines and coarse aggregate.

B. Polish Concrete Appearance Levels: Level 2: Satin (Honed) up to 200- to 400-grit polish; DOI 10 to 39; Haze Reading less than 10; Reflective Sheen: Low to medium.

C. Slip resistance.

1.4 ACCESSORIES

A. Repair materials.

1.5 APPLICATION

A. Repair and fill pinholes, micro-cracks, and other flaws.

B. Apply pre-densifier concrete cleaner.

C. Apply penetrating liquid densifier.

D. Machine grind floor surfaces.

E. Scoring.

F. Apply penetrating stain densifier treatment.

G. Apply sealers.

1.6 FIELD QUALITY CONTROL

A. Testing Agency: Contractorengaged.

B. Measure polish specular gloss level, DOI, and haze as specified; repolish if required to achieve Project requirements.

END OF SECTION 033543

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural steel.
2. Shear stud connectors.
3. Shrinkage-resistant grout.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
2. Section 055000 "Metal Fabrications" for miscellaneous steel fabrications and other steel items not defined as structural steel.
3. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for painting requirements.

1.3 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

B. Lateral Force Resisting System: Elements of structural-steel frame designated as "LFRS" or along grid lines designated as "LFRS" on Drawings, including columns, beams, and braces and their connections.

C. Heavy Sections: Rolled and built-up sections as follows:

1. Shapes included in ASTM A6/A6M with flanges thicker than 1-1/2 inches.
2. Welded built-up members with plates thicker than 2 inches.
3. Column base plates thicker than 2 inches.

D. Protected Zone: Structural members or portions of structural members indicated as "protected zone" on Drawings. Connections of structural and nonstructural elements to protected zones are limited.

E. Demand-Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the seismic-load-resisting system and which are indicated as "demand critical" or "seismic critical" on Drawings.

1.4 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site Insert location.

1.6 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Forged-steel hardware.
7. Slide bearings.
8. Shop primer.
9. Galvanized-steel primer.
10. Etching cleaner.
11. Galvanized repair paint.
12. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members and connections of the seismic-load-resisting system.
6. Indicate locations and dimensions of protected zones.
7. Identify demand-critical welds.
8. Identify members not to be shop primed.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1/D1.1M for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand-critical welds.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer fabricator shop-painting applicators testing agency.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural-steel materials, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shear stud connectors.
5. .

F. Source quality-control reports.

G. Field quality-control reports.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.

3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: As indicated..

B. Channels, Angles -Shapes: As indicated..

C. Plate and Bar: As indicated..

D. Cold-Formed Hollow Structural Sections: structural tubing as indicated on drawings.

E. Steel Pipe: ASTM A53/A53M, Type E or Type S, Grade B.

1. Weight Class: As indicated..
2. Finish: Black.

F. Steel Castings: ASTM A216/A216M, Grade WCB, with supplementary requirement S11.

G. Steel Forgings: ASTM A668/A668M.

H. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS AND CONNECTORS

A. High-Strength Bolts, Nuts, and Washers: As indicated. .

1. Direct-Tension Indicators: As indicated.

B. High-Strength: As indicated.

1. Direct-Tension Indicators: As indicated.

C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: As indicated.

1. Finish: As indicated.
2. Direct-Tension Indicators: As indicated.

D. Tension-Control: As indicated on drawings.

1. Finish: Plain.

E. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.3 RODS

A. As indicated on drawings.

2.4 PRIMER

A. Steel Primer:

1. Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

B. Galvanized-Steel Primer: As indicated.MPI#26.

1. Etching Cleaner: MPI#25, for galvanized steel.
2. Galvanizing Repair Paint: ASTM A780/A780M.

2.5 SHRINKAGE-RESISTANT GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 1.

F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

G. Steel Wall-Opening Framing: Select true and straight members for fabricating steel wall-opening framing to be attached to structural-steel frame. Straighten as required to provide uniform, square, and true members in completed wall framing. Build up welded framing, weld exposed joints continuously, and grind smooth.

H. Welded-Steel Door Frames: Build up welded-steel door frames attached to structural-steel frame. Weld exposed joints continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secure removable stops to frames with countersunk machine screws, uniformly spaced not more than 10 inches o.c. unless otherwise indicated on Drawings.

I. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.7 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: As indicated..

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.8 SHOP PRIMING

A. Shop prime steel surfaces, except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces of high-strength bolted, slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces unless indicated to be painted.
6. Corrosion-resisting (weathering) steel surfaces.
7. Surfaces enclosed in interior construction.

B. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness

of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.

1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

    a. Liquid Penetrant Inspection: ASTM E165/E165M.
    b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    c. Ultrasonic Inspection: ASTM E164.
    d. Radiographic Inspection: ASTM E94/E94M.

4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:

    a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.
    b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: As indicated..

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect and test bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1) Liquid Penetrant Inspection: ASTM E165/E165M.
2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3) Ultrasonic Inspection: ASTM E164.
4) Radiographic Inspection: ASTM E94/E94M.

3.6 PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Section 099113 "Exterior Painting."

D. Touchup Priming: Cleaning and touchup priming are specified in Section 099600 "High-Performance Coatings."

END OF SECTION 051200

SECTION 053100 – STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof deck.
2. Noncomposite form deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Section 055000 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Roof deck.
2. Noncomposite form deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Test and Evaluation Reports:

1. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

a. Power-actuated mechanical fasteners.

D. Field Quality-Control Submittals:

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with SDI QA/QC and the following welding codes:

1. AWS D1.1/D1.1M.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store products in accordance with SDI MOC3. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck in accordance with AISI S100.

B. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.

2.2 ROOF DECK

A. Manufacturers:
1. Nucor Corp.
2. Verco Decking, Inc., a Nucor Company

B. Fabrication of Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI RD and with the following:

1. Prime-Painted Steel Sheet: ASTM A1008/A1008M, Structural Steel (SS), **Grade 33** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

a. Color: Manufacturer's standard
2. Deck Profile: As indicated.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated
5. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: As indicated.
6. Span Condition: As indicated.
7. Side Laps: **Interlocking seam**

2.3 NONCOMPOSITE FORM DECK

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Fabrication of Noncomposite Form Deck: Fabricate ribbed-steel sheet noncomposite deck panels used as a form to comply with SDI NC, with the minimum section properties indicated, and with the following:
   1. Prime-Painted Steel Sheet: ASTM A1008/A1008M, Structural Steel (SS), **Grade 33**minimum, with **top and** underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
      a. Color: As indicated
   2. Profile Depth: As indicated.
   3. Design Uncoated-Steel Thickness: As indicated.
   4. Span Condition: As indicated.
   5. Side Laps: **Interlocking seam**.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories in accordance with SDI C, SDI NC, and SDI RD, as applicable; manufacturer's written instructions; and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

   1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install in accordance with deck manufacturer's written instructions.

J. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

3.3 INSTALLATION OF ROOF DECK

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: As indicated.
2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds as indicated.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: As indicated

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: As indicated.

D. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive in accordance with manufacturer's written instructions to ensure complete closure.

3.4 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: As indicated
2. Weld Spacing: As indicated.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: As indicated.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure in accordance with SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, in accordance with SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

F. Install piercing hanger tabs at 14 inches apart in both directions, within 9 inches of walls at ends, and not more than 12 inches from walls at sides unless otherwise indicated.

3.5 REPAIR

A. Repair Painting:

1. Wire brush and clean rust spots, welds, and abraded areas on top surface of prime-painted deck immediately after installation, and apply repair paint.
2. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
3. Repair Painting: Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections:

1. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck in accordance with quality-assurance inspection requirements of SDI QA/QC.

   a. Field welds will be subject to inspection.

2. Steel decking will be considered defective if it does not pass tests and inspections.
3. Shear Stud Connectors: In addition to visual inspection, test and inspect field-welded shear connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:

   a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
   b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors that are already tested.

C. Prepare test and inspection reports.

END OF SECTION 053100

PART 4 -

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior non-load-bearing wall framing.
2. Soffit framing.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for miscellaneous steel shapes, masonry shelf angles, and connections used with cold-formed metal framing.
2. Section 092116.23 "Gypsum Board Shaft Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies, with height limitations.
3. Section 092216 "Non-Structural Metal Framing" for standard, interior non-load-bearing, metal-stud framing, with height limitations and ceiling-suspension assemblies.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cold-formed steel framing materials.
2. Exterior non-load-bearing wall framing.
3. Vertical deflection clips.
4. Single deflection track.
5. Double deflection track.
6. Drift clips.
7. Soffit framing.
8. Post-installed anchors.
9. Power-actuated anchors.
10. Sill sealer gasket.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Certificates: For each type of code-compliance certification for studs and tracks.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Vertical deflection clips.
6. Horizontal drift deflection clips
7. Miscellaneous structural clips and accessories.

E. Research Reports:

1. For nonstandard cold-formed steel framing post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.
2. For sill sealer gasket/termite barrier, showing compliance with ICC-ES AC380.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Product Tests: Mill certificates or data from a qualified independent testing agency**,** or in-house testing with calibrated test equipment, indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect and store cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling as required in AISI S202.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:

1. Dietrich Metal Framing; a Worthington Industries Company.
2. SCAFCO Corporation.

3. Steeler, Inc.
4. Or Approved Equal

B. Products by other manufacturers are subject to approval prior to bidding.

2.2 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As indicated in the drawings.
2. Flange Width: As indicated in the drawings.
3. Section Properties: As indicated in the drawings.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As indicated in the drawings.
2. Flange Width: As indicated in the drawings.

C. Vertical Deflection Clips, Exterior: Manufacturer's standard deflection clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

D. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:

1. Minimum Base-Metal Thickness: As indicated in the drawings.
2. Flange Width: As indicated in the drawings.

E. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.

1. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:

a. Minimum Base-Metal Thickness: As indicated in the drawings.
b. Flange Width: As indicated in the drawings.

2. Inner Track: Of web depth indicated, and as follows:

a. Minimum Base-Metal Thickness: As indicated in the drawings.
b. Flange Width: As indicated in the drawings.

F. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure through positive mechanical attachment to stud web and structure.

2.3 SOFFIT FRAMING

A. Exterior Soffit Frame: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As indicated in the drawings.
2. Flange Width: As indicated in the drawings.
3. Section Properties: As indicated in the drawings.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers and knee braces.
9. Joist hangers and end closures.
10. Hole-reinforcing plates.
11. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: As indicated in the drawings.

B. Anchor Bolts: As indicated in the drawings.

C. Post-Installed Anchors: As indicated in the drawings.

D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780.

B. Cement Grout: Portland cement, ASTM C150/C150M, Type I; and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.

D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

E. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.7 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.

4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 INSTALLATION OF EXTERIOR NONLOADBEARING WALL FRAMING

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.

B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as indicated in the drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.

1. Install single deep-leg deflection tracks and anchor to building structure.
2. Install double deep-leg deflection tracks and anchor outer track to building structure.
3. Connect vertical deflection clips to bypassing studs and anchor to building structure.
4. Connect drift clips to cold-formed steel framing and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.

1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 INSTALLATION TOLERANCES

A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.

3.6 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Miscellaneous framing and supports.
2. Metal ladders.
3. Pit sump covers.
4. Miscellaneous steel trim.
5. Metal bollards.
6. Loose bearing and leveling plates.

B. Products furnished, but not installed, under this Section include the following:

1. Loose steel lintels.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
3. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

C. Related Requirements:

1. Section 0422000 "Concrete Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
2. Section 051200 "Structural Steel Framing" for steel framing, supports, machine beams, hoist beams, divider beams, door frames, and other steel items attached to the structural-steel framing.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:
1. Fasteners.
2. Shop primers.
3. Shrinkage-resisting grout.
4. Slotted channel framing.
5. Manufactured metal ladders.

6. Metal bollards.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Miscellaneous framing and supports for applications where framing and supports are not specified in other Sections.
2. Shelf angles.
3. Metal ladders.
4. Pit sump covers.
5. Miscellaneous steel trim including Stainless Steel Wall Panel.
6. Metal bollards.
7. Loose steel lintels.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Stainless Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 304.

D. Stainless Steel Bars and Shapes: ASTM A276/A276M, Type 304.

E. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

F. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

G. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: As indicated.
2. Cold-Rolled Steel: ASTM A1008/A1008M, structural steel, Grade 33; [**0.0966-inch**] [**0.0677-inch**] [**0.0528-inch**] minimum thickness;.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless steel fasteners for fastening aluminum or stainless steel.
2. Provide bronze fasteners for fastening bronze.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/, Grade A325Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3,heavy-hex carbon-steel nuts; and where indicated, flat washers.

D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593:with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.4 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

E. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

F. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

H. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

I. Concrete: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.7 METAL LADDERS

A. General:

1. Comply with ANSI A14.3.
2. For pit ladders, comply with ASME A17.1/CSA B44.

B. Steel Ladders:

1. Space siderails 18 inches apart unless otherwise indicated.
2. Siderails: Continuous, 3/8-by-2-1/2-inch steel flat bars, with eased edges.
3. Rungs: 1-inch- square, steel bars.
4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
6. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung.

7. Source Limitations: Obtain nonslip surfaces from single source from single manufacturer.
8. Provide platforms as indicated fabricated from welded or pressure-locked steel bar grating, supported by steel angles. Limit openings in gratings to no more than 3/4 inch in least dimension.
9. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
10. Galvanize and prime exterior ladders, including brackets.
11. Prime exterior ladders, including brackets and fasteners, with zinc-rich primer.

2.8 PIT SUMP COVERS

A. Fabricate from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than [**1/2 inch**] [**3/4 inch**] [**1 inch**] in least dimension.

B. Provide steel angle supports unless otherwise indicated.

2.9 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize and prime exterior miscellaneous steel trim.

D. Prime exterior miscellaneous steel trim with zinc-rich primer.

E. Interior Stainless-Steel panels – Fabricate panels to full dimensions of wall as indicated on drawings.
1. Adhere to wall with manufacturer approved adhesive.
2. Provide non-pick security caulk at seams and panel ends.

2.10 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.

1. Cap bollards with 1/4-inch- thick, steel plate with domed top.
2. Where bollards are indicated to receive controls for door operators, provide cutouts for controls and holes for wire.
3. Where bollards are indicated to receive light fixtures, provide cutouts for fixtures and holes for wire.

B. Fabricate sleeves for bollard anchorage from steel or stainless steel pipe or tubing with 1/4-inch- thick, steel or stainless steel plate welded to bottom of sleeve. Make sleeves not less than 8 inches deep and 3/4 inch larger than OD of bollard.

C. Prime steel bollards with zinc-rich primer.

2.11 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize bearing and leveling plates.

C. Prime plates with zinc-rich primer.

2.12 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to one-twelfth of clear span, but not less than 8 inches unless otherwise indicated.

C. Galvanize and prime loose steel lintels located in exterior walls.

D. Prime loose steel lintels located in exterior walls with zinc-rich primer.

2.13 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.14 GENERAL FINISH REQUIREMENTS

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.15 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with universal shop primer unless indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
5. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for ceiling hung toilet partitions securely to, and rigidly brace from, building structure.

C. Anchor shelf angles securely to existing construction with expansion anchors anchor bolts.

3.3 INSTALLATION OF METAL LADDERS

A. Secure ladders to adjacent construction with the clip angles attached to the stringer.

B. Install brackets as required for securing of ladders welded or bolted to structural steel or built into masonry or concrete.

3.4 INSTALLATION OF PIT SUMP COVERS

A. Install tops of sump pit cover plates and frames flush with finished surface. Adjust as required to avoid lippage that could present a tripping hazard.

3.5 INSTALLATION OF MISCELLANEOUS STEEL TRIM

A. Anchor to concrete construction to comply with manufacturer's written instructions.

3.6 INSTALLATION OF METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

B. Anchor bollards to existing construction with expansion anchors anchor bolts. Provide four 3/4-inch bolts at each bollard unless otherwise indicated.

1. Embed anchor bolts at least 4 inches in concrete.

C. Anchor bollards in concrete with pipe sleeves preset and anchored into concrete. Fill annular space around bollard solidly with shrinkage-resistant grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately 1/8 inch toward bollard.

D. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

3.7 INSTALLATION OF LOOSE BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with shrinkage-resistant grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.8 REPAIRS

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

   a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

2. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

SECTION 055113 - METAL PAN STAIRS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Preassembled steel stairs with concrete-filled treads.
2. Steel tube railings attached to metal stairs.
3. Steel tube handrails attached to walls adjacent to metal stairs.
4. Safety gate.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs and railings.

1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails, and items with integral anchors, that are to be embedded in concrete or masonry.
2. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.

D. Schedule installation of railings so wall attachments are made only to completed walls.

1. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For metal pan stairs and the following:

1. Shop primer products.
2. Handrail wall brackets.
3. Grout.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.
4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.
3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.

a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Uniform Load: 100 lbf/sq. ft..
2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..
3. Uniform and concentrated loads need not be assumed to act concurrently.
4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.

B. Structural Performance of Railings: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
b. Infill load and other loads need not be assumed to act concurrently.

3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

C. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Tubing for Railings: ASTM A513/A513M.

D. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, either commercial steel, Type B, or structural steel, Grade 25, unless another grade is required by design loads; exposed.

2.3 FASTENERS

A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls.

1. Select fasteners for type, grade, and class required.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

E. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

A. Handrail Wall Brackets: As indicated on drawings.

B. Welding Electrodes: Comply with AWS requirements.

C. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

E. Zinc-Rich Primer: Comply with SSPC-Paint 20, Type II, Level 2, and compatible with topcoat.

F. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for exterior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Assemble stairs and railings in shop to greatest extent possible.

1. Disassemble units only as necessary for shipping and handling limitations.
2. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Weld exposed corners and seams continuously unless otherwise indicated.
5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 - No evidence of welded joint.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that will be exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.6 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Architectural Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers as indicated on Drawings.

   a. Provide closures for exposed ends of channel and rectangular tube stringers.
   b. Finish: Painted.

2. Construct platforms of steel channel headers and miscellaneous framing members as indicated on Drawings.

   a. Provide closures for exposed ends of channel and rectangular tube framing.
   b. Finish: Painted.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.

1. Steel Sheet: Uncoated, cold -rolled steel sheet.
2. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.
3. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

2.7 FABRICATION OF STAIR RAILINGS

A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings."

B. Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: See drawings.

C. Welded Connections: Fabricate railings with welded connections.

1. Cope components at connections to provide close fit, or use fittings designed for this purpose.
2. Weld all around at connections, including at fittings.
3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
4. Obtain fusion without undercut or overlap.
5. Remove flux immediately.
6. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 - No evidence of a welded joint as shown in NAAMM AMP 521.

D. Form changes in direction of railings as follows:

1. As detailed.
2. By inserting prefabricated elbow fittings.

E. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

F. Close exposed ends of railing members with prefabricated end fittings.

G. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

H. Connect posts to stair framing by direct welding unless otherwise indicated.

I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.

1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
2. For galvanized railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
3. For nongalvanized railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
4. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

J. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports.

1. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.8 FINISHES

A. Finish metal stairs after assembly.

B. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.

1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLING METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

D. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
3. Comply with requirements for welding in "Fabrication, General" Article.

E. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."

3.3 INSTALLING RAILINGS

A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.

1. Space posts at spacing indicated or, if not indicated, as required by design loads.
2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet.
4. Secure posts and rail ends to building construction as follows:

   a. Anchor posts to steel by welding to steel supporting members.
   b. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with post-installed anchors and bolts.

B. Install railing gates level, plumb, and secure for full opening without interference.

1. Attach hardware using tamper-resistant or concealed means.
2. Adjust hardware for smooth operation.

C. Attach handrails to wall with wall brackets.

1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
2. Secure wall brackets to building construction as required to comply with performance requirements.

   a. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.

3.4 REPAIR

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

END OF SECTION 055113

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel railings.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Manufacturer's product lines of mechanically connected railings.
2. Fasteners.
3. Post-installed anchors.
4. Handrail brackets.
5. Shop primer.
6. Intermediate coats and topcoats.
7. Bituminous paint.
8. Nonshrink, nonmetallic grout.
9. Anchoring cement.
10. Metal finishes.
11. Paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Verification: For each type of exposed finish required.

1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters, including finish.
2. Fittings and brackets.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Research Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
b. Infill load and other loads need not be assumed to act concurrently.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STEEL RAILINGS

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

B. Tubing: ASTM A500/A500M (cold formed).

C. Plates, Shapes, and Bars: ASTM A36/A36M.

2.4 FASTENERS

A. Fastener Materials:

1. Ungalvanized-Steel Railing Components: Plated steel fasteners complying with ASTM F1941/F1941M, Class Fe/Zn 5 for zinc coating.
2. Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.
3. Finish exposed fasteners to match appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.

C. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193[**or ICC-ES AC308**].

1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

A. Handrail Brackets: Cast stainless steel, center of handrail 2-1/2 inches from wall.

B. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.

1. For stainless steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

C. Galvanizing Repair Paint: High-zinc-dust-content paint, complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."

E. Intermediate Coats and Topcoats: Provide products that comply with Section 099123 "Interior Painting."

F. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.

1. Clearly mark units for reassembly and coordinated installation.
2. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weather in a manner that excludes water.

1. Provide weep holes where water may accumulate.
2. Locate weep holes in inconspicuous locations.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 welds; ornamental quality with no evidence of a welded joint.

I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.

J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

K. Form changes in direction as follows:
   1. By bending by inserting prefabricated elbow fittings.
   2. .
   3. .
   4. By bending to smallest radius that will not result in distortion of railing member.

L. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

M. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.

   1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
   2. Coordinate anchorage devices with supporting structure.

Q. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.7 STEEL AND IRON FINISHES

A. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

B. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1 for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

   1. Shop prime uncoated railings with universal shop primer primers specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" unless indicated.
   2. Do not apply primer to galvanized surfaces.

2.8 STAINLESS STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Stainless Steel Pipe and Tubing Finishes:
   1. 320-Grit Polished Finish: Oil-ground, uniform, fine, directionally textured finish.

C. Stainless Steel Sheet and Plate Finishes:

   1. Directional Satin Finish: ASTM A480/A480, No. 4.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

A. Perform cutting, drilling, and fitting required for installing railings.

1. Fit exposed connections together to form tight, hairline joints.
2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

C. Adjust railings before anchoring to ensure matching alignment at abutting joints.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.

3.4 ANCHORING POSTS

A. Use stainless steel pipe sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

C. Cover anchorage joint with flange of same metal as post, [**welded to post after placing anchoring material**] [**attached to post with setscrews**].

D. Anchor posts to metal surfaces with flanges, angle type, or floor type, as required by conditions, connected to posts and to metal supporting members as follows:

1. For steel railings, weld flanges to post and bolt to metal supporting surfaces.
2. For stainless steel railings, weld flanges to post and bolt to supporting surfaces.

3.5 ATTACHING RAILINGS

A. Anchor railing ends to concrete and masonry with flanges connected to railing ends and anchored to wall construction with anchors and bolts.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and.

C. Attach handrails to walls with wall brackets, except where end flanges are used. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface.
1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

3.6 REPAIR

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

2. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

3.7 CLEANING

A. Clean [**aluminum**] [**and**] [**stainless steel**] by washing thoroughly with clean water and soap and rinsing with clean water.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

3.8 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for framing at glass-mat gypsum board sheathing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.

B. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.

C. Evaluation Reports: For the following, from ICC-ES:
1. Air-barrier and water-resistant glass-mat gypsum sheathing.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

B. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing Performance: Air-barrier and water-resistant glass-mat gypsum sheathing assembly, and seals with adjacent construction, shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

2.2 WALL SHEATHING

A. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.

1. Manufacturers:
   a. Certainteed Corporation: GlasRoc
   b. G-P Gypsum Corporation: Dens-Glass Gold
   c. National Gypsum Company: Gold Bond e(2)XP
   d. Temple-Inland, Inc.: GreenGlass
   e. United States Gypsum Co.: Securock

2. Type and Thickness: Regular, 1/2 inch thick.
3. Size: 48 by 96 inches for vertical installation.

2.3 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For parapet and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
   1. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C954.

2.4 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

   1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

2.5 MISCELLANEOUS MATERIALS

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

   1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
   2. ICC-ES evaluation report for fastener.

D. Coordinate wall parapet sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.
   1. Fasten gypsum sheathing to cold-formed metal framing with screws.
   2. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
   3. Install panels with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.

   1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.

D. Seal sheathing joints according to sheathing manufacturer's written instructions.
   1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

E. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing:

   1. Install accessory materials according to sheathing manufacturer's written instructions and details to form a seal with adjacent construction, to seal fasteners, and ensure continuity of air and water barrier.

      a. Coordinate the installation of sheathing with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
      b. Install transition strip on roofing membrane or base flashing, so that a minimum of 3 inches of coverage is achieved over each substrate.

   2. Connect and seal sheathing material continuously to air barriers specified under other Sections as well as to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
   3. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
   4. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip, so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

      a. Transition Strip: Roll firmly to enhance adhesion.

   5. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of sheathing material with foam sealant.
   6. Seal top of through-wall flashings to sheathing with an additional 6-inch- wide, transition strip.
   7. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

8. Repair punctures, voids, and deficient lapped seams in strips and transition strips extending 6 inches beyond repaired areas in strip direction.

3.3 FIELD QUALITY CONTROL

A. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:

1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
3. Termination mastic has been applied on cut edges.
4. Strips and transition strips have been firmly adhered to substrate.
5. Compatible materials have been used.
6. Transitions at changes in direction and structural support at gaps have been provided.
7. Connections between assemblies (sheathing and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
8. All penetrations have been sealed.

B. Air barriers will be considered defective if they do not pass tests and inspections.

C. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

D. Prepare test and inspection reports.

END OF SECTION 061600

SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Miscellaneous materials.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 123623.13 "Plastic-Laminate-Clad Countertops."
3. Section 123661.16 “Solid Surfacing Countertops.”

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Miscellaneous materials.

B. Product Data Submittals: For each product.

C. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.

D. Samples for Verification: For the following:

1. Plastic Laminates: 12 by 12 inches (300 by 300 mm) for each type, color, pattern, and surface finish required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

B. Installer Qualifications: Licensed participant in AWI's Quality Certification Program.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS **(PL2)**

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.

B. Architectural Woodwork Standards Grade: Custom.

C. Type of Construction: Frameless.

D. Door and Drawer-Front Style: Flush overlay.

E. High-Pressure Decorative Laminate: ISO 4586-3, grades as indicated or if not indicated, as required by quality standard.

F. Exposed Surfaces:

1. Plastic-Laminate Grade: VGS.
2. Edges:. Charter Industries 15/16” wide 3.0mm thick PVC edge band, color NWZ0062.
3. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

G. Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermally fused laminate panels.
   a. Edges of Thermally Fused Laminate Panel Shelves: PVC or polyester edge banding.
   b. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, ISO 4586-3, grade to match exposed surface.

2. Drawer Sides and Backs: Thermally fused laminate panels with PVC or polyester edge banding.
3. Drawer Bottoms: Thermally fused laminate panels.

H. Dust Panels: 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.

I. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, ISO 4583-3, grade to match exposed surface.

J. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

K. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. **PL2**: Nevamar Dragonfly WZ0062.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
2. Particleboard (Medium Density): ANSI A208.1, Grade M-2-Exterior Glue.
3. Softwood Plywood: DOC PS 1, medium-density overlay.

4. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of ISO 4586.

2.3 CABINET HARDWARE AND ACCESSORIES

A. Reveal Trim:
1. Basis of Design Product: Fry Reglet Millwork Reveal F w/Return Key
   a. Size: 1/2” reveal with 3/16” return; depth as needed for substrate
   b. Finish: clear anodized

B. Metal Accent Trim:
1. Basis of Design Product: Fry Reglet Millwork 1/4” Post Termination
   a. Size: 1/4” post width; depth as needed for substrate
   b. Finish: clear anodized

C. Transition/Corner Trim:
1. Basis of Design Product: Fry Reglet Millwork Corner Key
   a. Size: 3/16” return; depth as needed for substrate
   b. Finish: clear anodized

D. Millwork Cleats:
1. 1/4” aluminum z-clip cleats for mounting millwork panels on substrates in decorative conditions

E. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 135 degrees of opening, self-closing.

F. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

G. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.

H. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.

I. Drawer Slides: ANSI/BHMA A156.9.
1. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Side mount.
   a. Type: Full extension.
   b. Material: Zinc-plated ball bearing slides.
   c. Motion Feature: Self-closing mechanism.
2. Pencil drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide, provide 50 lb (22.7 kg) load capacity.
3. General-purpose drawers more than 3 inches (75 mm) high, but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide 75 lb (34 kg) load capacity.
4. File drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide 100 lb (45 kg) load capacity.
5. Lateral file drawers more than 6 inches (150 mm) high and more than 24 inches (600 mm) but not more than 30 inches (762 mm) wide, provide 150 lb (68 kg) load capacity.

J. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

K. Exposed Hardware Finishes: For exposed hardware without specified finish, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
   1. Satin Stainless Steel: ANSI/BHMA 630.

L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesive for Bonding Plastic Laminate: Type II water-resistant type as selected by fabricator to comply with requirements.

   1. Adhesive for Bonding Edges: Hot-melt adhesive[**or adhesive specified above for faces**].

2.5 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION 064116

SECTION 066400 - PLASTIC PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Plastic sheet paneling.

B. Related Requirements:

1. Section 102600 "Wall and Door Protection" for corner guards installed over plastic paneling.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For plastic paneling and trim accessories, in manufacturer's standard sizes.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain plastic paneling and trim accessories from single manufacturer.

2.2 PLASTIC SHEET PANELING

A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Composites, Inc.
b. Marlite.
c. Nudo Products, Inc.
d. Panolam Surface Systems.

2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

3. Nominal Thickness: Not less than 0.09 inch.
4. Surface Finish: Molded pebble texture.
5. Color: White.

2.3 ACCESSORIES

A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, and caps as needed to conceal edges.

1. Color: Match panels.

B. Adhesive: As recommended by plastic paneling manufacturer.

C. Sealant: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.

B. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

C. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.

D. Lay out paneling before installing. Locate panel joints where indicated and to provide equal panels at ends of walls not less than half the width of full panels.

1. Mark plumb lines on substrate at trim accessory locations for accurate installation.
2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

A. Install plastic paneling according to manufacturer's written instructions.

B. Install panels in a full spread of adhesive.

C. Install trim accessories with adhesive.

D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.

E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 066400

SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Modified bituminous sheet waterproofing.
2. Molded-sheet drainage panels.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written installation instructions for evaluating, preparing, and treating substrate.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Qualification Statements: For Installer.

C. Sample warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer. Do not apply waterproofing to frozen, damp, or wet substrates.

1. Do not apply waterproofing when snow, rain, fog, or mist is present.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.7 WARRANTY

A. Manufacturer's Warranty:

1. Waterproofing Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.

a. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Modified Bituminous Sheet Waterproofing: Minimum 60-mil (1.5-mm) nominal thickness, self-adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated on one side to a 4-mil- (0.10-mm-) thick, polyethylene-film reinforcement, and with release liner on adhesive side; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. Basis of Design: Subject to compliance with requirements, provide Henry WP200 or approved equal.
2. Physical Properties:

a. Tensile Strength, Membrane: 250 psi (1.7 MPa) minimum; ASTM D412, Die C, modified.
b. Ultimate Elongation: 300 percent minimum; ASTM D412, Die C, modified.
c. Low-Temperature Flexibility: Pass at minus 20 deg F (minus 29 deg C); ASTM D1970/D1970M.
d. Puncture Resistance: 40 lbf (180 N) minimum; ASTM E154/E154M.
e. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D570.
f. Water Vapor Permeance: 0.05 perm (2.9 ng/Pa x s x sq. m) maximum; ASTM E96/E96M, Water Method.
g. Hydrostatic-Head Resistance: 200 ft. (60 m) minimum; ASTM D5385/D5385M.

2.2 ACCESSORIES FOR WATERPROOFING

A. Furnish accessory materials as recommended in writing by waterproofing manufacturer for intended use and compatibility with sheet waterproofing.

1. Furnish liquid-type accessory materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid solvent-borne primer as recommended in writing for substrate by sheet waterproofing material manufacturer.

C. Surface Conditioner: Liquid, waterborne surface conditioner as recommended in writing for substrate by sheet waterproofing material manufacturer.

D. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.

E. Metal Termination Bars: Aluminum or stainless steel bars, approximately 1 by 1/8 inch (25 by 3 mm), predrilled at 9-inch (229-mm) centers.

2.3 MOLDED-SHEET DRAINAGE PANELS

A. Molded-Sheet Drainage Panel with Polymeric Film, Nonwoven-Geotextile Faced: Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21 mm) sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft. (112 to 261 L/min. per m).

1. Basis of Design: Subject to compliance with requirements, provide Henry DB500 or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.

1. Verify that concrete has cured and aged for minimum time recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean, prepare, and treat substrates in accordance with manufacturer's written installation instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections.

E. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.

F. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks in accordance with ASTM D4258.

G. Corners: Prepare, prime, and treat inside and outside corners in accordance with manufacturer's written installation instructions.

1. Install membrane strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of liquid membrane on horizontal inside corners and as follows:

a. At footing-to-wall intersections, extend liquid membrane in each direction from corner or install membrane strip centered over corner.

H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

3.3 INSTALLATION OF MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Install modified bituminous sheets in accordance with waterproofing manufacturer's written installation instructions.

B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.

1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F (16 deg C).

D. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.

E. Seal edges of sheet waterproofing terminations with termination bar and sealant.

F. Roll waterproofing membrane to firmly adhere to substrate. Roll seams and terminations.

G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.

H. Immediately install protection course with butted joints over waterproofing membrane.

3.4 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, in accordance with manufacturer's written installation instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

1. For vertical applications, install [**board insulation**] [**protection course**] before installing drainage panels.

3.5 PROTECTION, REPAIR, AND CLEANING

A. Do not permit foot or vehicular traffic on unprotected membrane.

B. Protect waterproofing from damage and wear during remainder of construction period.

C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 071326

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board.
2. Glass-fiber blanket.

B. Related Requirements:
1. Section 061600 "Sheathing" for foam-plastic board installed directly over exterior gypsum board sheathing.
2. Section 092900 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

B. Evaluation Reports: For foam-plastic insulation, from ICC-ES.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD

A. Extruded polystyrene boards in this article are also called "XPS boards." Roman numeral designators in ASTM C578 are assigned in a fixed random sequence, and their numeric order does not reflect increasing strength or other characteristics.

B. Extruded Polystyrene Board, Type X (Continuous insulation at exterior walls): ASTM C578, Type X, 15-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. DiversiFoam Products.
b. Dow Chemical Company (The).
c. DuPont de Nemours, Inc.
d. MBCI.
e. Owens Corning.

C. Extruded Polystyrene Board, Type IV (Foundation and Slab Locations): ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Dow Chemical Company (The).
b. Kingspan Insulation Limited.
c. Owens Corning.

2.2 GLASS-FIBER BLANKET

A. Glass-Fiber Blanket, Unfaced: ASTM C665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. CertainTeed Corporation.
b. Johns Manville; a Berkshire Hathaway company.
c. Knauf Insulation.
d. Owens Corning.

2.3 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

E. Install insulation such that R-values are clearly visible for inspection purposes.

3.3 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

A. Butt panels together for tight fit.

B. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.5 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face and as recommended by manufacturer.
   1. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions.
   2. Press units firmly against inside substrates.
   3. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042613 "Masonry Veneer."

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
   4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

   1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..

3.7 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072600 - VAPOR RETARDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Reinforced-polyethylene vapor retarders.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for under-slab vapor retarders.

2. Section 074213.13 “Formed Metal Wall Panel” for vapor retarder installed at formed metal wall panel wall assembly.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

PART 2 - PRODUCTS

2.1 REINFORCED-POLYETHYLENE VAPOR RETARDERS

A. Reinforced-Polyethylene Vapor Retarders: Sheet with outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either nylon cord or polyester scrim and weighing not less than 20 lb/1000 sq. ft., with maximum permeance rating of 0.1 perm.

1. Products: Subject to compliance with requirements, provide one of the following:

a. LAMTEC Corporation; R-3035.
b. Raven Industries, Inc; DURA-SKRIM 6WW.
c. Reef Industries, Inc; Griffolyn T-65.

2.2 ACCESSORIES

A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

B. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.

C. Vapor-Retarder Fasteners: Pancake-head, self-tapping steel drill screws; with fender washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to vapor retarders, including removing projections capable of puncturing vapor retarders.

3.2 INSTALLATION OF VAPOR RETARDERS ON FRAMING

A. Place vapor retarders on side of construction indicated on Drawings.

B. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives, vapor retarder fasteners, or other anchorage system as recommended by manufacturer. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

C. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs and sealing with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Locate all joints over framing members or other solid substrates.

D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.

E. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

3.3 PROTECTION

A. Protect vapor retarders from damage until concealed by permanent construction.

END OF SECTION 072600

SECTION 072715 - NONBITUMINOUS SELF-ADHERING SHEET AIR BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Self-adhering, vapor-permeable, nonbituminous sheet air barriers.

B. Related Requirements:

   1. Section 061600 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.

   2. Section 072100 “Thermal Insulation”

1.3 DEFINITIONS

A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; and tested physical and performance properties of products.

B. Shop Drawings: For air-barrier assemblies.

   1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
   2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
   3. Include details of interfaces with other materials that form part of air barrier.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Remove and replace liquid materials that cannot be applied within their stated shelf life.

B. Protect stored materials from direct sunlight.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.

1. Protect substrates from environmental conditions that affect air-barrier performance.
2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E2357.

2.3 NONBITUMINOUS SHEET AIR BARRIER

A. Vapor-Permeable Nonbituminous Sheet: Minimum 18-mil- thick, self-adhering sheet consisting of a breathable carrier film or fabric and an adhesive with release liner on adhesive side.

1. **Products:** Basis of design: VaproShield; Revealshield SA Self-Adhered WRB/Air Barrier Membrane.
2. Physical and Performance Properties:

a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.
b. Puncture Resistance: Minimum 40 lbf; ASTM E154/E154M.
c. Vapor Permeance: Minimum 25 perms ; ASTM E96/E96M, Desiccant Method, Procedure A.
d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541 as modified by ABAA.
e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
f. UV Resistance: Can be exposed to sunlight for No more than the maximum number of days according to manufacturer's written instructions.
g. Finish: Black

2.4 ACCESSORY MATERIALS

A. Requirement: Provide primers, transition strips, termination strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

B. Preformed Silicone Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.

1. **Products:** Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dow Corning Corporation; Dow Corning 123 Silicone Seal.
   b. GE Construction Sealants; Momentive Performance Materials Inc.; US11000 Ultraspan.
   c. Pecora Corporation; Sil-Span.
   d. Tremco Incorporated; Spectrem Simple Seal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
3. Verify that substrates are visibly dry and free of moisture.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.

E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

F. Bridge isolation joints expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 INSTALLATION

A. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.

B. Prepare, treat, and seal inside and outside corners and vertical and horizontal surfaces at terminations and penetrations with termination mastic.

C. Apply and firmly adhere air-barrier sheets over area to receive air barrier. Accurately align sheets and maintain uniform 2-1/2-inch- minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure airtight installation.

1. Apply sheets in a shingled manner to shed water.
2. Roll sheets firmly to enhance adhesion to substrate.

D. Apply continuous air-barrier sheets over accessory strips bridging substrate cracks, construction, and contraction joints.

E. Seal top of through-wall flashings to air-barrier sheet with an additional 6-inch- wide, transition strip.

F. Seal exposed edges of sheet at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

G. Install air-barrier sheet and accessory materials to form a seal with adjacent construction and to maintain a continuous air barrier.

1. Coordinate air-barrier installation with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.

2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.

H. Connect and seal exterior wall air-barrier sheet continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

I. At end of each working day, seal top edge of air-barrier material to substrate with termination mastic.

J. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

K. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

1. Transition Strip: Roll firmly to enhance adhesion.

L. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air-barrier material with foam sealant.

M. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with air-barrier sheet extending 6 inches beyond repaired areas in all directions.

N. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.4 FIELD QUALITY CONTROL

A. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements.

1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Continuous structural support of air-barrier system has been provided.
3. Site conditions for application temperature and dryness of substrates have been maintained.
4. Maximum exposure time of materials to UV deterioration has not been exceeded.
5. Surfaces have been primed.
6. Termination mastic has been applied on cut edges.
7. Air barrier has been firmly adhered to substrate.
8. Compatible materials have been used.
9. Transitions at changes in direction and structural support at gaps have been provided.
10. Connections between assemblies (air barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
11. All penetrations have been sealed.

B. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
2. Remove and replace deficient air-barrier components for retesting as specified above.

3.5 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials according to air-barrier manufacturer's written instructions.
2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed Work, using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 072715

SECTION 074213.13 - FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Concealed-fastener, lap-seam metal wall panels.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

   1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
   2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.

   1. Include Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

   1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.8 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/180 of the span.

B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft..

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft..

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

A. Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

B. Concealed-Fastener Metal Wall Panels: Formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges; with narrow reveal joint between panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Pac-Clad Precision Highline and Precision Box Rib or a comparable product by one of the following:
   a. Centria
   b. Metal Sales

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet

complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Nominal Thickness: 22 gauge
b. Exterior Finish: Two-coat fluoropolymer.
c. Color: Black Aluminum, As selected by Architect from manufacturer's full range.

3. Panel Profile:
   a. Box Rib 1
   b. Box Rib 3

4. Panel Coverage: 12 inches and 13 3/8 inches, as noted on drawings.
5. Panel Depth: 1 3/8 inch.
6. Clip: ½" Standoff Clip (if available).

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions[**for seacoast and severe environments**].
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
1. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.

2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
1. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
2. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
3. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
4. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.13

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manufactured reglets with counterflashing.
2. Formed wall sheet metal fabrications.
3. Formed equipment support flashing.

B. Related Requirements:

1. Section 074213.13 "Formed Metal Wall Panel" for flashings at wall panels.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following
1. Elastomeric sealant.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Include identification of material, thickness, weight, and finish for each item and location in Project.
3. Include details for forming, including profiles, shapes, seams, and dimensions.
4. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
5. Include details of termination points and assemblies.
6. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
7. Include details of special conditions.
8. Include details of connections to adjoining work.

C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.8 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install copings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 coating designation; prepainted by coil-coating process to comply with ASTM A755/A755M.

1. Surface: Smooth, flat.
2. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As selected by Architect from manufacturer's full range.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

F. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions.

1. Source Limitations: Obtain reglets from single source from single manufacturer.
2. Material: Galvanized steel, 0.022 inch thick.
3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
4. Accessories:

   a. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

5. Finish: With manufacturer's standard color coating.

2.4 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

G. Do not use graphite pencils to mark metal surfaces.

2.5 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:

1. Galvanized Steel: 0.022 inch thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inchesbeyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:

1. Galvanized Steel: 0.022 inch thick.

2.6 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.
8. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

D. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

E. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Form joints to completely conceal sealant.
b. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
c. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.3 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.4 INSTALLATION OF MISCELLANEOUS FLASHING

A. Equipment Support Flashing:

1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
2. Weld or seal flashing with elastomeric sealant to equipment support member.

3.5 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING

A. Clean off excess sealants.

3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

B. Related Requirements:

1. Section 321373 "Concrete Paving Joint Sealants" for sealing joints in paved roads, parking lots, walkways, and curbing.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Pecora Corporation.
b. Sika Corporation; Joint Sealants.
c. The Dow Chemical Company.
d. Tremco Incorporated.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. BASF Corporation.
b. Pecora Corporation.
c. Sherwin-Williams Company (The).
d. Sika Corporation; Joint Sealants.
e. Tremco Incorporated.

B. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. BASF Corporation.
b. Pecora Corporation.
c. Sherwin-Williams Company (The).

d. Sika Corporation.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Pecora Corporation.
b. The Dow Chemical Company.
c. Tremco Incorporated.

2.5 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Bostik, Inc.
b. Pecora Corporation.

2.6 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Pecora Corporation.
b. Sherwin-Williams Company (The).
c. Tremco Incorporated.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.
    d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

a. Metal.
b. Glass.
c. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces, JS-1.

1. Joint Locations:

   a. Isolation and contraction joints in cast-in-place concrete slabs.
   b. Joints between different materials listed above.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces, JS-2.

1. Joint Locations:

   a. Construction joints in cast-in-place concrete.
   b. Control and expansion joints in unit masonry.
   c. Joints in exterior insulation and finish systems.
   d. Joints between metal panels.
   e. Joints between different materials listed above.
   f. Perimeter joints between materials listed above and frames of doors, windows and louvers.
   g. Control and expansion joints in ceilings and other overhead surfaces.
   h. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces, JS-3.

1. Joint Locations:

   a. Isolation joints in cast-in-place concrete slabs.
   b. Control and expansion joints in tile flooring.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces, JS-4.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Tile control and expansion joints.
c. Vertical joints on exposed surfaces of unit masonry and concrete walls and partitions.
d. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement, JS-5.

1. Joint Locations:

a. Control joints on exposed interior surfaces of exterior walls.
b. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces, JS-6.

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.
c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Concealed mastics, JS-7.

1. Joint Locations:

a. Aluminum thresholds.
b. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.

B. Related Requirements:
1. Section 081416 “Flush Wood Doors” for wood doors in hollow metal frames. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
2. Section 088000 “Glazing” for glazing in doors.
3. Section 099113 “Exterior Painting” for finishes for exterior hollow metal doors and frames.
4. Section 099123 “Interior Painting” for finishes for interior hollow metal doors and frames.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 ACTION SUBMITTALS

A. Product Data Submittals: For each product.

1. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.

9. Details of moldings, removable stops, and glazing.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.5 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 HOLLOW METAL DOORS AND FRAMES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:

1. Ceco Door; ASSA ABLOY.
2. Curries Company; ASSA ABLOY.
3. Deansteel Manufacturing Company, Inc.
4. Mesker Door Inc.
5. Pioneer Industries.
6. Republic Doors and Frames.
7. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

A. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.38 deg Btu/F x h x sq. ft. (2.16 W/K x sq. m) when tested in accordance with ASTM C1363 or ASTM E1423.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B..

1. Doors:

a. Type: As indicated in the Door and Frame Schedule on Drawings.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
d. Edge Construction: Model 2, Seamless.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Core: Manufacturer's standard.

2. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B..

1. Doors:

a. Type: As indicated in the Door and Frame Schedule on Drawings.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm), with minimum A40 (ZF120) coating.
d. Edge Construction: Model 2, Seamless.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Polyurethane.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
b. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.5 HOLLOW-METAL PANELS

A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.7 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 088000 "Glazing."

2.8 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding[**, or by rigid mechanical anchors**].
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with [**beveled**] [**square**] stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

2.9 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Floor Anchors: Secure with postinstalled expansion anchors.

a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Solidly pack mineral-fiber insulation inside frames.
4. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint in accordance with manufacturer's written instructions.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Solid-core flush wood doors with plastic-laminate-faces.
2. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for openings.
5. Factory-machining criteria.
6. Factory- finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Dimensions and locations of mortises and holes for hardware.
7. Clearances and undercuts.
8. Requirements for veneer matching.
9. Doors to be factory finished and application requirements.

C. Samples for Verification:

1. Plastic laminate, 6 inches square, for each color, texture, and pattern selected.

2. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

1. Provide labels from AWI or WI certification program indicating that doors comply with requirements of grades specified.

2.2 SOLID-CORE FLUSH WOOD DOORS WITH PLASTIC-LAMINATE FACES

A. Interior Doors:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Masonite Architectural.

b. Oshkosh Door Company.
c. VT Industries Inc.

2. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
3. ANSI/WDMA I.S. 1A Grade: Custom.
4. Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, Grade HGS.
5. Colors, Patterns, and Finishes: PL2:Nevamar WZ0062, ARP(T-) finish.
6. Exposed Vertical Edges: Plastic laminate that matches faces, applied before faces.
7. Core for Non-Fire-Rated Doors:

a. ANSI A208.1, Grade LD-1 or Grade LD-2 particleboard.

1) Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
2) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware."

8. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before faces and crossbands are applied.

2.3 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.

1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
2. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.4 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.

1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
2. Finish faces, all four edges, edges of cutouts, and mortises.

B. Factory finish doors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083323 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Service doors.
2. Insulated service doors.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for miscellaneous steel supports, door-opening framing, corner guards, and bollards.

1.2 ACTION SUBMITTALS

A. Product Data: For each type and size of overhead coiling door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
5. Show locations of controls, locking devices, and other accessories.
6. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

D. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:

1. Curtain slats.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Special warranty.

B. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

1. Obtain operators and controls from overhead coiling-door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:

1. Design Wind Load: As indicated on Drawings.
2. Testing: According to ASTM E330/E330M or DASMA 108 for garage doors and complying with acceptance criteria of DASMA 108.
3. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.
4. Operability under Wind Load: Design overhead coiling doors to remain operable under uniform pressure (velocity pressure) of 20-lbf/sq. ft. (960-Pa) wind load, acting inward and outward.

2.3 DOOR ASSEMBLY

A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.

B. Manufacturers: Subject to compliance with requirements, provide Overhead Door, Stormtite 625 or approved equal from the following manufacturers:
1. Clopay.

2. Cornell.

C. Operation Cycles: Door components and operators capable of operating for not less than 50,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

1. Include tamperproof cycle counter.

D. Air Infiltration: Maximum rate of 1.0 cfm/sq. ft. (5.1 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASTM E283.

E. Insulated Door Curtain R-Value: 7.7.

F. Door Curtain Material: Galvanized steel.

G. Door Curtain Slats: Flatprofile slats of 2-5/8-inch (67-mm) center-to-center height.
1. Insulated-Slat Interior Facing: Metal.
2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.

H. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch (38 by 38 by 3 mm) thick; fabricated from hot-dip galvanized steel and finished to match door.

I. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

J. Hood: Match curtain material and finish.

1. Shape: Round.
2. Mounting: Between jambs.

K. Locking Devices: Equip door with slide bolt for padlock.

L. Electric Door Operator:

1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
2. Operator Location: Wall.
3. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use; moving parts of operator enclosed or guarded if exposed and mounted at 8 ft. (2.44 m) or lower.
4. Motor Exposure: Interior.
5. Motor Electrical Characteristics:

a. Horsepower: 3/4 hp.
b. Voltage: 115 V ac, single phase, 60 Hz.

6. Emergency Manual Operation: Chain type.
7. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar.

a. Sensor Edge Bulb Color: Black.

8. Control Station(s): Interior mounted.

M. Curtain Accessories: Equip door with weatherseals.

N. Door Finish:

1. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.
2. Interior Curtain-Slat Facing: Finish as selected by Architect from manufacturer's full range.

2.4 MATERIALS, GENERAL

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 (Z275) zinc coating; nominal sheet thickness (coated) of 0.028 inch (0.71 mm); and as required.
2. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84 or UL 723. Enclose insulation completely within slat faces.
3. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum steel thickness of 0.010 inch (0.25 mm).

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain, and a continuous bar for holding windlocks.

2.6 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Nominal 0.028-inch- (0.71-mm-) thick, hot-dip galvanized-steel sheet with G90 (Z275) zinc coating, complying with ASTM A653/A653M.

2.7 LOCKING DEVICES

A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.

B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.8 CURTAIN ACCESSORIES

A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.

1. At door head, use 1/8-inch- (3-mm-) thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- (3-mm-) thick seals of flexible vinyl, rubber, or neoprene.

2.9 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

1. Fire-Rated Doors: Equip with auxiliary counterbalance spring and prevent tension release from main counterbalance spring when automatic-closing device operates.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.10 ELECTRIC DOOR OPERATORS

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Door Operator Location(s): Operator location indicated for each door.

1. Wall Mounted: Operator is mounted to the inside front wall on the left or right side of door and connected to door drive shaft with drive chain and sprockets. Side room is required for this type of mounting. Wall-mounted operator can also be mounted above or below shaft; if above shaft, headroom is required.

D. Motors: Reversible-type motor[**with controller (disconnect switch)**] for motor exposure indicated for each door assembly.

1. Electrical Characteristics: Minimum as indicated for each door assembly. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.
2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.

E. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

F. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.

1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

a. Self-Monitoring Type: Four-wire-configured device designed to interface with door operator control circuit to detect damage to or disconnection of sensor edge.

G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."

1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.

H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf (111 N).

I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

K. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with the accessibility standard.

2.11 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.12 STEEL AND GALVANIZED-STEEL FINISHES

A. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Power-Operated Doors: Install automatic garage doors openers according to UL 325.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door. Reset door-closing mechanism after successful test.

B. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

C. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.5 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

1. Adjust exterior doors and components to be weather resistant.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

3.6 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service includes [**three**] [**six**] [**nine**] [**12**] months' full maintenance by skilled employees of coiling-door Installer. Include [**monthly**] [**quarterly**] preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies are to be manufacturer's authorized replacement parts and supplies.

1. Perform maintenance, including emergency callback service, during normal working hours.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 083323

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

B. Related Requirements:

1. Section 087100 “Door Hardware” for door hardware in aluminum framed doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
1. Include point-to-point wiring diagrams showing the following:

a. Power requirements for each electrically operated door hardware.
b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

1.4 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

B. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

C. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

D. Structural: Test according to ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

E. Water Penetration under Static Pressure: Test according to ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 8 lbf/sq. ft..

F. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.38 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
b. Entrance Doors: U-factor of not more than 0.55 Btu/sq. ft. x h x deg F as determined according to NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.21 as determined according to NFRC 200.
b. Entrance Doors: SHGC of not more than 0.13 as determined according to NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft. when tested according to ASTM E283.
b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 70 as determined according to AAMA 1503.
b. Entrance Doors: CRF of not less than 68 as determined according to AAMA 1503.

H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STOREFRONT SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America, an Arconic company; Trifab VersaGlaze 451/451T or a comparable product by one of the following:

1. EFCO Corporation.
2. Oldcastle BuildingEnvelope (OBE); CRH Americas.
3. Trulite Glass & Aluminum Solutions, LLC.
4. U.S. Aluminum; a brand of C.R. Laurence.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken (Basis-of-Design Trifab VG 451T).
2. Interior Framing Construction: Nonthermal (Basis-of-Design Trifab VG 451).
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Center.
5. Finish: Clear anodic finish.
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 EXTERIOR ENTRANCE DOOR SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America, an Arconic company; 500T Insulpour Thermal Entrance or a comparable product by one of the following:

1. EFCO Corporation.
2. Oldcastle Building Envelope (OBE); CRH Americas.
3. Trulite Glass & Aluminum Solutions, LLC.
4. U.S. Aluminum; a brand of C.R. Laurence.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 2-1/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

   a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Door Design: Wide stile; 5-inch nominal width.
   a. Provide 10-inch tall bottom rail.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

4. Finish: Match adjacent storefront framing finish.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets indicated in "Entrance Door Hardware Sets" Article for each entrance door, to comply with requirements in this Section.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
3. Opening-Force Requirements:

a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion.
b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.

D. Pivot Hinges: BHMA A156.4, Grade 1.

1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.

E. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

F. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

G. Cylinders:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Best Access Systems; Stanley Security Solutions, Inc.

2. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores will be provided by Owner.

a. Core Type: Interchangeable.
b. Number of Pins: Seven

3. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide five construction master keys and one control key.

H. Operating Trim: BHMA A156.6.

I. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.

J. ADA Door Operators: ANSI A156.19, with accessories required for a complete installation and incorporating electric lock monitoring.

K. Mag Locks: BHMA/ANSI A 156.23, Grade 1, High-security, concealed, failsafe with integrated electronics and 2000 lbs holding force.

1. Provide fasteners, mounting brackets and spacer bars as required for proper installation.

L. Weather Stripping: Manufacturer's standard replaceable components.

1. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

M. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

N. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

2.7 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 088000 "Glazing."

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.5 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.6 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

END OF SECTION 084113

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum windows.

1.2 DEFINITIONS

A. Combination Assemblies: An assembly formed by a combination of two or more separate fenestration products whose frames are mulled together utilizing a combination mullion or reinforcing mullion.

B. Combination Mullions: A horizontal or vertical member formed by joining two or more individual fenestration units together without a mullion stiffener.

C. Reinforcing Mullions: A horizontal or vertical member with an added continuous mullion stiffener and joining two or more individual fenestration units along the sides of the mullion stiffener.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes.

B. Shop Drawings:

1. Plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

D. Samples for Verification: Actual sample of finished products for each type of exposed finish:

1. Exposed Aluminum Finishes: 2 by 4 inches (50 by 100 mm).
2. Exposed Hardware: Full-size units.

E. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

A. Warranty Documentation:

1. Manufacturers' special warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum windows to Project site in original, unopened packages and store them in accordance with manufacturer's written instructions. Protect aluminum windows against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Handle aluminum windows in a manner that prevents damage before, during, and after installation.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install aluminum windows outside of limits recommended in writing by manufacturer.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures, including excessive deflection, water leakage, condensation, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: Two years from date of Substantial Completion.
b. Glazing Units: Five years from date of Substantial Completion.
c. Hardware: Three years from date of Substantial Completion.
d. Aluminum Finish: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain aluminum windows from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: FGIA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: CW.
2. Minimum Performance Grade: 40.
3. Mulled Window Systems: Evaluate and rate combination assemblies as single systems as determined by AAMA 450 in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 requirements.

C. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor): As determined in accordance with NFRC 100:
   a. Operable Windows: Not more than 0.45 Btu/sq. ft. x h x deg F (2.56 W/sq. m x K).

2. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance in accordance with AAMA 1503, showing a CRF of 52.

D. Thermal Movements: Provide aluminum windows, including anchorage, which allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C) ambient; 180 deg F (100 deg C) material surfaces.

E. Outdoor-Indoor Transmission Class (OITC): Rated for not less than 26 OITC when tested for laboratory sound transmission loss in accordance with ASTM E90 and determined by ASTM E1332.

2.3 ALUMINUM WINDOWS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America, an Arconic company; 8400TL or a comparable product by one of the following:

1. EFCO Corporation.
2. Oldcastle BuildingEnvelope (OBE); CRH Americas.
3. Trulite Glass & Aluminum Solutions, LLC.
4. U.S. Aluminum; a brand of C.R. Laurence.

B. Provide manufacturer's standard aluminum window assemblies consisting of frames, sashes, glass, hardware, fasteners, and all components and accessories as required for a complete installation.

C. Operating Types: Provide the following operating types in locations indicated on Drawings:
1. Horizontal sliding.

D. Frames and Sashes: Aluminum extrusions of alloy, temper, and strength complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Thermally Broken Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and

window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.

E. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.

1. Kind: Fully tempered.

F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

G. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.

H. Horizontal-Sliding Window Hardware:

1. Sill Cap/Track: Extruded-aluminum track with natural anodized finish of dimensions and profile indicated; designed to comply with performance requirements indicated and to drain to the exterior.
2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only. Provide key-operated custodial locks.
3. Roller Assemblies: Low-friction design.

I. Weather Stripping: Provide manufacturer's standard full-perimeter weather stripping for each operable sash unless otherwise indicated.

J. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Avoid exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA AMP 500 "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3 ADJUSTING

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

3.4 CLEANING AND PROTECTION

A. Clean exposed surfaces immediately after installing windows using manufacturer's written instructions. Avoid damaging finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately in accordance with manufacturer's written instructions.

END OF SECTION 085113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical door hardware

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:

   a. "Metal Doors and Frames"
   b. "Flush Wood Doors"
   c. "Aluminum-Framed Entrances and Storefronts"

1.2 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives

2. NFPA 101 – Life Safety Code
3. NFPA 105 – Smoke and Draft Control Door Assemblies
4. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.3 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:

a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

3. Door Hardware Schedule:

a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
c. Indicate complete designations of each item required for each opening, include:

1) Door Index: door number, heading number, and Architect's hardware set number.
2) Quantity, type, style, function, size, and finish of each hardware item.

3) Name and manufacturer of each item.
4) Fastenings and other pertinent information.
5) Location of each hardware set cross-referenced to indications on Drawings.
6) Explanation of all abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for hardware.
8) Door and frame sizes and materials.
9) Degree of door swing and handing.

4. Key Schedule:

a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Final approved hardware schedule edited to reflect conditions as installed.
d. Final keying schedule
e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:

a. Fire door assemblies, in compliance with NFPA 80.
b. Required egress door assemblies, in compliance with NFPA 101.

1.4 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

    a. For door hardware: DHI certified AHC or DHC.
    b. Can provide installation and technical data to Architect and other related subcontractors.
    c. Can inspect and verify components are in working order upon completion of installation.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

    a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
    b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:

    a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
    b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Accessibility Requirements:

    a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference

   a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

      1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      2) Preliminary key system schematic diagram.
      3) Requirements for key control system.
      4) Address for delivery of keys.

2. Pre-installation Conference

   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Review required testing, inspecting, and certifying procedures.
   d. Review questions or concerns related to proper installation and adjustment of door hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.6 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

a. Mechanical Warranty

1) Locks

a) Schlage ND Series: 10 years
b) Schlage ALX Series: 10 years

2) Exit Devices

a) Von Duprin: 10 years

3) Closers

a) LCN 4000 Series: 30 years

1.8 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.3 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Ives 5BB series

2. Acceptable Manufacturers and Products:

a. Hager BB1191/1279 series
b. McKinney TB series
c. Best FBB series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:

a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

a. Steel Hinges: Steel pins
b. Non-Ferrous Hinges: Stainless steel pins
c. Out-Swinging Exterior Doors: Non-removable pins
d. Out-Swinging Interior Lockable Doors: Non-removable pins
e. Interior Non-lockable Doors: Non-rising pins

2.4 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Select
b. Best
c. Roton
d. ABH
e. Hager

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.5 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage ND series

2. Acceptable Manufacturers and Products:

a. Sargent 11-Line
b. Corbin-Russwin CL3100 series

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide escutcheon with lock status indicator window on top of lockset rose:

    a. Escutcheon height (including rose) 6.05 inches high by 3.68 inches wide.
    b. Indicator window measuring a minimum 3.52-inch by .60 inch with 1.92 square-inches of front facing viewing area and 180-degree visibility with a total of .236 square-inches of total viewable area.
    c. Provide snap-in serviceable window to prevent tampering. Lock must function if indicator is compromised.
    d. Provide messages color-coded with full text and symbol, as scheduled, for easy visibility.
    e. Unlocked and Unoccupied message will display on white background, and Locked and Occupied message will display on red background.

3. Cylinders: Refer to "KEYING" article, herein.
4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

    a. Vandlgard: Provide levers with vandal resistant technology for use at heavy traffic or abusive applications.
    b. Lever Design: Rhodes

2.6 CYLINDRICAL LOCKS – GRADE 2

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Schlage ALX series

2. Acceptable Manufacturers and Products:

    a. Sargent 7-Line
    b. Corbin-Russwin CL3800 series

B. Requirements

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 2, and UL Listed for 3-hour fire doors with a minimum cycle life of 1 million.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide ¾" latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide a minimum of 5 points of lever engagement between the cassette spindle and lever shank to prevent lever sag.

7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Plug-n-Play – Provide modular lockset allowing lock functions to be created for 7 typical functions by inserting/installing parts into the exterior of a fully assembled chassis
9. Reconfigurable Chassis - Provide modular lockset that allows the function to be reconfigured by removing external components from the chassis
10. Lever Trim: Solid cast levers and wrought roses on both sides.

    a. Lever Design: Rhodes

2.7 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Schlage Everest 29 R

2. Acceptable Manufacturers and Products:

    a. Sargent XC
    b. Medeco X4

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

    a. Patented Restricted Small Format: cylinder with small format interchangeable cores (SFIC) with restricted, patented keyway.

3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.8 KEYING

A. Scheduled System:

1. New factory registered system:

    a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

    a. Replaceable Construction Cores.

1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.

a) 3 construction control keys
b) 12 construction change (day) keys.

2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:

a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

1) Master Keying system as directed by the Owner.

b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.

c. Provide keys with the following features:

1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
2) Patent Protection: Keys and blanks protected by one or more utility patent(s).

d. Identification:

1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
2) Identification stamping provisions must be approved by the Architect and Owner.
3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

e. Quantity: Furnish in the following quantities.

1) Permanent Control Keys: 3.
2) Master Keys: 6.
3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
4) Key Blanks: Quantity as determined in the keying meeting.

2.9 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer:

a. Telkee

2. Acceptable Manufacturers:

   a. HPC
   b. Lund

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.

   a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
   b. Provide hinged-panel type cabinet for wall mounting.

2.10 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

   a. LCN 4050A series

2. Acceptable Manufacturers and Products:

   a. Norton 7500 series
   b. Sargent 351 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.11 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:

    a. Ives

2. Acceptable Manufacturers:

    a. Elmes
    b. Burns
    c. Trimco
    d. Rockwood

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.12 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:

    a. Ives

2. Acceptable Manufacturers:

    a. Burns
    b. Trimco
    c. Rockwood

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.13 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:

    a. Glynn-Johnson

2. Acceptable Manufacturers:

    a. Rixson
    b. Sargent
    c. ABH

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.14 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco
c. Rockwood

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.15 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:

a. Zero International

2. Acceptable Manufacturers:

a. National Guard
b. Reese
c. DHSI
d. Legacy
e. Pemko

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.16 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Rockwood
c. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.17 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

Abbreviation	Name
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
SCH	Schlage Lock Company
VON	Von Duprin
ZER	Zero International Inc

116909 OPT0383769 Version 1

HW SET: 01

For use on Door #(s):
147

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	VANDL STOREROOM LOCK	ND96BD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER

HW SET: 02

For use on Door #(s):
115C 115D 118A 120A 141A 143A

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	VANDL ENTRANCE LOCK	ND92BD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER

HW SET: 03

For use on Door #(s):
113 114 134 135 145

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80B RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 04

For use on Door #(s):
128

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80B RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 05

For use on Door #(s):
103 104 126 127 146

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	ALX53B RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 06

For use on Door #(s):
112

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	78-L-BE-06	626	VON
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 07

For use on Door #(s):
105 109 110 137 139

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-LOC	626	SCH
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: 08

For use on Door #(s):
125 140 143B 144A 144C

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ALX10 RHO	626	SCH
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 09

For use on Door #(s):
101 102 142A 144B

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ALX10 RHO	626	SCH
1	EA	SURFACE CLOSER	4050A CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 10

For use on Door #(s):
106 107 108 129 130 136

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8305 8" 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 11

For use on Door #(s):
149

Each to have:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	SURFACE BOLT	SB360 12" T	604	IVE
2	EA	PULL PLATE	8305 8" 4" X 16"	630	IVE
2	EA	SURFACE CLOSER	4050A HEDA	689	LCN
2	EA	SILENCER	SR64	GRY	IVE

HW SET: A1

For use on Door #(s):
100 112A 122

Each to have:

1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-75-NL-OP-388	626	VON
1	EA	SFIC MORTISE HOUSING	80-102	626	SCH
1	EA	SFIC RIM HOUSING	80-129	626	SCH
2	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	90 DEG OFFSET PULL	8190HD 10" STD	630	IVE
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	4050A EDAW/62G	689	LCN
1	EA	PA MOUNTING PLATE	4050A-18PA	689	LCN
1	EA	CUSH SHOE SUPPORT	4050A-30 SRT	689	LCN
1	EA	PERIMETER GASKET.	BY DOOR ASSEMBLY MANUFACTURER		
1	EA	THRESHOLD.	BY DOOR ASSEMBLY MANUFACTURER		
1	SET	SWEEP.	BY DOOR ASSEMBLY MANUFACTURER		

HW SET: R1

For use on Door #(s):
115 115A 116 116A 117 117A
118 119 119A 120 141 142
143 144

Each to have:

	EA	NOTE	ALL HARDWARE BY DOOR SUPPLIER/MANUFACTURER

END OF SECTION

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Glass products.
2. Insulating glass.
3. Glazing sealants.
4. Glazing tapes.
5. Miscellaneous glazing materials.

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturers of fabricated glass units.

B. Sample Warranties: For special warranties.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.9 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain tinted and coated glass from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.

   a. Wind Design Data: As indicated on Drawings.

2. Design Snow Loads: As indicated on Drawings.
3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
3. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on LBL's WINDOW 7 computer program, expressed as Btu/sq. ft. x h x deg F.
4. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on LBL's WINDOW 7 computer program.
5. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

E. Strength: Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

B. Reflective- and Low-E-Coated Vision Glass: ASTM C1376.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Vitro Architectural Glass.
b. Pilkington North America

C. Ceramic-Coated Spandrel Glass: ASTM C1048, Type I, Condition B, Quality-Q3.

2.5 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer

rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:

1. Neoprene with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. Type recommended in writing by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.9 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.

2. Provide 1/8-inch- minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant where indicated.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 MONOLITHIC GLASS SCHEDULE

A. Clear (Glass Type 2): Fully tempered float glass.

1. Minimum Thickness: 6 mm.
2. Safety glazing required.

3.8 INSULATING GLASS SCHEDULE

A. Low-E-Coated, Tinted Insulating (Glass Type 1):

1. Basis-of-Design Product: Vitro Solarban 70 (2) Atlantica + Clear.
2. Overall Unit Thickness: 1 inch.
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Tinted fully tempered float glass.
5. Tint Color: Green.
6. Interspace Content: Air.
7. Indoor Lite: Clear fully tempered float glass.
8. Low-E Coating: Sputtered on second surface.
9. Winter Nighttime U-Factor: 0.28 maximum.
10. Summer Daytime U-Factor: 0.26 maximum.
11. Visible Light Transmittance: 49 percent minimum.
12. SGHC: 0.23 maximum.
13. Safety glazing required.

B. Ceramic-Coated, Low-E, Tinted Insulating Spandrel (Glass Type 1S):

1. Basis-of-Design Product: Vitro Solarban 70 (2) Atlantica + Ceramic Spandrel.
2. Coating Color: United Plate Glass Company, Ceramic Frit; Harmony Solex.
3. Overall Unit Thickness: 1 inch.
4. Minimum Thickness of Each Glass Lite: 6 mm.
5. Outdoor Lite: Tinted fully tempered float glass.
6. Tint Color: Green.
7. Interspace Content: Air.

8. Indoor Lite: Clear fully tempered float glass.
9. Low-E Coating: Sputtered on second surface.
10. Opaque Coating Location: Fourth surface.
11. Winter Nighttime U-Factor: 0.28 maximum.
12. Summer Daytime U-Factor: 0.26 maximum.

END OF SECTION 088000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions and soffits.
2. Grid suspension systems for interior gypsum board ceilings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Horizontal Deflection: For composite wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft. .

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
2. Protective Coating: ASTM A653/A653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.

1. Steel Studs and Tracks:

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1) CEMCO; California Expanded Metal Products Co.
2) ClarkDietrich
3) MRI Steel Framing, LLC.
4) SCAFCO Steel Stud Company

b. Minimum Base-Steel Thickness: 0.0329 inch.
c. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Double-Track System: ASTM C645 top outer tracks, inside track with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
2. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1) CEMCO; California Expanded Metal Products Co.
2) ClarkDietrich
3) MRI Steel Framing, LLC.
4) SCAFCO Steel Stud Company

b. Minimum Base-Steel Thickness: 0.0329 inch.
c. Depth: As indicated on Drawings.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: 0.0269 inch.

E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

B. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

C. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-tee members that interlock.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Armstrong World Industries, Inc.
    b. Rockfon North America.
    c. USG Corporation.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
2. Pony Wall Support: Clark Dietrich Model # LGPW24 or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. Single-Layer Application: 24 inches o.c. unless otherwise indicated.
2. Multilayer Application: 24 inches o.c. unless otherwise indicated.
3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

A. Install interior gypsum ceiling suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. Hangers: 48 inches o.c.
2. Main Beams: 48 inches o.c.
3. Cross Tees: 24 inches o.c.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Trim.

B. Related Requirements:

1. Section 061600 "Sheathing" for sheathing for exterior walls.
2. Section 092216 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum board, Type X.
2. Gypsum ceiling board.
3. Mold-resistant gypsum board.
4. Glass-mat, water-resistant backing board.
5. Interior trim.
6. Joint treatment materials.
7. Sound-attenuation blankets.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

B. Gypsum Ceiling Board, Type X: ASTM C1396/C1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.3 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with manufacturer's standard edges.

1. Core: 5/8 inch, Type X.
2. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. U-Bead: J-shaped; exposed short flange does not receive joint compound.

d. Expansion (control) joint.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Subject to project requirements, provide Fry Reglet Drywall Reveal Molding with 1/4" reveal opening DRM-625-25.
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221, Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified. Paint to match wall below.
4. Location: as indicated on interior elevations.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

   a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound or high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

D. Joint Compound for Tile Backing Panels:

1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.

2.6 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

D. Acoustical Sealant: As specified in Section 079200 " Joint Sealants."

E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

F. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLATION OF TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at inside and outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. U-Bead: Use at exposed panel edges where indicated.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 5: Where exposed to view.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Porcelain tile.
2. Waterproof membranes.
3. Crack isolation membranes.
4. Setting material.
5. Grout materials.

1.2 DEFINITIONS

A. General: Definitions in ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. Face Size: Actual tile size, excluding spacer lugs.

C. Large Format Tile: Tile with at least one edge 15 inches (381 mm) or longer.

D. Module Size: Actual tile size plus joint width indicated.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.
2. Metal flooring transitions 6-inch (152-mm) lengths.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials, from the same production run, to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units:[**Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.**]

2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Installer employs only [**Ceramic Tile Education Foundation Certified Installers**] [**or**] [**installers recognized by the U.S. Department of Labor as Journeyman Tile Layers**] for Project.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.8 WARRANTY

A. System Warranty: Manufacturer's non-prorated comprehensive warranty that agrees to repair and replace defective installation areas, material, and labor that fail under normal usage within specified warranty period.

   1. Warranty Period: Lifetimefrom date of Product Purchase.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Tile: Obtain tile of each color or finish from single source or producer.

   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Tiling System: Obtain system products from single manufacturer and each aggregate from single source or producer.

   1. Obtain setting and grouting materials, except for unmodified portland cement and aggregate, from single manufacturer.
   2. Obtain underlayment from manufacturer of setting and grouting materials.
   3. Obtain waterproof membrane, crack isolation, and other required membranes from manufacturer of setting and grouting materials.
   4. Obtain joint sealants from manufacturer of setting and grouting materials.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

   1. Provide tile complying with Standard Grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 PORCELAIN TILE

A. Porcelain Tile Type **CT1**

1. Certification: Tile certified by the Porcelain Tile Certification Agency.
2. Face Size: 11-5/8 by 23-3/8 inches (295.6 by 594.4 mm).
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch .

5. Tile Color, Glaze, and Pattern: Ironcraft Charcoal Grey IC13, matte.
6. Grout Color: Mapei 5107 Iron.

B. Porcelain Tile Type **CT2**.

1. Certification: Tile certified by the Porcelain Tile Certification Agency.
2. Face Size: 11-5/8 by 23-3/8 inches (295.6 by 594.4 mm).
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch .

5. Tile Color, Glaze, and Pattern: Ironcraft CasperGrey IC12, matte.
6. Grout Color: Mapei 5107 Iron.

C. Porcelain Tile Type **CTB**.

1. Certification: Tile certified by the Porcelain Tile Certification Agency.
2. Face Size: field cut from full size tile to 6 by 23-3/8 inches for use as 6” tile wall base.
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch .

5. Tile Color, Glaze, and Pattern: Ironcraft Charcoal Grey IC13, matte.
6. Grout Color: Mapei 5107 Iron.

2.4 WATERPROOF MEMBRANES

A. General: Manufacturer's standard product that complies with ANSI A118.10 [**and ANSI A118.12**]and is recommended by manufacturer for application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Waterproof Membrane, Sheet: Polyethylene sheet faced on one or both sides with polyester fabric.

Schluter-KERDI sheet.

1. Nominal Thickness: 0.03 inch (0.8 mm) .

2.5 UNCOUPLING MEMBRANES

A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by manufacturer for application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Crack Isolation Membrane, Polyethylene Sheet: Polyethylene faced on under side with anchoring fleece.

1. Manufacturer: Schluter Systems

2. Product: DITRA 1/8 inch (3.5mm) uncoupling and waterproofing membrane

2.6 SETTING MATERIALS

A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

1. Basis of design: Schluter ALL-SET Specialized Modified Thin-Set Mortar.
2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to other requirements in ANSI A118.4.

2.7 GROUT MATERIALS

A. High-Performance Tile Grout: ANSI A118.7.

1. Mapei Ultracolor Plus FA

2. Polymer Type:

a. Dry, redispersible form, prepackaged with other dry ingredients.

2.8 MISCELLANEOUS MATERIALS

A. Metal Flooring Transitions: Profile designed specifically for flooring applications; height to match tile and setting-bed thickness.

1. Manufacturer: Schluter Systems.

2. Description: Schluter-RENO-U.
3. Material and Finish: Metallic; clear anodized aluminum material.

B. Metal Edge Trim: Profile designed for wall terminations and edge protection.

1. Manufacturer: Schluter Systems.

2. Description: Schluter-QUADEC.
3. Terminations: End caps Outside corners matching edge-protection profile.
4. Material and Finish: Clear anodized aluminum material.

C. Metal Cove Trim: Profile designed for wall terminations at floors.
   1. Manufacturer: Schluter Systems.
   2. Description: Schluter-DILEX.
   3. Terminations: End caps, inside corners matching cove profile.
   4. Material and Finish: Clear anodized aluminum material.

D. Temporary Protective Coating: Formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products and easily removable after grouting is completed without damaging grout or tile.

E. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

F. Grout Sealer: Grout manufacturer's standard UltraCare product for sealing grout joints that does not change color or appearance of grout.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

   1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

      a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
      b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

   3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
   4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds or other coatings, that are incompatible with tile-setting materials.

B. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

D. Substrate Flatness:

1. For tile shorter than 15 inches (381 mm), confirm that structure or substrate is limited to variation of 1/4 inch in 10 ft. (6.4 mm in 3 m) from the required plane, and no more than 1/16 inch in 12 inches (1.5 mm in 300 mm) when measured from tile surface high points.
2. For large format tile, tile with at least one edge 15 inches (381 mm) or longer, confirm that structure or substrate is limited to 1/8 inch in 10 ft. (3 mm in 3 m) from the required plane, and no more than 1/16 inch in 24 inches (1.5 mm in 609 mm) when measured from tile surface high points.

3.3 INSTALLATION OF CERAMIC TILE SYSTEM

A. Install tile backing panels and treat joints in accordance with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

B. Install uncoupling membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

C. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

1. Add materials, water, and additives in accurate proportions.
2. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

D. Install tile in accordance with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of ANSI A108 series that are referenced in TCNA installation methods and specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.

2. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
3. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
4. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
5. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

a. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

6. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

E. Metal Flooring Transitions: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

F. Metal Wall Trim: Install at locations indicated on Drawings and where exposed edge of tile terminates on wall.

G. Metal Cove Trim: Install at locations indicated on Drawings and where wall tile meets floor finish.

H. Grout Sealer: Apply grout sealer to[**cementitious**] grout joints[**in tile floors**] in accordance with manufacturer's written instructions. As soon as sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile in accordance with tile and grout manufacturer's written instructions. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.5 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least three days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.6 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Ceramic Tile Installation (CT1): TCNA F128; thin-set mortar on uncoupling membrane.

a. Bond coat: Modified dry-set (thin-set).

b. Uncoupling Membrane: Corrugated Polyethylene.
c. Thin-set Mortar: Modified dry-set mortar.
d. Grout: High-performance tile grout.

B. Interior Wall Installations, Masonry or Concrete:

1. TCNA W202I: Thinset mortar over waterproof membrane.

a. Ceramic Tile Type: CTB, CT2.
b. Thinset Mortar: Modified dry-set mortar.
c. Waterproof Membrane: Polyethylene faced sheet
d. Grout: High-performance unsanded cement grout.
e. Waterproof Membrane: Polyethylene sheet.
f. Joint Width: 1/8 inch (3.2 mm).

C. Interior Wall Installations, Wood or Metal Studs or Furring:

1. TCNA W247 <**Insert designation**>: Thinset mortar on fiber-reinforced gypsum backer board.

a. Ceramic Tile Type: CTB, CT2.
b. Thinset Mortar: Modified dry-set mortar.
c. Grout: High-performance unsanded cement grout.
d. Waterproof Membrane: Polyethylene sheet.
e. Joint Width: 1/8 inch (3.2 mm).

END OF SECTION 093013

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical panels.
2. Metal suspension system.
3. Metal edge moldings and trim.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Acoustical panels.
2. Metal suspension system.
3. Metal edge moldings and trim.

B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials[**, from the same product run,**] that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 5 percent of quantity installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Ceiling System: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Suspended ceilings to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class [**A**] [**B**] [**C**] in accordance with ASTM E1264.
2. Smoke-Developed Index: [**50**] [**450**] <**Insert value**> or less.

C. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.3 ACOUSTICAL PANELS **ACP#**

A. (ACP) Basis-of-Design Product: Armstrong Ceiling and Wall Solutions

B. Acoustical Panel Standard: Provide manufacturer's standard panels in accordance with ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Classification: Provide[**fire-resistance-rated**] panels as follows:

1. Type and Form, Type III: Mineral base with painted finish; Form 1, nodular.
2. Pattern: E (lightly textured).

D. Color: White.

E. Light Reflectance (LR): Not less than 0.84.

F. Ceiling Attenuation Class (CAC): Not less than 35.

G. Noise Reduction Coefficient (NRC): Not less than 0.75.

H. Articulation Class (AC): Not less than 170.

I. Edge/Joint Detail: Angled Tegular.

J. Thickness:

1. 7/8 inch (22 mm).

K. Modular Size: 24 by 24 inches (610 by 610 mm).

2.4 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Armstrong Ceiling & Wall Solutions, Prelude 15/16” Suspension System.

B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories in accordance with ASTM C635/C635M and designated by type, structural classification, and finish indicated.

C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.

1. Fire Rating: Class A.
2. Structural Classification: Heavy-duty system.
3. End Condition of Cross Runners: Override (stepped) type.
4. Face Design: Flat, flush.
5. Cap Material: Cold-rolled steel.
6. Cap Finish: Painted white.

2.5 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Stainless Steel Wire: ASTM A580/A580M, Type 304, nonmagnetic.
3. Nickel-Copper-Alloy Wire: ASTM B164, nickel-copper-alloy UNS No. N04400.
4. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- (2.69-mm-) diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION OF ACOUSTICAL PANEL CEILINGS

A. Install acoustical panel ceilings in accordance with ASTM C636/C636M, seismic design requirements, and manufacturer's written instructions.

1. Fire-Rated Assembly: Install fire-rated ceiling systems in accordance with tested fire-rated design.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
3. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
4. Do not attach hangers to steel deck tabs.
5. Do not attach hangers to steel roof deck. Attach hangers to structural members.
6. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
7. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

D. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. Arrange directionally patterned acoustical panels as follows:

a. As indicated on reflected ceiling plans.

2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Thermoset-rubber base.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples.

C. Product Schedule: For resilient base and accessory products.[**Use same designations indicated on Drawings.**]

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials[**, from the same product run,**] that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F (18 deg C) <**Insert temperature**> or more than 85 deg F (29 deg C) <**Insert temperature**>, in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.

3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F (18 deg C) <**Insert temperature**> or more than 85 deg F (29 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOSET-RUBBER BASE **RB**

A. **(RB1)** Basis of Design: Roppe Corporation
1. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
   a. Style and Location:
      1) Style B, Cove, standard toe: Where indicated on drawings.
2. Thickness: 0.125 inch (3.2 mm).
3. Height: 4 inches (102 mm).
4. Lengths: Coils in manufacturer's standard length.
5. Outside Corners: Job formed.
6. Inside Corners: Job formed.
7. Colors: 114 Lunar Dust.

B. **(RB2)** Basis of Design: Roppe Corporation
1. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
   a. Style and Location:
      1) Style B, Cove, standard toe: Where indicated on drawings.
2. Thickness: 0.125 inch (3.2 mm).
3. Height: 6 inches (152 mm).
4. Lengths: Coils in manufacturer's standard length.
5. Outside Corners: Job formed.
6. Inside Corners: Job formed.
7. Colors: 114 Lunar Dust.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

a. Miter or cope corners to minimize open joints.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Solid vinyl floor tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

C. Product Schedule: For floor tile.[**Use same designations indicated on Drawings.**]

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C). Store floor tiles on flat surfaces.

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C), in spaces to receive floor tile during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C).

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 SOLID VINYL FLOOR TILE

A. Manufacturer: Tarkett North America

B. Tile Standard: ASTM F1700.

1. Class: Class III, Printed Film Vinyl Tile.
2. Type:.

C. Thickness: 0.120 inch (3.0 mm).

D. Size: 18 by 18 inches (457 by 457 mm).

E. Colors and Patterns: Tarkett Contour Series Abstract, Color Play Collection, Color Weave PCWE, color: ANGORA C169.

F. Finish: 32 mil wear layer, quarry embossed matte finish

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated. Obtain adhesives from same manufacturer as resilient tile flooring.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
   a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 90 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in vertical ashlar pattern.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Carpet tile.

B. Related Requirements:
1. [**Section 096513 "Resilient Base and Accessories"**] [**Section 096519 "Resilient Tile Flooring"**] for resilient wall base and accessories installed with carpet tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.

B. Samples for Verification: Actual sample of finished products for each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials, from the same production run, to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 full-size units.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.6 FIELD CONDITIONS

A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended in writing by carpet tile manufacturer.

1.7 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:

a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
b. Loss of tuft-bind strength.
c. Excess static discharge.
d. Delamination.
e. Dimensional instability.

3. Warranty Period:Lifetime from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE <**CPT**>

A. Manufacturer: Mannington Commercial.

B. Color: Swan 15395.

C. Pattern: Origami: Valley Fold

D. Fiber Content: 100 percent nylon 6,6.

E. Pile Characteristic: Level-loop pile.

F. Density: 7,005 (267.54 kg/m3)).

G. Pile Thickness: 0.185 inches (4.7 mm) for finished carpet tile[**in accordance with ASTM D6859**].

H. Stitches: 9.16 stitches per inch (36.06 mm).

I. Gauge: 5/64 per inch .

J. Backing System: rEvolve II.

K. Size: 24 by 24 inches (610 by 610 mm).

L. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment.

M. Performance Characteristics:

1. Texture Appearance Retention Rating (TARR): Severe traffic, 3.5 minimum in accordance with ASTM D7330.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended in writing by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive types to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and that are recommended in writing by carpet tile manufacturer for releasable installation.

C. Metal Edge/Transition Strips: Extruded aluminum of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.
1. Products subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
a. Gradus.
1) ACT61 or equal: transition at carpet tile to concrete.
a) Finish: Aluminum.
b) Location: Refer to drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed manufacturer’s written requirements, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 10 lbs./1,000 SF in 24 hours.
b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 95 percent relative humidity level measurement.
c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, in accordance with manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns in horizontal brick ashlar pattern.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended in writing by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive and other surface blemishes using cleaner recommended in writing by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Surface preparation and application of paint systems on the following exterior substrates:

   a. Steel and iron.
   b. Galvanized metal.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for shop priming metal fabrications.

1.3 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
3. Indicate VOC content.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Sherwin-Williams Company (The).

B. Products: Subject to compliance with requirements, provide products listed in the Exterior Painting Schedule for the paint category indicated.

C. Source Limitations: Obtain paint from single source from single manufacturer.

2.2 PAINT PRODUCTS

A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: All colors to be selected by Architect from palette that best matches adjacent construction.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Masonry (Clay and CMUs): 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

E. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 INSTALLATION

A. Apply paints in accordance with manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Uninsulated metal piping.
b. Uninsulated plastic piping.
c. Pipe hangers and supports.
d. Metal conduit.
e. Plastic conduit.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.
4. Collect waste paint by type and deliver to recycling or collection facility.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates:

1. Water-Based Industrial Coating System:

a. Acrylic Prime Coat: Primer, rust inhibitive, water based MPI #107.

1) Sherwin Williams; Pro Industrial Pro-Cryl Universal Primer, B66W00310.

b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

c. Semigloss Topcoat: Industrial coating, exterior, water based, semigloss (MPI Gloss Level 5), MPI #153.

1) Sherwin Williams; Pro Industrial Acrylic Semi-Gloss B66-650 Series.

B. Galvanized-Metal Substrates:

1. Water-Based Industrial Coating System:

a. Acrylic Prime Coat: Primer, galvanized, water based, MPI #134.

1) Sherwin Williams; Pro Industrial Pro-Cryl Universal Primer, B66W00310.

b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

c. Semigloss Topcoat: Industrial coating, exterior, water based, semigloss (MPI Gloss Level 5), MPI #153.

1) Sherwin Williams; Pro Industrial Acrylic Semi-Gloss B66-650 Series.

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following interior substrates:
   1. Steel and iron.
   2. Galvanized metal.
   3. Wood.
   4. Gypsum board.

B. Related Requirements:

   1. Section 051200 "Structural Steel Framing" for shop priming structural steel.
   2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.
   3. Section 064116 “Plastic-Laminate-Clad Architectural Cabinets” for plastic laminate finishes.
   4. Section 099113 “Exterior Painting” for surfaces preparation and the application of paint systems on exterior substrates.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Label each Sample for location and application area.

C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.8 WARRANTY

A. Warranty Period: Two years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Sherwin-Williams Company (The).

B. Products: Subject to compliance with requirements, provide product listed in the Interior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Dry-Fog Coatings: 400 g/L.
4. Primers, Sealers, and Undercoaters: 200 g/L.
5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
7. Pretreatment Wash Primers: 420 g/L.
8. Floor Coatings: 100 g/L.
9. Shellacs, Clear: 730 g/L.
10. Shellacs, Pigmented: 550 g/L.

D. Colors

1. P1
a. Color: SW7011 Natural Choice 254-C6
b. Sheen: Eggshell (typical)
c. Location: General, as shown on drawings

2. P2
a. Color: SW0049 Silver Gray
b. Sheen: Eggshell (typical)
c. Location: Accents, as shown on drawings

3. P3
a. Color: SW6684 Brittlebush
b. Sheen: Semigloss
c. Location: Accents, as shown on drawings

4. P4
a. Color: SW7069 Iron Ore
b. Sheen: Semigloss
c. Location: Hollow Metal Door Frames, as shown on drawings

5. EP1
a. Color: SW7011 Natural Choice 254-C6
b. Epoxy paint
c. Sheen: Eggshell
d. Location: General, wet areas, as shown on drawings

E. As indicated in a color schedule

1. Five percent of surface area will be painted with deep tones.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Wood: 15 percent.
3. Gypsum Board: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:
   a. Uninsulated metal piping.
   b. Pipe hangers and supports.
   c. Metal conduit.

2. Paint the following work where exposed in occupied spaces:

   a. Equipment, including panelboards.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   h. Other items as directed by Architect.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Water-Based Light Industrial Coating System MPI INT 5.1B:

a. Prime Coat: Primer, rust-inhibitive, water based MPI #107.

1) S-W Pro Industrial Pro-Cryl Universal Primer, B66W1310.

b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.

c. Topcoat: Light industrial coating, interior, water based, semi-gloss (MPI Gloss Level 5), MPI #153.

1) S-W Pro Industrial Acrylic Semi-gloss, B66-650 Series.

B. Galvanized-Metal Substrates:

1. Water-Based Light Industrial Coating System MPI INT 5.3K:

a. Prime Coat: Primer, galvanized, water based, MPI #134.

1) S-W Pro Industrial Pro-Cryl Universal Primer, B66W1310.

b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.

c. Topcoat: Light industrial coating, interior, water based, semi-gloss (MPI Gloss Level 5), MPI #153.

1) S-W Pro Industrial Acrylic Semi-gloss, B66-650 Series.

C. Wood Substrates: Architectural woodwork .

1. Institutional Low-Odor/VOC Latex System [**MPI INT 6.3V**]:

a. Prime Coat: Primer, latex, for interior wood[**, MPI #39**].

1)

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5)[**, MPI #147**].

1)

D. Wood Substrates: Wood paneling .

1. Latex over Latex Primer System MPI INT 6.4R:

a. Prime Coat: Primer, latex, for interior wood, MPI #39.

1) S-W Multi-Purpose Latex Primer/Sealer, B51-450 Series.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.

1) S-W Duration Home Satin, A97-1200 Series.

E. Gypsum Board Substrates:

1. Latex over Latex Sealer System MPI INT 9.2A:

a. Prime Coat: Primer sealer, latex, interior, MPI #50.

1) S-W ProMar 200 Zero VOC Primer, B28W2600.

b. Prime Coat: Latex, interior, matching topcoat.
c. Intermediate Coat: Latex, interior, matching topcoat.

d. Topcoat: Latex, interior (MPI Gloss Level 3)[**, MPI #52**].

1) S-W ProMar 200 Zero VOC Eg-Shel, B20-12650 Series.

2. Pre-Catalyzed Waterbased Epoxy System:

a. Prime Coat: Primer sealer, latex, interior, MPI #50.

1) S-W ProMar 200 Zero VOC Primer, B28W2600.

b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.
c. Topcoat: Epoxy-modified latex, single component, interior, eggshell (MPI Gloss Level 3), MPI #151.

1) S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy Eggshell, K45-1150 Series.

END OF SECTION 099123

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cast dimensional characters.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ACE Sign Systems, Inc.
b. Allen Markings International.
c. APCO Graphics, Inc.
d. A. R. K. Ramos Signage Systems.
e. ASI Sign Systems, Inc.
f. Metal Arts; Division of L & H Mfg. Co.
g. Metallic Arts.

2. Character Material: Cast aluminum.
3. Character Height: 8-inch.
4. Thickness: Manufacturer's standard for size of character.
5. Finishes:

a. Integral Aluminum Finish: Clear anodized.

6. Mounting: Concealed studs.
7. Typeface: Helvetica.

2.2 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Castings: ASTM B26/B26M, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. Sign Mounting Fasteners:

a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
6. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101419

SECTION 101423 - PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Panel signs.
2. Room-identification signs.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

B. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 SIGNS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Best Sign Manufacturing HC300 ADA System or product indicated or comparable product by one of the following:

1. Allen Industries, Inc.

2. Allen Markings International.
3. APCO Graphics, Inc.
4. ASI Sign Systems, Inc.
5. Best Sign Systems Inc.
6. InPro Corporation.
7. Mohawk Sign Systems.

    a. Edge Conditions: Square Cut.
    b. Corner Conditions: Square
    c. Color: To be selected by Architect from manufacturers full range of colors.

8. Mounting: Manufacturer's standard method for substrates indicated with.
9. Text and Typeface: Finish raised characters to contrast with background color, and finish Braille to match background color.

2.2 PANEL-SIGN MATERIALS

A. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish hot-dip galvanized devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Internally brace signs for stability and for securing fasteners.

6. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.5 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that anchor inserts are correctly sized and located to accommodate signs.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Room-Identification Signs: Install in locations on walls as indicated and according to accessibility standard Insert requirement.

C. Mounting Methods:

1. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position and push to engage tape adhesive.
3. Hook-and-Loop Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply sign component of two-part tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage; push to engage tape

adhesive. Keep tape strips 0.250 inch away from edges to prevent visibility at sign edges when sign is initially installed or reinstalled. Apply substrate component of tape to substrate in locations aligning with tape on back of sign; push and rub well to fully engage tape adhesive to substrate.

4. Magnetic Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.4 PANEL SIGN TYPES

A. Information Signs: Best HC300 ADA System Type ‘E’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Unframed.
3. Copy: Tactile and braille surface.
4. Character Style: Helvetica.
5. Text: “MECHANICAL / ELECTRICAL ROOM”.
6. Message: Fixed.
7. Sizes:

   a. Sign: 14-1/4” x 4-3/4”.
   b. Character: Minimum 1 ½”-inch-high characters.

8. Location: Install at Door 113 and 134.

B. Information Signs: Best HC300 ADA System Type ‘E’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Unframed.
3. Copy: Tactile and braille surface.
4. Character Style: Helvetica.
5. Text: “ELECTRICAL ROOM”.
6. Message: Fixed.
7. Sizes:

   a. Sign: 14-1/4” x 4-3/4”.
   b. Character: Minimum 1-inch-high characters.

8. Location: Install at Door 114 and 135.

C. Information Signs: Best HC300 ADA System Type ‘E’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Unframed.
3. Copy: Tactile and braille surface.
4. Character Style: Helvetica.
5. Text: “STORAGE ROOM”.
6. Message: Fixed.
7. Sizes:

   a. Sign: 14-1/4” x 4-3/4”.
   b. Character: Minimum 1-inch-high characters.

8. Location: Install at Door 145.

D. Information Signs: Best HC300 ADA System Type ‘E’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Unframed.
3. Copy: Tactile and braille surface.
4. Character Style: Helvetica.
5. Text: “LOCKER ROOM”.
6. Message: Fixed.
7. Sizes:

   a. Sign: 14-1/4” x 4-3/4”.
   b. Character: Minimum 1-inch-high characters.

8. Location: Install at Door 108 and 136.

E. Toilet Room Signs: Best HC300 ADA System Type ‘D’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Framed.
3. Copy: Raised.
4. Character Style: Helvetica.
5. Text: According to requirements in ADA or of authorities having jurisdiction, whichever are more stringent, “MEN” and “WOMEN”.
6. Message: Fixed.
7. Sizes:

   a. Sign: 8” x 8”.
   b. Character: Minimum 1-inch high characters.

8. Location: Install at Doors 106, 107, 129, and 130.

F. Toilet Room Signs: Best HC300 ADA System Type ‘D’.

1. Material: Cast-acrylic sheet.
2. Perimeter: Framed.
3. Copy: Raised.
4. Character Style: Helvetica.
5. Text: According to requirements in ADA or of authorities having jurisdiction, whichever are more stringent, “RESTROOM”.
6. Message: Fixed.

7. Sizes:

    a. Sign: 8” x 8”.
    b. Character: Minimum 1-inch high characters.

8. Location: Install at Doors 105.

G. Information Sign: Applied Vinyl.

1. Material: 3M Vinyl Characters.
2. Character Style: Helvetica.

    a. Character Size: 4-inch high

3. Text: “FIRE RISER”
4. Location: Install on Exterior Door 147.

END OF SECTION 101423

SECTION 101426 - POST AND PANEL/PYLON SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Nonilluminated post-and-panel signs.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for concrete foundations, concrete fill in postholes, and setting anchor bolts in concrete foundations for signs.
2. Section 101423 "Panel Signage" for wall-mounted sign panels.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For signage.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.

C. Product Schedule: For post-and-panel and pylon signs. Use same designations indicated on Drawings or specified.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.
c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 POST-AND-PANEL SIGNS

A. Post-and-Panel Sign: Sign of single-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Solid-Sheet Sign Panels: Aluminum sheet with finish specified and as follows:

a. Thickness: Minimum 0.080 inch.
b. Edge Condition: Rounded.
c. Corner Condition: Corners rounded to radius.
d. Surface-Applied Graphics: Applied reflective vinyl film.

2. Sign-Frame Mounting: Over posts.
3. Posts: Steel.

a. Shape: Square.
b. Size: 2 by 2 inches.
c. Installation Method: Direct burial.
d. Finish and Color: Silver baked enamel or powder coat.

2.2 MATERIALS

A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Steel Materials:

1. Steel Tubing or Pipe: ASTM A500/A500M, Grade B.
2. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated on Drawings and suitable for exterior applications.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in locations concealed from view after final assembly.
2. Mill joints to tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

B. Post Fabrication: Fabricate posts designed for structural performance indicated and of lengths required for installation method indicated for each sign.

1. Steel Posts: Fabricate from minimum 0.120-inch- thick, steel tubing unless otherwise indicated. Include post caps, fillers, spacers, junction boxes, access panels, reinforcement where required for loading conditions, and related accessories required for complete installation.

   a. Hot-dip galvanize post assemblies after fabrication according to ASTM A123/A123M.

2. Direct Burial: Fabricate posts 36 inches longer than height of sign to permit direct burial or embedment in concrete foundations or concrete-filled postholes.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.7 METALLIC-COATED STEEL FINISHES

A. Surface Preparation: Clean surfaces of oil and other contaminants. Use cleaning methods that do not leave residue. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A780/A780M.

B. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.

3.3 INSTALLING POSTS

A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16 inch in 3 feet.

B. Direct-Burial Method:

1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches, backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.
2. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete in posthole as indicated on Drawings.

3.4 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101426

SECTION 102113.13 - METAL TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal toilet compartments.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for blocking.
2. Section 092216 "Non-Structural Metal Framing" for blocking.
3. Section 102800 "Toilet, Bath, and Laundry Accessories" for accessories mounted on toilet compartments.

1.2 COORDINATION

A. Coordinate requirements for [**overhead supports,**]blocking, reinforcing, and other supports concealed within wall[**and ceiling**] to ensure that toilet compartments can be supported and installed as indicated.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Metal toilet compartments.

a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Show locations of reinforcements for compartment-mounted grab bars and locations of blocking for surface-mounted toilet accessories.
3. Show locations of centerlines of toilet fixtures.
4. Show locations of floor drains.

C. Samples for Verification: Actual sample of finished product for each type of toilet compartment, hardware, and accessory.

1. Size: Manufacturers' standard size.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For toilet compartments.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hinges: One hinge(s) with associated fasteners.
2. Latch and Keeper: One latch(es) and keeper(s) with associated fasteners.
3. Door Bumper: One door bumper(s) with associated fasteners.
4. Door Pull: One door pull(s) with associated fasteners.
5. Fasteners: 10 fasteners of each size and type.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements, and coordinate before fabrication.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain metal toilet compartments from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 75 or less.
2. Smoke-Developed Index: 450 or less.

B. Structural Performance: Where grab bars are mounted on toilet compartments, design panels to comply with the following requirements:

1. Panels are able to withstand a concentrated load on grab bar of at least 250 lbf (1112 N) applied at any direction and at any point, without deformation of panel.

C. Regulatory Requirements: Comply with applicable provisions in [**the USDOJ's "2010 ADA Standards for Accessible Design"**] [**and**] [**ICC A117.1**] <**Insert accessibility regulation**> for toilet compartments designated as accessible.

2.3 METAL TOILET COMPARTMENTS **TP**

A. <u>Basis of design manufacturer: Hadrian, Inc.</u>

B. Toilet-Enclosure Style: Overhead braced.

C. Urinal-Screen Style: Floor anchored.

D. Door, Panel, and Pilaster Construction: Seamless, metal facing sheets pressure laminated to core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces shall be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.

1. Core Material: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch (25 mm) for doors and panels and 1-1/4 inches (32 mm) for pilasters.
2. Grab-Bar Reinforcement: Provide concealed internal reinforcement for grab bars mounted on units of size and material adequate for panel to withstand specified structural performance requirements.
3. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.

E. Entrance Screen Construction: Matching panel construction.

F. Urinal-Screen Construction:

1. Flat-Panel Urinal Screen: Matching panel construction.

G. Facing Sheets and Closures: Electrolytically coated steel or hot-dip galvanized-steel sheet with nominal base-metal (uncoated) thicknesses as follows:

1. Pilasters, Braced at Both Ends: Manufacturer's standard thickness, but not less than 0.036 inch (0.91 mm).
2. Panels: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
3. Doors: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
4. Entrance Screens: Thickness matching panels.
5. Flat-Panel Urinal Screens: Thickness matching panels.
6. Integral-Flange, Wall-Hung Urinal Screens: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
7. Wedge-Shaped, Wall-Hung Urinal Screens: Manufacturer's standard thickness, but not less than 0.036 inch (0.91 mm).

H. Pilaster Shoes: Formed from stainless steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.

I. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters; with shoe[**and sleeve (cap)**] matching that on the pilaster.

J. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets; [**chrome-plated zamac**] [**stainless steel**].

K. Steel Sheet Finish: Immediately after cleaning and pretreating, apply manufacturer's standard baked-on finish, including thermosetting, electrostatically applied, and powder coatings. Apply one color in each room.

1. Color: Hadrian 621 Slate.

2.4 HARDWARE AND ACCESSORIES

A. Door Hardware and Accessories: Manufacturer's operating hardware and accessories.

1. Hinges:

   a. Manufacturer's standard hinge.

2. Latch and Keeper: Manufacturer's surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at toilet enclosures designated as accessible.

   a. Material: Manufacturer's standard.

3. Coat Hook: Manufacturer's combination hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories.

   a. Material: Manufacturer's standard.

4. Door Bumper: Manufacturer's rubber-tipped bumper at outswinging doors.

   a. Material: Manufacturer's standard.

5. Door Pull: Manufacturer's unit at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at toilet enclosures designated as accessible.

   a. Material: Manufacturer's standard.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.5 MATERIALS

A. Aluminum Castings: ASTM B26/B26M.

B. Aluminum Extrusions: ASTM B221 (ASTM B221M).

C. Steel Sheet: Commercial steel sheet for exposed applications; mill phosphatized and selected for smoothness.

   1. Electrolytically Zinc Coated: ASTM A879/A879M, 01Z (03G).
   2. Hot-Dip Galvanized: ASTM A653/A653M, either hot-dip galvanized or galvannealed.

D. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.

E. Stainless Steel Castings: ASTM A743/A743M.

F. Zamac: ASTM B86, commercial zinc-alloy die castings, chrome plated.

2.6 FABRICATION

A. Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories, and solid blocking within panel where required for attachment of toilet accessories.

B. Overhead-Braced Units: Manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters and walls to suit floor and wall conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

C. Urinal-Screen Posts: Manufacturer's standard corrosion-resistant anchoring assemblies at posts and walls, with leveling adjustment at[**tops and**] bottoms of posts. Provide shoes[**and sleeves (caps)**] at posts to conceal anchorage.

D. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, inswinging doors for standard toilet enclosures and 36-inch- (914-mm-) wide, outswinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for toilet enclosures designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position indicated with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels or Screens: 1/4 inch (7 mm).
b. Panels or Screens and Walls: 1/2 inch (7 mm).

2. Stirrup Brackets: Secure panels or screens to walls and to pilasters with no fewer than two brackets attached near top and bottom of panel.

a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each

pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware in accordance with hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors to return doors to fully closed position.

END OF SECTION 102113.13

SECTION 102600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Corner guards.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of wall and door protection showing locations and extent.

C. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:
   1. Corner Guards: 12 inches (300 mm) long.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type of exposed plastic material.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.

   1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials[**, from the same product run,**] that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Corner Guards: Full size plastic corner guards of maximum length equal to 5 percent of each type installed, but no fewer than two units.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Maintain room temperature within storage area at not less than 70 deg F (21 deg C) during the period plastic materials are stored.
2. Keep plastic materials out of direct sunlight.
3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F (21 deg C).

a. Store corner-guards in a vertical position.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wall- and door-protection products[**of each type**] from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

2.3 CORNER GUARDS

A. Surface-Mounted, Opaque-Plastic Corner Guards **(C)**: Fabricated as one piece from PVC plastic; with formed edges; fabricated with 90- or 135-degree turn to match wall condition.

1. Basis of Design: Koroseal Korogard G800 Series Vinyl Corner Guard.
2. Wing Size: Nominal 1-1/2 by 1-1/2 inches.
3. Mounting: Adhesive.
4. Color and Texture: Korogard Seashell (OZ).

2.4 MATERIALS

A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.

B. Adhesive: As recommended by protection product manufacturer.

2.5 FABRICATION

A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

2.6 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances[**, fire rating,**] and other conditions affecting performance of the Work.

B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.

1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing wall and door protection.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.

3.4 CLEANING

A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.

B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 102600

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.
2. Private-use bathroom accessories.
3. Custodial accessories.
4. Mirrors

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Include electrical characteristics.

B. Samples: For each exposed product and for each finish specified, full size.

1. Approved full-size Samples will be returned and may be used in the Work.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.
2. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Hand Dryers: Manufacturer agrees to repair or replace hand dryers that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED MATERIALS

A. Owner-Furnished Materials: Soap Dispensers, Paper towel dispensers, Toilet tissue dispensers, Sanitary napkin receptacles, trash bins

2.2 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Structural Performance: Design accessories and fasteners to comply with the following requirements:

1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.
2. Shower Seats: Installed units are able to resist 360 lbf applied in any direction and at any point.

2.3 PUBLIC-USE WASHROOM ACCESSORIES

A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.

B. Toilet Tissue (Roll) Dispenser

1. Manufacturers: Owner furnished, Contractor installed.

C. Paper Towel Dispenser:
   1. Manufacturer: Owner furnished, Contractor installed.

D. Soap Dispenser:

   1. Manufacturer: Owner furnished, Contractor installed.

E. Grab Bar:

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. American Specialties, Inc.
      b. Bobrick Washroom Equipment, Inc.
      c. Bradley Corporation.

   2. Mounting: Flanges with concealed fasteners.
   3. Material: Stainless steel, 0.05 inch thick.

      a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satinRetain first option in "Outside Diameter" Subparagraph below for medium-duty applications; second, for heavy duty.

   4. Outside Diameter: 1-1/2 inches.
   5. Configuration and Length: As indicated on Drawings.

F. Sanitary-Napkin Disposal Unit
      a. Manufacturers: Owner furnished, Contractor installed.

G. Frameless Mirrors

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. American Specialties, Inc.
      b. Bobrick Washroom Equipment, Inc.
      c. Bradley Corporation.

   2. Size: As indicated on Drawings.

   3. Hangers: Manufacturer's standard rigid, tamper and theft resistant.

H. Hook

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

      a. American Specialties, Inc.
      b. Bobrick Washroom Equipment, Inc.
      c. Bradley Corporation.

   2. Description: Double-prong unit.
   3. Mounting: Exposed.
   4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.4 CUSTODIAL ACCESSORIES

A. Source Limitations: Obtain custodial accessories from single source from single manufacturer.

B. Custodial Mop and Broom Holder

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. American Specialties, Inc.
   b. Bobrick Washroom Equipment, Inc.
   c. Bradley Corporation.

2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 36 inches.
4. Hooks: Four.
5. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

   a. Shelf: Not less than nominal 0.05-inch- thick stainless steel.
   b. Rod: Approximately 1/4-inch- diameter stainless steel.

2.5 MATERIALS

A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch- minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.

C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch-minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.

G. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).

H. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.6 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

1. Remove temporary labels and protective coatings.

B. Grab Bars: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104400 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Knox box.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Knox Box: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Maintenance Data: For knox box to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 HIGH SECURITY EMERGENCY KEY BOX

A. Provide recess-mounted emergency key box as approved by the local fire jurisdiction. Key box to be master-keyed as dictated by local fire jurisdiction.

1. Product: Submit to compliance with requirements, provide the following:

a. Knox, Inc; 3200 Series x RMK. Purchase from Knox Box (www.knoxbox.com).

1) Mounting: Recessed.
2) Door: Hinged.
3) Finish: Aluminum.
4) Fire Department: Moscow (Idaho) Fire Department.
5) Quantity: Three (3).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where knox box will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for Knox box as required by type and size of unit and trim style.

3.3 INSTALLATION

A. General: Install knox box in location and at mounting height required by local fire department or at height acceptable to authorities having jurisdiction.

B. Fully recess into wall construction and provide trim at surrounding siding.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of knox box installation, clean interior and exterior surfaces as recommended by manufacturer.

C. Touch up marred finishes or replace Knox box units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by knox box manufacturer.

D. Replace knox box units that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104400

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:

a. Portable fire extinguisher.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINET (FEC)

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Fire-Protection Cabinet Type: Suitable for fire extinguisher.

C. Cabinet Construction: Nonrated.

D. Cabinet Material: Cold-rolled steel sheet.

E. Semirecessed Cabinet: Where indicated on drawings. One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4- to 1-1/2-inch (32- to 38-mm) backbend depth.
2. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.

F. Surface-Mounted Cabinet: Where indicated on drawings. Cabinet box fully exposed and mounted directly on wall with no trim.

G. Cabinet Trim Material: Steel sheet.

H. Door Material: Steel sheet.

I. Door Style: Fully glazed panel with frame.

J. Door Glazing: Tempered float glass (clear).

K. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim,, permitting door to open 180 degrees.

L. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet glazing.
2) Application Process: Decals.
3) Lettering Color: Red.
4) Orientation: Vertical.

M. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.

a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
c. Color: White.
2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.2 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
2. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.3 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION OF FIRE-PROTECTION CABINETS

A. General: Install fire-protection cabinets in locations and at mounting heights indicated.

1. Fire-Protection Cabinet Mounting Height: 42 inches (1067 mm) above finished floor to top of fire extinguisher.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
   1. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Identification:

   1. Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

B. Related Requirements:

1. Section 104413 "Fire Protection Cabinets."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Activar Construction Products Group, Inc. - JL Industries.
b. Babcock-Davis.
c. Larsens Manufacturing Company.
d. Nystrom.
e. Potter Roemer LLC; a Division of Morris Group International.

2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
3. Valves: Manufacturer's standard.
4. Handles and Levers: Manufacturer's standard.
5. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers in locations indicated and in compliance with requirements of authorities having jurisdiction.

END OF SECTION 104416

SECTION 105113 - METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Welded athletic lockers.
   2. Locker benches.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker and bench.

B. Shop Drawings: For metal lockers.

   1. Include plans, elevations, sections, and attachment details.
   2. Show locker trim and accessories.
   3. Include locker identification system and numbering sequence.

C. Samples: For each color specified, in manufacturer's standard size.

D. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available.

E. Samples for Verification: For the following products, in manufacturer's standard size:

   1. Lockers and equipment.
   2. Locker benches.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures.
b. Faulty operation of latches and other door hardware.

2. Damage from deliberate destruction and vandalism is excluded.
3. Warranty Period for Knocked-Down Metal Lockers: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain metal lockers, locker benches, and accessories from single source from single locker manufacturer.

1. Obtain locks from single lock manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: For lockers and locker benches indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.3 WELDED ATHLETIC LOCKERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Art Metal Products.
2. Hadrian Manufacturing Inc.
3. Lyon Workspace Products, LLC.
4. Penco Products, Inc.

5. Republic Storage Systems, LLC.

B. Expanded-Metal Doors: Fabricated from 0.090-inch nominal-thickness expanded metal; welded to 0.105-inch nominal-thickness steel angle frame; with 0.090-inch nominal-thickness, steel sheet lock panel backed by 0.060-inch nominal-thickness, steel sheet retainer welded to door frame.

C. Body: Assembled by welding body components together. Fabricate from unperforated steel sheet with thicknesses as follows:

1. Tops and Bottoms: 0.060-inch nominal thickness, with single bend at edges.
2. Backs: 0.048-inch nominal thickness.
3. Shelves: 0.060-inch nominal thickness, with double bend at front and single bend at sides and back.

D. Unperforated Sides: Fabricated from 0.048-inch nominal-thickness steel sheet.

E. Frames: Channel formed; fabricated from 0.060-inch nominal-thickness steel sheet or 0.097-inch nominal-thickness steel angles; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.

F. Reinforced Bottoms: Structural channels, formed from 0.060-inch nominal-thickness steel sheet; welded to front and rear of side-panel frames.

G. Hinges: Welded to door and attached to door frame with no fewer than two factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.

1. Knuckle Hinges: Steel, full loop, five or seven knuckles, tight pin; minimum 2 inches high. Provide no fewer than three hinges for each door more than 42 inches high.
2. Hinges: Manufacturer's standard, steel, continuous or knuckle type.

H. Recessed Door Handle and Latch: Stainless steel cup with integral door pull, recessed so locking device does not protrude beyond door face; pry and vandal resistant.

1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks, built-in cylinder locks, or padlocks; positive automatic latching and prelocking.

a. Latch Hooks: Equip doors 48 inches and higher with three latch hooks and doors less than 48 inches high with two latch hooks; fabricated from 0.120-inch nominal-thickness steel sheet; welded to full-height door strikes; with resilient silencer on each latch hook.
b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact, and incorporating a prelocking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.

I. Locks: Combination padlocks.

J. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.

K. Hooks: Manufacturer's standard ball-pointed, aluminum or steel; zinc plated.

L. Coat Rods: Manufacturer's standard.

M. Legs: 6 inches high; formed by extending vertical frame members, or fabricated from 0.075-inch nominal-thickness steel sheet; welded to bottom of locker.

1. Closed Front and End Bases: Fabricated from 0.048-inch nominal-thickness steel sheet.

N. Continuous Zee Base: 4 inches high; fabricated from 0.075-inch nominal-thickness steel sheet.

O. Continuous Sloping Tops: Fabricated from 0.048-inch nominal-thickness steel sheet, with a pitch of approximately 20 degrees.

1. Closures: Vertical-end type.

P. Recess Trim: Fabricated from 0.048-inch nominal-thickness steel sheet.

Q. Filler Panels: Fabricated from 0.048-inch nominal-thickness steel sheet.

R. Boxed End Panels: Fabricated from 0.060-inch nominal-thickness steel sheet.

S. Materials:

1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
2.

T. Finish: Baked enamel or powder coat.

1. Color: As selected by Architect from manufacturer's full range.

2.4 LOCKS

A. Combination Padlock: Provided by Owner.

2.5 LOCKER BENCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Art Metal Products.
2. Lyon Workspace Products, LLC.
3. Penco Products, Inc.
4. Republic Storage Systems, LLC.

B. Provide bench units with overall assembly height of 17-1/2 inches.

C. Bench Tops: Manufacturer's standard one-piece units, with rounded corners and edges.

1. Size: Minimum 9-1/2 inches wide by 1-1/4 inches thick except provide 20 inch- wide tops where accessible benches are indicated.

2. Laminated clear hardwood with one coat of clear sealer on all surfaces and one coat of clear lacquer on top and sides.

3. Extruded aluminum with clear anodic finish.

D. Fixed-Bench Pedestals: Manufacturer's standard supports, with predrilled fastener holes for attaching bench top and anchoring to floor, complete with fasteners and anchors, and as follows:

1. Tubular Steel:

a. 1-1/2-inch- diameter steel tubing: threaded on both ends, with standard pipe flange at top and bell-shaped cast-iron base; with baked-enamel or powder-coat finish; anchored with exposed fasteners.

1) Color: As selected by Architect from manufacturer's full range.

b. 1-1/4-inch- diameter steel tubing: with 0.1265-inch- thick steel flanges welded at top and base; with baked-enamel finish; anchored with exposed fasteners.

1) Color: As selected by Architect from manufacturer's full range.

E. Materials:
1. Steel Tube: ASTM A500/A500M, cold rolled.

2.6 FABRICATION

A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.

1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.

B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.

C. Equipment: Provide each locker with an identification plate and the following equipment:

1. Single-Tier Units: Shelf, one double-prong ceiling hook, and two single-prong wall hooks.
2. Coat Rods: For each compartment of each locker.

D. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds smooth and flush.

E. Accessible Lockers: Fabricate as follows:

1. Locate bottom shelf no lower than 15 inches above the floor.
2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.

F. Continuous Zee Base: Fabricated in lengths as long as practical to enclose base and base ends; finished to match lockers.

G. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.

1. Sloping-top corner fillers, mitered.

H. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.

I. Boxed End Panels: Fabricated with 1-inch- wide edge dimension, and designed for concealing fasteners and holes at exposed ends of nonrecessed metal lockers; finished to match lockers.

2.7 ACCESSORIES

A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.

B. Anchors: Material, type, and size required for secure anchorage to each substrate.

1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls for corrosion resistance.
2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install lockers level, plumb, and true; shim as required, using concealed shims.

1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
2. Anchor single rows of metal lockers to walls near top and bottom of lockers.
3. Anchor back-to-back metal lockers to floor.

B. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.

C. Equipment:

1. Attach hooks with at least two fasteners.
2. Attach door locks on doors using security-type fasteners.
3. Identification Plates: Identify metal lockers with identification indicated on Drawings.

    a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
    b. Attach plates to upper shelf of each open-front metal locker, centered, with a least two aluminum rivets.

D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

1. Attach recess trim to recessed metal lockers with concealed clips.
2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
3. Attach sloping-top units to metal lockers, with closures at exposed ends.
4. Attach boxed end panels using concealed fasteners to conceal exposed ends of nonrecessed metal lockers.

E. Fixed Benches: Provide no fewer than two pedestals for each bench, uniformly spaced not more than 72 inches apart. Securely fasten tops of pedestals to undersides of bench tops, and anchor bases to floor.

3.3 ADJUSTING

A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding. Verify that integral locking devices operate properly.

3.4 PROTECTION

A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.

B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 105113

SECTION 107113 – EXTERIOR SUN CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following types of sun control devices.

1. Prefabricated fixed exterior sun shades as shown on the drawings, as specified, and as needed for a complete and proper installation.
2. The drawings show the extent of the work, the dimensional profile and depth of the sunshades to be provided.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.

B. Product Data: Include capacities, and individual panel weights for sun shade units. Include manufacturer's data substantiating compliance with requirements indicated.

C. Shop Drawings: Provide shop drawing for each type of sun shade required. Include sections of typical trim members and dimensioned elevations. Show anchors, grounds, reinforcement, accessories, layout, and installation details.

D. Samples: Provide samples of each product for selection of colors, as required, and for verification of compliance with requirements indicated.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is an authorized representative of the manufacturer for both installation and maintenance of the type of units required for this Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Exterior Sun Shades:

a. Basis of design: Airolite Co..
b. Style of blades: 1” x 8” horizontal blades – rectangular tube style.
c. Facia and face frame: 2” x 12” Tube frame and facia at perimeter without supporting rods.
d. Outriggers: ½” x 12” Aluminum.
e. Finish: Custom. Color match Pantone 361.
f. Furnish manufacturer’s ten (10) year limited warranty against failure of finish.

2.2 MATERIALS

A. Aluminum Extrusions: ASTM B211, Alloy 6063-T5.

B. Fasteners: Fasteners shall be aluminum or stainless steel. Provide types, gauges and lengths to suit unit installation conditions. All exposed fasteners to be pre-finished to match selected sunshade color.

C. Anchors and Inserts: Use non-Ferrous metal or hot dip galvanized anchors and inserts for installation and elsewhere as required for corrosion resistance. All exposed anchors to be pre=finished to match selected sunshade color.

2.3 FABRICATION, GENERAL

A. Provide fixed Sunshades and accessories of design, material, sizes, depth, arrangement, and thickness as indicated or as required for optimal performance with respect to strength; durability; and uniform appearance.

B. Include supports, anchorage, and accessories required for complete assembly. Coordinate size and profile for knife plates provided for attachment under Division 5.

2.4 SUNSHADE CONSTRUCTION

A. Components: All fascia, blades and outrigger components shall be 6063-T5 aluminum alloy. Outrigger support tab brackets shall be high strength aluminum.

1. Outriggers shall be custom fabricated aluminum plate and designed to have flush blade to plate appearance when assembled. Outriggers must be custom fabricated to the profiles detailed. Outriggers to be a minimum of 1/4 inch thick.
2. Double end plates are required at all outrigger conditions.
3. Blades shall be extruded aluminum and of airfoil design. Blades shall be factory assembled to outriggers using stainless steel, type F, thread cutting screws through internal screw slots in blades. Welded construction is not acceptable. Blades must be removable for replacement in case of damage.
4. Blades to be miter cut and fitted to outrigger plates. Sunshades will ship in corded sections to be fitted support members by the installer.
5. Include supports, anchorage, and accessories required for complete assembly.

B. Snow Load: Sunshade system must be designed to meet a snow load of 20 lbs./square feet.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine openings to receive the work. Do not proceed until any unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's instructions and recommendations for installation of the work.

B. Verify dimensions of support structure at the site by accurate field measurements so that the work will be accurately designed, fabricated and fitted to the structure.

C. Anchor Sunscreen to building substructure as indicated on architectural drawings.

D. Erection Tolerances;

1. Variation from level: +/- 1/8 inch in any column to column space of 20"-0" runs, non-cumulative.
2. Offsets in end-to-end or edge-to-edge alignment of consecutive members 1/32 inch.

E. Corners: Miter sun control fascia assembly at outside corners.

F. Cut and trim component parts during erection only with the approval of the manufacturer or fabricator, and in accordance with his recommendations. Restore finish completely. Remove and replace members where cutting and trimming has impaired the strength or appearance of the assembly as directed.

G. Do not erect warped, bowed, deformed or otherwise damaged or defaced members. Remove and replace any members damaged in the erection process as directed.

H. Set units level, plumb and true to line, with uniform joints.

3.3 ADJUST AND CLEAN

A. Verify that accessories required for each unit have been properly installed and that operating units function properly.

B. Clean units in accordance with the manufacturer's instructions.

END OF SECTION 107113

SECTION 113013 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cooking appliances.
2. Refrigeration appliances.
3. Cleaning appliances.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Cooking appliances.
2. Refrigeration appliances.
3. Cleaning appliances.

B. Product Data Submittals: For each product.

1. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For manufacturers' special warranties.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.5 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Electric Cooktop and Range: Full warranty, including parts and labor, for on-site service on surface-burner elements.

1. Warranty Period: one year from date of Substantial Completion.

C. Microwave Oven: Full warranty, including parts and labor, for on-site service on the magnetron tube.

1. Warranty Period: Five years from date of Substantial Completion.

D. Refrigerator/Freezer, Freezer, and Icemaker, Sealed System: Full warranty, including parts and labor, for on-site service on the product.

1. Warranty Period for : One year from date of Substantial Completion.

E. Dishwasher: Full warranty, including parts and labor, for on-site service on the product.
1. Warranty Period : One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 COOKING APPLIANCES

A. Electric Range: Freestanding range with one oven(s) and complying with AHAM ER-1.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE Profile, Model PB900YVFS or a comparable product by one of the following:

a. LG Electronics
b. Panasonic.
2. Width: 30 inches (762 mm).
3. Electric Burner Elements: 4.
a. Radiant Type: Two 1500 W and two 3000 W.

4. Oven Features:

a. Capacity: 3.3 cu. ft. (0.09 cu. m).
b. Operation: convection.
c. Broiler: Located in oven.
d. Oven Door(s): Counterbalanced, removable, with observation window handle.
e. Electric Power Rating:

1) Oven(s): Manufacturer's standard.
2) Broiler: Manufacturer's standard.

f. Controls: Digital panel controls and timer display, located on splash panel at rear of rangetop.

5. Anti-Tip Device: Manufacturer's standard.
6. Electric Power Supply: As indicated on Drawings.
7. Material: Stainless steel with ceramic-glass cooktop.

B. Microwave Oven:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE Profile, Model PES7227SLSS or a comparable product by one of the following:

    a. LG Electronics
    b. Panasonic.
2. Mounting: Countertop.
3. Type: Conventional.
4. Dimensions:

    a. Width: 24 inches (610 mm).
    b. Depth: 19-1/2 inches (495 mm).
    c. Height: 14 inches (356 mm).

5. Capacity: 2.0 cu. ft. (0.06 cu. m).
6. Oven Door: Door with observation window and pushbutton latch release.
7. Microwave Power Rating: Manufacturer's standard.
8. Controls: Digital panel controls and timer display.
9. Material: Stainless steel.

2.2 REFRIGERATION APPLIANCES

A. Refrigerator/Freezer: Two-door refrigerator/freezer with freezer on bottom and complying with AHAM HRF-1.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE GFE26JYMFS or a comparable product by one of the following:

    a. Amana; a division of Whirlpool Corporation.
    b. LG Electronics.

2. Type: Freestanding.
3. Dimensions:

    a. Width: 36 inches (914 mm).
    b. Depth: 33-1/4 inches (845 mm).
    c. Height: 70 inches (1778 mm).

4. Storage Capacity:

    a. Refrigeration Compartment Volume:17.0 cu. ft.
    b. Freezer Volume: 9.0 cu. ft.
    c. Shelf Area: Four adjustable glass shelves.

5. General Features:

    a. Door Configuration: Overlay.
    b. Dispenser in door for ice and cold water.
    c. Built-in water-filtration system.

6. Refrigerator Features:

    a. Interior light in refrigeration compartment.
    b. Compartment Storage: vegetable crisper and meat compartment.

c. Door Storage: Modular compartments.
d. Temperature-controlled meat/deli bin.

7. Freezer Features: One freezer compartment(s) configured as pull-out drawer(s).

a. Automatic defrost.
b. Interior light in freezer compartment.
c. Automatic icemaker and storage bin.

8. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.
9. Front Panel(s): Stainless steel.

10. Appliance Color/Finish: Stainless steel.

2.3 CLEANING APPLIANCES

A. Dishwasher: Complying with AHAM DW-1.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE ADA Compliant GDT225SSLSS or a comparable product by one of the following:

a. BSH Home Appliances Corporation (Bosch).
b. KitchenAid; a division of Whirlpool Corporation.

2. Type: Built-in undercounter.
3. Dimensions:

a. Width: 24 inches (610 mm).
b. Depth: 23 inches (584 mm).
c. Height: 32-1/4 inches (Adjust to fit under 2’-10” countertop).

4. Sound Level: Maximum 42 dB.
5. Tub and Door Liner: Stainless steel with sealed detergent and automatic rinsing-aid dispensers.
6. Rack System: Nylon-coated sliding dish racks, with removable cutlery basket.
7. Controls: Touch-pad controls with four wash cycles and hot-air and heat-off drying cycle options.
8. Features:

a. Waste food disposer.
b. Self-cleaning food-filter system.
c. Hot-water booster heater for 140 deg F (60 deg C) wash water with incoming water at 100 deg F (38 deg C).
d. Lock-out feature.
e. Half-load option.
f. Delay-wash option.
g. Digital display panel.
h. Water softener.
i. Soil-sensing water use control system.

9. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.

10. Front Panel: Stainless steel.

B. Clothes Washer: Complying with AHAM HLW-1.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE GFW655SSVWW or a comparable product by one of the following:

   a. Amana; a division of Whirlpool Corporation.
   b. LG Electronics.

2.
3. Type: Freestanding, front-loading unit.
4. Dimensions:

   a. Width: 23-1/2 inches (597 mm).
   b. Depth: 31 inches (787 mm).
   c. Height: 38 inches (965 mm).

5. Drum: Manufacturer's standard.

   a. Capacity: 5 cu. ft..

6. Controls: Rotary-dial controls for water-fill levels, wash/rinse water temperatures, and variable-speed and fabric selectors.

   a. Wash Cycles: 10 wash cycles, including regular, delicate, and permanent press.
   b. Wash Temperatures: Five settings.
   c. Speed Combinations: Five.
7. Motor: Manufacturer's standard with built-in overload protector.
8. Features:
   a. Self-cleaning lint filter.
   b. Unbalanced-load compensator.
   c. Inlet Hoses: Minimum length 60 inches (1525 mm).
   d. Drain Hoses: Minimum length 48 inches (1220 mm).
   e. Self-leveling legs.
   f. Automatic dispenser for detergent.
   g. Spin-cycle safety switch.
   h. End-of-cycle signal.
   i. Extra-rinse option.
   j. Delay-wash option.
   k. Electronic temperature control.
   l. Water levels automatically set.

9. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.
10. Appliance Finish: Stainless steel.

11. Front-Panel Finish: Stainless steel.

C. Clothes Dryer: Complying with AHAM HLD-1.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Haier Group (GE Appliances); GE GFD65ESSVWW or a comparable product by one of the following:

   a. Amana; a division of Whirlpool Corporation.

b. LG Electronics.

2.
3. Type: Freestanding, frontloading, electric unit.
4. Dimensions:

a. Width: 23-1/2 inches (597 mm).
b. Depth: 31 inches (787 mm).
c. Height: 36 inches (914 mm).

5. Drum: Manufacturer's standard.

a. Capacity: 7.8 cu. ft..

6. Controls: Rotary-dial controls for drying cycle, temperatures, <**Insert function,**> and fabric selectors.
7. Features:

a. Removable lint filter.
b. Electronic temperature and moisture-level-sensor controls.
c. End-of-cycle signal.
d. Interior drum light.
e. Self-leveling legs.
f. Antibacterial cycle.
g. Auxiliary drying rack.
h. Built-in electrical power fuse.

8. Appliance Finish: Stainless steel.

9. Front-Panel Finish: Stainless steel.

2.4 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

C. Examine walls, ceilings, and roofs for suitable conditions where overhead exhaust hoods will be installed.

D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install appliances according to manufacturer's written instructions.

B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

D. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

END OF SECTION 113013

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated, single-roller shades.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Samples for Verification: For each type of roller shade.
1. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.

C. Product Schedule: For roller shades.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of shadeband material.

C. Product Compliance: For each type of manual roller shade system, provide documentation to indicate that product complies with ANSI/WCMA A100.1-2022 safety standard tension lock (tensioned hold-down device, permanently manufactured attachment to the bead chain and partially disables product when not installed correctly).

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED, SINGLE-ROLLER SHADES

Basis of Design Product: Subject to compliance with requirements, provide Hunter Douglas Architectural RB 500+ manual roller shades or comparable product by one of the following:

1. SWF Contract
2. Mechoshade Systems Inc.
3. Draper Inc.

B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Manufacturer's standard.

a. Loop Length: Full length of roller shade.
b. Limit Stops: Provide upper and lower ball stops.
c. Chain-Retainer Type: Chain tensioner, jamb mounted complying with ANSI/WCMA A100.1-2022 safety standard.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller shade weight and for lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criterion is more stringent.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands

indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: As indicated on Drawings.
2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
3. Shadeband-to-Roller Attachment: Manufacturer's standard method.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.

F. Shadebands:

1. Shadeband Material: Light-filtering fabric.
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type: Enclosed in sealed pocket of shadeband material.
b. Color and Finish: Pfifer Sheerweave Infinity2 Stone PG4.
c. Openness: 1%

G. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped.
b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 3 inches.

2. Endcap Covers: To cover exposed endcaps.
3. Installation Accessories Color and Finish: Clear anodized aluminum.

2.3 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than [**1:4**] <**Insert ratio**>, provide battens and seams at uniform spacings along shadeband

length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

B. Roller Shade Locations: At exterior windows As indicated on Drawings.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

SECTION 123623.13 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad countertops.
2. Accessories.

B. Related Requirements:

1. Section 224100 "Residential Plumbing Fixtures" for non-integral sinks and plumbing fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings:

1. Plans, sections, details, edge and backsplash profiles, and attachments to other work.
2. Locations and details of joints.
3. Locations and sizes of cutouts and holes for items installed in countertop.
4. Apply AWI's Quality Certification Program label to Shop Drawings.

C. Samples for Verification:

1. Plastic Laminates: For each type, color, pattern, and surface finish required, 8 by 10 inches (200 by 250 mm) in size.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Indicate locations and sizes of cutouts and holes for items installed in countertop and backsplashes.

B. Product Certificates: For the following:

1. Composite wood products.
2. High-pressure decorative laminate.
3. Chemical-resistant, high-pressure decorative laminate.

C. Quality Standard Compliance Certificates: [**AWI's Quality Certification Program**] [**WI's Certified Compliance Program**].

D. Qualification Statements: For [**Installer**] [**fabricator**].

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver countertops only after casework and supports on which they will be installed have been completed in installation areas.

B. Store countertops in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

C. Keep surfaces of countertops covered with protective covering during handling and installation.

1.6 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD COUNTERTOPS **(PL1)**

A. Plastic-Laminate-Clad Countertop Type:

B. Quality Standard: Unless otherwise indicated, comply with for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that countertops comply with requirements of grade specified.

C. Grade: Custom.

D. High-Pressure Decorative Laminate: ISO 4586-3, Grade HGF.

E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
1. **(PL1) Wilsonart Black Alicante 4926K-07, textured gloss finish.**

F. Edge Treatment: PVC edging, Charter Industries 1-5/16 inches wide 3mm edge band, color W4926.

G. Core Material: As selected by fabricator to comply with quality standard.

H. Core Material at Sinks: veneer-core plywood made with Type II adhesive.

I. Core Thickness: 3/4 inch (19 mm).

1. Build up countertop thickness to 1-1/4 inches (31.75 mm) at front, back, and ends with additional layers of core material laminated to top.

J. Paper Backing: Provide paper backing on underside of countertop substrate.

2.2 PLASTIC-LAMINATE-CLAD COUNTERTOPS **(PL2)**

A. Plastic-Laminate-Clad Countertop Type:

B. Quality Standard: Unless otherwise indicated, comply with for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that countertops comply with requirements of grade specified.

C. Grade: Custom.

D. High-Pressure Decorative Laminate: ISO 4586-3, Grade HGF.

E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
1. **(PL2) Nevamar Dragonfly WZ0062, ARP(T-) finish**

F. Edge Treatment: PVC edging, Charter Industries 1-5/16 inches wide 3mm edge band, color NWZ0062.

G. Core Material: As selected by fabricator to comply with quality standard.

H. Core Thickness: 1-1/8 inch (29 mm).

I. Paper Backing: Provide paper backing on underside of countertop substrate.

2.3 ACCESSORIES

A. Grommets at **(PL1)** Countertops:
1. Wire-Management Grommets: Circular, grommets and matching caps with slot for wire passage.

a. Finish: Molded plastic.
b. Outside Diameter: 2 inches (51 mm).
c. Color: Black.

B. Grommets at **(PL2)** Countertops:

1. Wire-Management Grommets: Circular, grommets and matching caps with slot for wire passage.

    a. Finish: Metal.
    b. Outside Diameter: 2 inches (51 mm).
    c. Color: Brushed, nickel plated

2.4 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

B. Composite Panel Products: Provide materials that comply with requirements of referenced quality standard for each type of countertop and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2 , MR 50.

    a. Grade 130 or better; complying with performance requirements specified.

2. Particleboard: ANSI A208.1 , MR 50.

    a. Grade M-2 or better; complying with performance requirements specified.

3. Veneer-Core Hardwood Plywood: ANSI/HPVA HP-1.

2.5 MISCELLANEOUS MATERIALS

A. Adhesive for Bonding Plastic Laminate: Type I, waterproof type as selected by fabricator to comply with requirements.

1. Adhesive for Bonding Edges: Hot-melt adhesive[**or adhesive specified above for faces**].

B. Installation Adhesive: Manufacturer's standard product that is recommended for application indicated.

2.6 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

B. Examine shop-fabricated work for completion and complete work as required, including removal of packing.

3.3 INSTALLATION

A. Grade: Install countertops to comply with same grade as item to be installed.

B. Assemble countertops and complete fabrication at Project site to extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where indicated on Shop Drawings.

1. Secure field joints in countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten in accordance with manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.

D. Countertop Installation:

1. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
3. Anchor wall cleating necessary for proper setting for countertops not supported by casework.
4. Install countertops level and true in line. Use concealed shims as required to maintain not more than 1/8-inch-in-96-inch (3-mm-in-2400-mm) variation from a straight, level plane.
5. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and to walls with adhesive.

6. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.4 ADJUSTING AND CLEANING

A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects. Where impossible to repair, replace countertops. Adjust joinery for uniform appearance.

B. Clean countertops on exposed and semiexposed surfaces.

C. Protection: Provide kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches (1220 mm) o.c. Remove protection at Substantial Completion.

END OF SECTION 123623.13

SECTION 123661.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid surface material countertops.
2. Solid surface material backsplashes.
3. Solid surface material end splashes.
4. Solid surface material apron fronts.
5. Solid surface material sinks.

B. Related Requirements:

1. Section 224100 "Residential Plumbing Fixtures" for plumbing fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For countertop materials and sinks.

B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

1. Show locations and details of joints.
2. Show direction of directional pattern, if any.

C. Samples for Verification: For the following products:

1. Countertop material, 6 inches (150 mm) square.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of countertops.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.

1.7 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.

1. Basis-of-Design product: Subject to project requirements, provide Wilsonart Solid Surface.

2. Type: Provide Standard type unless Special Purpose type is indicated.
3. Integral Sink Bowls: Wilsonart Oval Vanity Bowl AV1613, sink color: Designer White
   a. Comply with CSA B45.5/IAPMO Z124.
4. Colors and Patterns: Kimberlite 9215CE.

B. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.

2.2 FABRICATION

A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."

1. Grade: Custom.

B. Countertops:

1. 1/2-inch- (12.7-mm-) thick, solid surface material with front edge built up with same material.

C. Backsplashes and Endsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material.

D. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

1. Fabricate with loose backsplashes for field assembly.
2. Install integral sink bowls in countertops in the shop.

E. Joints:

1. Fabricate countertops without joints.

F. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch (5 mm) into fixture opening.

2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

2.3 INSTALLATION MATERIALS

A. Adhesive: Product recommended by solid surface material manufacturer.

B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.

B. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.

1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.

C. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

D. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.

E. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

1. Seal edges of cutouts in particleboard subtops by saturating with varnish.

F. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16

SECTION 124813 - ENTRANCE FLOOR MATS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Modular plank rail mats.
2. Surface mounted modular vinyl foot grids.

B. References:
1. ASTM International:
   a. E 648 Standard Test Method for Critical Radiant Flux of Flooring Systems using a Radiant Energy Source
   b. E 662 Standard Test Method for Specific Density of Smoke Generated by Solid Materials
   c. 2047 Standard Test Method for Static Coefficient of Friction measured by the James Machine
2. The Carpet and Rug Institute (CRI)
3. The National Floor Safety Institute (NFSI)
4. American with Disabilities Act (ADA)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include Manufacturer's specification summary sheet for specified products, construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.

B. Shop Drawings:

1. Submit shop drawings showing layout, seaming diagram, finish colors, designs and textures.
2. Perimeter floor frames.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For floor mats and frames to include in maintenance manuals.

B. Warranty: Provide manufacturer's written warranty.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Entrance Mats: Furnish quantity of floor covering material equal to 5% of the amount to be installed Maintenance of entrance flooring shall be according to Milliken maintenance instructions

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. ISO 9001 Certified
2. ISO 14001 Certified
3. OHSAS 18001 Certified
4. At least ten years' active experience in the manufacture and marketing of commercial flooring

B. Installer Qualifications:
1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installing work similar to that required for this project
2. At least five years' experience in the installation of entrance flooring
3. Experience on at least five projects of similar size, type and complexity of current project
4. Employer of tradesmen for current project who are competent in techniques required by manufacturer for entrance flooring installation indicated

1.7 DELIVERY, STORAGE AND HANDLING

A. General: Comply with requirements in Division 1

B. Ordering: Comply with manufacturer's ordering and lead-time requirements to avoid

construction delays

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact

D. Storage and Protection: Material shall be stored in areas that are enclosed and weather tight and at temperature recommended by manufacturer to protect from exposure to harmful weather conditions prior to commencement of installation

1.8 PROJECT CONDITIONS

A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive floor covering shall be clean, fully enclosed and weather tight.

B. The temperature of the space shall be kept at a manufacturer's recommendation continually after installation. The entrance flooring material and adhesive shall be conditioned in the same manner.

1.9 SEQUENCING AND SCHEDULING

A. Finishing operations: Install entrance flooring after finishing operations; including painting and ceiling operations have been completed

B. Concrete curing and drying: Do not install floor covering over concrete substrates until substrates have cured and are dry.

1.10 WARRANTY

A. Manufacturer's Materials Warranty: Submit, for owner's acceptance, manufacturer's standard warranty document

B. Manufacturer's warranty is in addition to, and not a limitation of, other rights owner may have under Contract Documents.
   1. Total Warranty Period: 5-year Wear Warranty commencing on the date of substantial completion.
   2. For materials: 1-Year Warranty on Manufacturing Defects from date of substantial completion.

PART 2 - PRODUCTS

2.1 ENTRANCE FLOOR MATS AND FRAMES, GENERAL

A. Accessibility Standard: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.2 MODULAR PLANK RAIL MATS (**EM1**)

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide Milliken Obex Bar

B. Modular Plank Aluminum-Rail Click-In Mats: Extruded-aluminum snap-together profile tread 2.72 inches (69mm) wide by 0.43 inches (11mm) thick, sitting on attached polyurethane foam backing.

   1. Tread Inserts: Textile insert, Tufted cut pile, Milliken-Certified WearOn Nylon, Multi- and Monofilament, Type 6,6 and 6, twisted and heat-set.
   2. Colors, Textures, and Patterns of Inserts: Milliken OBEX CutX Grey.
   3. Rail Color: Clear anodized aluminum.
   4. Hinges: Aluminum.
   5. Mat Size: As indicated in drawings.
   6. Finishing Profiles for surface mount applications: All four sides of surface installation will be finished with manufacturer's supplied aluminum ramp and corners. Ramps will need to be fastened to floor with metal screws.

2.3 COMMERCIAL MODULAR VINYL FOOT GRIDS (**EM2**)

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide Milliken Obex Grid – Open Mono

B. Surface mounted modular vinyl foot grids: vinyl link mats, 7/16 inch (11 mm) thick, with pressure-fit click linkage, vulcanized edge-nosing trim, and links consisting of extruded virgin PVC snap together modular grid with high performance monofilament textile insert. Tread Inserts: Textile Insert, 1.89 inches wide, Tufted cut pile, Milliken Monofilament

1. Grid Material: 100% PVC, open construction

2. Maximum rolling load: 1,100 lbs. (500 Kg) free laid, 2,200 lbs. (1,000 Kg) glued.

3. Grid Color: black
4. Insert Construction: Tufted Cut Pile, ECONYL® Solution-Dyed Nylon Monofilament, twisted and heat-set.

5. Insert Color: Milliken Obex Mono / 11-O / Grey.
6. Mat Size: As indicated.
7. Finishing Profiles for surface mount applications: All four sides of surface installation will need to be finished with manufactures supplied OBEX™ Vinyl Edge Kit. Edge kit is a snap-on edge system that connects to each individual grid piece. Edging only works on full pieces.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's requirements as published in Milliken published Instillation Instructions.

B. Specify Surface Mount and length and width measurements for each application to ensure you receive correct finishing components.

3.2 EXAMINATION

A. Examine substrates and floor conditions for compliance with requirements for location, sizes, and other conditions affecting installation of floor mats and frames in accordance with manufacturer's instructions.

B. Material inspection: In accordance with manufacturer's installation requirements, visually inspect materials prior to installing and during installation, if visual defect is noticed STOP WORK and contact manufacturer. Material with visual defects should not be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Compliance: Comply with manufacturer's requirements as published in Milliken Installation Instructions for OBEX Bar and OBEX Grids regarding job site conditions, substrate testing and preparation, layout and installing, clean up and protection of entrance flooring after installation.

A. Install surface-type units to comply with manufacturer's written instructions; coordinate with entrance locations and traffic patterns.

1. Anchor fixed surface-type frame members to floor with devices spaced as recommended by manufacturer.

3.4 PROTECTION

A. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

B. Repair or replace damaged installed products.

3.5 CLEANING

A. Cleaning: See Milliken OBEX Bar and OBEX Grid maintenance guide

B. Remove temporary coverings and protection of adjacent work areas

C. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance

D. Remove construction debris from project site and legally dispose of waste.

END OF SECTION 124813

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels (Deductive Alternate 1).
3. Metal wall panels (Deductive Alternate 1).
4. Foamed-insulation-core metal wall panels.
5. Foamed-insulation-core metal roof panels.
6. Thermal insulation (Deductive Alternate 1).
7. Accessories.

B. Related Requirements:

1. Section 012300 "Alternates" for metal roof and wall panel alternates.
2. Section 081113 "Hollow Metal Doors and Frames" for hollow metal doors and frames in metal building systems.
3. Section 083323 "Overhead Coiling Doors" for coiling vehicular doors in metal building systems.
4. Section 084113 “Aluminum-Framed Entrances and Storefronts” for storefronts in metal building systems.
5. Section 084413 “Glazed Aluminum Curtain Walls” for curtain walls in metal building systems.
6. Section 089116 “Operable Wall Louvers” for mechanical wall louvers. See mechanical.

1.2 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.3 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:

a. Condition of foundations and other preparatory work performed by other trades.
b. Structural load limitations.
c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
d. Required tests, inspections, and certifications.
e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
b. Structural limitations of purlins and rafters during and after roofing.
c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
d. Temporary protection requirements for metal roof panel assembly during and after installation.
e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:

a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
b. Structural limitations of girts and columns during and after wall panel installation.
c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
d. Temporary protection requirements for metal wall panel assembly during and after installation.
e. Wall observation and repair after metal wall panel installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Metal roof panels.
b. Metal wall panels.
c. Foamed-insulation-core metal panels.
d. Foamed- insulation-core metal roof panels.
e. Thermal insulation and vapor-retarder facings.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:

1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.

2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

    a. Show provisions for attaching mezzanines.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.

    a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
    b. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.

4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:8):

    a. Flashing and trim.
    b. Gutters.
    c. Downspouts.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:

1. Panels: Nominal 12 inches (300 mm) long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
2. Flashing and Trim: Nominal 12 inches (300 mm) long. Include fasteners and other exposed accessories.
3. Vapor-Retarder Facings: Nominal 6-inch- (150-mm-) square Samples.
4. Windows: Full-size, nominal 12-inch- (300-mm-) long frame Samples showing typical profile.
5. Accessories: Nominal 12-inch- (300-mm-) long Samples for each type of accessory.

E. Delegated Design Submittals: For metal building systems.

1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For erector.

B. Welding certificates.

C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.

4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

D. Erector Certificates: For qualified erector, from manufacturer.

E. Material Test Reports: For each of the following products:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

F. Source quality-control reports.

G. Field quality-control reports.

H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

I. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panel finishes to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to IAS AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 25 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Western Steel Buildings or a comparable product by one of the following:
   1. American Metal Buildings
   2. Nucor
   3. Prime Metal Buildings and Components

B. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:

   1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.
   2. Rigid Modular: Solid-member, structural-framing system with interior columns.

C. End-Wall Framing:
   1. Engineer end walls to be expandable. Provide primary frame, capable of supporting full-bay design loads, and end-wall columns.

D. Secondary-Frame Type: Manufacturer's standard purlins and joists and exterior-framed (bypass) girts.

E. Eave Height: As indicated on Drawings.

F. Bay Spacing: As indicated on Drawings.

G. Roof Slope: 1 inch per 12 inches (1:12).

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal building system.

B. Structural Performance: Metal building systems to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

   1. Design Loads: **As indicated on Drawings**.
   2. Deflection and Drift Limits:
      a. No greater than the following:

         1) Purlins and Rafters: Vertical deflection of **1/240** of the span.
         2) Girts: Horizontal deflection of **1/240** of the span.

3) Metal Roof Panels: Vertical deflection of **1/240** of the span.
4) Metal Wall Panels: Horizontal deflection of **1/240**of the span.
5) Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
6) Lateral Drift: Maximum of **1/400**of the building height.

C. Seismic Performance: Metal building system to withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: **120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces**

E. Fire-Resistance Ratings: Where assemblies are indicated to have a fire-resistance rating, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E119 or ASTM E108 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory," FM Global's "Approval Guide," or from the listings of another qualified testing agency.

F. Fire Propagation Characteristics: Exterior wall assemblies containing foam plastics pass NFPA 285 fire test.

G. Structural Performance for Metal Roof[**and Wall**] Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.

H. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

I. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

J. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

K. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

L. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: [**UL 30**] [**UL 60**] [**UL 90**].

M. Thermal Performance for Opaque Elements: Provide the following maximum U-factors and minimum R-values when tested according to ASTM C1363 or ASTM C518:

1. Roof:
   a. R-Value: 25.

2. Walls:
   a. R-Value: 30.

2.4 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

   a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.
2. Rigid Modular Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide interior columns fabricated from round steel pipes or tubes, or shop-welded, built-up steel plates.
3. Long-Bay Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide interior columns fabricated from round steel pipes or tubes, or shop-welded, built-up steel plates.
4. Frame Configuration: **One-directional, sloped**
5. Exterior Column: **Tapered**.
6. Rafter: **Tapered**.

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other

miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:

1. Purlins:

   a. C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- (64-mm-) wide flanges.
   b. Steel joists of depths As needed to comply with system performance requirements.

2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- (64-mm-) wide flanges.

   a. Depth: **As indicated on Drawings**.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
4. Flange Bracing: Minimum 2-by-2-by-1/8-inch (51-by-51-by-3-mm) structural-steel angles or 1-inch- (25-mm-) diameter, cold-formed structural tubing to stiffen primary-frame flanges.
5. Sag Bracing: Minimum 1-by-1-by-1/8-inch (25-by-25-by-3-mm) structural-steel angles.
6. Base or Sill Angles: Manufacturer's standard base angle, minimum 3-by-2-inch (76-by-51-mm), fabricated from zinc-coated (galvanized) steel sheet.
7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
8. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

G. Canopy Framing: Manufacturer's standard structural-framing system, designed to withstand required loads; fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide frames with attachment plates and splice members, factory drilled for field-bolted assembly.

   1. Type: **As indicated**.

H. Bracing: Provide adjustable wind bracing **using any method** as follows:
   1. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.
   2. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
   3. Fixed-Base Columns: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
   4. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.

I. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

J. Materials:

1. W-Shapes: ASTM A992/A992M; ASTM A572/A572M, Grade 50 or 55 (345 or 380); or ASTM A529/A529M, Grade 50 or 55 (345 or 380).
2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55 (345 or 380); or ASTM A529/A529M, Grade 50 or 55 (345 or 380).
3. Plate and Bar: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55 (345 or 380); or ASTM A529/A529M, Grade 50 or 55 (345 or 380).
4. Steel Pipe: ASTM A53/A53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A1011/A1011M, Structural Steel (SS), Grades 30 through 55 (205 through 380), or High-Strength Low-Alloy Steel (HSLAS) or High-Strength Low-Alloy Steel with Improved Formability (HSLAS-F), Grades 45 through 70 (310 through 480); or cold-rolled, ASTM A1008/A1008M, Structural Steel (SS), Grades 25 through 80 (170 through 550), or HSLAS, Grades 45 through 70 (310 through 480).
7. Metallic-Coated Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80 (230 through 550), or HSLAS or HSLAS-F, Grades 50 through 80 (340 through 550); with G60 (Z180) coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.

    a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80 (230 through 550), or HSLAS or HSLAS-F, Grades 50 through 80 (340 through 550); with G90 (Z275) coating designation.
    b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, SS, Grade 50 or 80 (340 or 550); with Class AZ50 (AZM150) coating.
9. Steel Joists: Manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated on Drawings and required for secondary framing.
10. Non-High-Strength Bolts, Nuts, and Washers: ASTM A307, Grade A, carbon-steel, hex-head bolts; ASTM A563 (ASTM A563M) carbon-steel hex nuts; and ASTM F844 plain (flat) steel washers.

    a. Finish: **Hot-dip zinc coating, ASTM F2329, Class C**Retain "High-Strength Bolts, Nuts, and Washers, Grade A325 (Grade A325M)" or "High-Strength Bolts, Nuts, and Washers, Grade A490 (Grade A490M)" Subparagraph below.

11. High-Strength Bolts, Nuts, and Washers, Grade A325 (Grade A325M): ASTM F3125/F3125M, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

    a. Finish: **Hot-dip zinc coating, ASTM F2329, Class C**.

12. High-Strength Bolts, Nuts, and Washers, Grade A490 (Grade A490M): ASTM F3125/F3125M, Type 1, heavy-hex steel structural boltsASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
13. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, **heavy-hex** head assemblies consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1 hardened carbon-steel washers.

    a. Finish: **Mechanically deposited zinc coating, ASTM B695, Class 50**

14. Unheaded Anchor Rods: **ASTM F1554, Grade 55**

    a. Configuration: Straight.
    b. Nuts: ASTM A563 (ASTM A563M) **heavy**hex carbon steel.
    c. Plate Washers: ASTM A36/A36M carbon steel.
    d. Washers: ASTM F436 (ASTM F436M) hardened carbon steel.
    e. Finish: **Hot-dip zinc coating, ASTM F2329, Class C**

15. Headed Anchor Rods: **ASTM F1554, Grade 55**.

    a. Configuration: Straight.
    b. Nuts: ASTM A563 (ASTM A563M) **heavy-**hex carbon steel.
    c. Plate Washers: ASTM A36/A36M carbon steel.
    d. Washers: ASTM F436 (ASTM F436M) hardened carbon steel.
    e. Finish: **Hot-dip zinc coating, ASTM F2329, Class C**

16. Threaded Rods: **ASTM A572/A572M, Grade 50 (345)**]

    a. Nuts: ASTM A563 (ASTM A563M) **heavy**hex carbon steel.
    b. Washers: **ASTM A36/A36M** carbon steel.
    c. Finish: **Hot-dip zinc coating, ASTM F2329, Class C**

K. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

1. Clean and prepare in accordance with SSPC-SP2.
2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil (0.025 mm).

    a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil (0.013 mm) on each side.

2.5 METAL ROOF PANELS (DEDUCTIVE ALTERNATE 1)

A. Standing-Seam, Vertical-Rib, Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.030-inch (0.76-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

    a. Exterior Finish: Two-coat fluoropolymer.
    b. Color: As selected by Architect from manufacturer's full range.

2. Clips: Two-piece floating to accommodate thermal movement.
3. Joint Type: Mechanically seamed.
4. Panel Coverage: 16 inches (406 mm).
5. Panel Height: 2 inches (51 mm).

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.6 METAL WALL PANELS (DEDUCTIVE ALTERNATE 1)

A. Exposed-Fastener, Tapered-Rib, Metal Wall Panels: Formed with raised, trapezoidal major ribs and intermediate stiffening ribs symmetrically spaced between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

   a. Exterior Finish: Two-coat fluoropolymer.
   b. Color: As selected by Architect from manufacturer's full range.

2. Major-Rib Spacing: o.c.
3. Panel Coverage: 36 inches (914 mm).
4. Panel Height: 1.25 inches (32 mm).

B. Finishes:

1. Exposed Coil-Coated Finish:

   a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.7 FOAMED-INSULATION-CORE METAL WALL PANELS (BASE BID)

A. Concealed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Formed with tongue-and-groove panel edges; designed for sequential installation by interlocking panel edges and mechanically attaching panels to supports using concealed clips or fasteners.

1. Panel Thermal-Resistance Value (R-Value): 25.
2. Facing Material: Fabricate panel with exterior and interior facings of same material and thickness. Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

   a. Exterior Surface: Striated.
   b. Exterior Finish: Two-coat fluoropolymer.
   c. Color: As selected by Architect from manufacturer's full range.

3. Panel Coverage: 42 inches (1067 mm) nominal.
4. Panel Thickness: 2.5 inches (64 mm).
5. Insulation Core: Modified polyisocyanurate or polyurethane foam using a non-CFC blowing agent, foamed-in-place or board type, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.

a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.
b. Density: 2.0 to 2.6 lb/cu. ft. (32 to 42 kg/cu. m) when tested according to ASTM D1622.
c. Compressive Strength: Minimum 20 psi (140 kPa) when tested according to ASTM D1621.
d. Shear Strength: 26 psi (179 kPa) when tested according to ASTM C273/C273M.

6. Fire-Test-Response Characteristics: Class A according to ASTM E108.
7. Surface-Burning Characteristics: Flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.8 FOAMED-INSULATION-CORE METAL ROOF PANELS (BASE BID)

A. Concealed-Fastener, Mechanically Seamed Standing Seam, Foamed-Insulation-Core Metal Roof Panels: Formed with tongue-and-groove panel edges; designed for sequential installation by interlocking panel edges and mechanically attaching panels to supports using concealed clips or fasteners.

1. Panel Thermal-Resistance Value (R-Value): 30.
2. Facing Material: Fabricate panel with exterior and interior facings of same material and thickness. Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.028-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Exterior Surface: Standing Seam at panel joints and shallow ribs in field.
b. Exterior Finish: Two-coat fluoropolymer.
c. Color: As selected by Architect from manufacturer's full range.

3. Panel Coverage: 42 inches (1067 mm) nominal.
4. Panel Thickness: 2.5 inches (64 mm).
5. Insulation Core: Modified polyisocyanurate or polyurethane foam using a non-CFC blowing agent, foamed-in-place or board type, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.

a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.
b. Density: 2.0 to 2.6 lb/cu. ft. (32 to 42 kg/cu. m) when tested according to ASTM D1622.
c. Compressive Strength: Minimum 20 psi (140 kPa) when tested according to ASTM D1621.
d. Shear Strength: 26 psi (179 kPa) when tested according to ASTM C273/C273M.

6. Fire-Test-Response Characteristics: Class A according to ASTM E108.
7. Surface-Burning Characteristics: Flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.9 THERMAL INSULATION (DEDUCTIVE ALTERNATE 1)

A. Unfaced Metal Building Insulation: ASTM C991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft. (8-kg/cu. m) density; 2-inch- (51-mm-) wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

B. Retainer Strips: For securing insulation between supports, 0.025-inch (0.64-mm) nominal-thickness, formed, metallic-coated steel or PVC retainer clips colored to match insulation facing.

C. Vapor-Retarder Facing: ASTM C1136, with permeance not greater than 0.02 perm (1.15 ng/Pa x s x sq. m) when tested according to ASTM E96/E96M, Desiccant Method.
1. Composition:

a. White metallized-polypropylene film facing, fiberglass scrim reinforcement, and kraft-paper backing.

D. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.10 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure

strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch (25-mm) standoff; fabricated from extruded polystyrene.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

E. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2438-mm-) long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."

1. Gutter Supports: Fabricated from same material and finish as gutters.
2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.

F. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- (3-m-) long sections, complete with formed elbows and offsets.

1. Mounting Straps: Fabricated from same material and finish as gutters.

G. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

H. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.

2. Fasteners for Metal Roof Panels:

    a. Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless steel cap or zinc-aluminum-alloy head and EPDM sealing washer.

3. Fasteners for Metal Wall Panels:

    a. Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with EPDM sealing washers bearing on weather side of metal panels.

4. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
5. Blind Fasteners: High-strength aluminum or stainless steel rivets.
6. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
7. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
8. Metal Panel Sealants:

    a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
    b. Joint Sealant: ASTM C920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.11 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

    1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
    2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members to be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

    1. Make shop connections by welding or by using high-strength bolts.
    2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
    3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
    4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.

5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.12 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.

a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.

2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Steel Joists: Install joistsand accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.
2. Space, adjust, and align joists accurately in location before permanently fastening.
3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
4. Joint Installation:
   a. Weld joist seats to supporting steel framework.

5. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

    a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.

3. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
5. Provide metal closures at peaks rake edges each side of ridge caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

C. Insulated Metal Wall Panels: Install insulated metal wall panels on exterior side of girts. Attach panels to supports at each panel joint using concealed clip and fasteners at maximum 42 inches (1067 mm) o.c., spaced not more than manufacturer's recommendation. Fully engage tongue and groove of adjacent insulated metal wall panels.

1. Install clips to supports with self-tapping fasteners.
2. Apply continuous ribbon of sealant to panel joint on concealed side of insulated metal wall panels as vapor seal; apply sealant to panel joint on exposed side of panels as weather seal.

D. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), noncumulative; level, plumb, and on location lines; and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Two-Layers-between-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Install layer of filler insulation over first layer to fill space between purlins formed by thermal spacer blocks. Hold in place with bands and crossbands below insulation.

   a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
2. Sound-Absorption Insulation: Where sound-absorption requirement is indicated for metal liner panels, cover insulation with polyethylene film and provide inserts of wire mesh to form acoustical spacer grid.

D. Board Wall Insulation: Extend board insulation in thickness indicated to cover entire wall. Hold in place by metal wall panels fastened to secondary framing. Comply with manufacturers' written instructions.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.8 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to NAAMM-HMMA 840. Fit non-fire-rated doors accurately in their respective frames, with the following clearances:

1. Between Doors and Frames at Jambs and Head: 1/8 inch (3 mm).
2. Between Edges of Pairs of Doors: 1/8 inch (3 mm).
3. At Door Sills with Threshold: 3/8 inch (9.5 mm).
4. At Door Sills without Threshold: 3/4 inch (19.1 mm).

C. Field Glazing: Comply with installation requirements in Section 088000 "Glazing."

D. Door Hardware:

1. Install surface-mounted items after finishes have been completed at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of sealant complying with requirements for concealed mastics specified in Section 079200 "Joint Sealants."

3.9 WINDOW INSTALLATION

A. General: Install windows plumb, rigid, properly aligned, without warp or rack of frames or sash, and securely fasten in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each window frame with elastomeric sealant used for metal wall panels.

1. Separate dissimilar materials from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in AAMA/WDMA/CSA 101/I.S.2/A440.

B. Set sill members in bed of sealant or with gaskets, for weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Mount screens directly to frames with tapped screw clips.

3.10 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.
1. Tie downspouts to underground drainage system indicated.

E. Circular Roof Ventilators: Set ventilators complete with necessary hardware, anchors, dampers, weather guards, rain caps, and equipment supports. Mount ventilators on flat level base. Install preformed filler strips at base to seal ventilator to metal roof panels.

F. Continuous Roof Ventilators: Set ventilators complete with necessary hardware, anchors, dampers, weather guards, rain caps, and equipment supports. Join sections with splice plates and end-cap skirt assemblies where required to achieve indicated length. Install preformed filler strips at base to seal ventilator to metal roof panels.

G. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.11 FIELD QUALITY CONTROL

3.12 ADJUSTING

A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.

3.13 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting:

1. After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing[**, bearing plates,**] and accessories.

   a. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
   b. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 133419

SECTION 146000 - TOP RUNNING SINGLE GIRDER BRIDGE CRANE

PART 1 - GENERAL

1.1 SUMMARY

A. The work required under this section shall include the designing, manufacturing, shipping, installation and field testing of a top running, single girder, overhead traveling bridge crane with one trolley hoist.

B. Related Sections:

1. Structural Steel
2. Special Coating
3. Electrical Requirements
4. Basic Electrical Materials and Methods

1.2 REFERENCES

A. Crane Manufacturers Association of America (CMAA)

1. Specification No. 70 for Top Running & Under Running Single Girder Electric Overhead Traveling Cranes.

B. American National Standard (ANSI)

1. ANSI B-30.16 Overhead Hoists

C. Occupational Safety and Health Administration (OSHA)

1. Par. 1910.179 Overhead & Gantry Cranes

D. Hoist Manufacturers Institute (HMI)

E. National Electric Code (NEC)

1. NEC (Latest Edition Article 610 Cranes and Hoists)

F. American Institute of Steel Construction (AISC)

1. Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings

G. American Society for Testing and Materials (ASTM)

1. A36/A36M - Specification for Carbon Structural Steel

H. American Welding Society (AWS)

1. D1.1 - Structural Welding Code - Steel
2. D14.1 - Overhead Cranes

1.3 OPERATING SPECIFICATIONS

A. Capacity:5 tons and 10 tons, as indicated on drawings

B. Duty Class: CMAA Class C

C. Span: As indicated on drawings.

D. Runway Length: As indicated on drawings.

E. Steel: AISC Hot Rolled Shapes or Plate

F. Bridge Girder Deflection: L/600

G. End Trucks: Dual drive with rotating axles. Motors shall include AC magnetic disc brakes per CMAA requirements.

H. Hoist: 5 ton / 10 ton, Electric wire rope hoist

I. Lift: As indicated on drawings.

J. Trolley: Motor driven with drive wheels each side and AC magnetic brakes per CMAA requirements.

K. Speeds:

1. Bridge: 100 fpm adjustable to max
2. Trolley: 65 fpm adjustable to max
3. Hoist: 19 and 3.3 fpm

L. Speed Controls

1. Bridge:

a. 2 speed VFD
b. Stepless VFD

2. Trolley:

a. 2 speed VFD
b. Stepless VFD

3. Hoist (s):

a. 2 speed Magnetic
b. 2 speed VFD
c. Stepless Vector VFD

M. Voltage: 208 V 3 Ph 60 Hz, 115-volt control.

N. Environment: Normal Indoor

O. Bumpers: Rubber bumpers on end trucks and trolley per CMAA requirements.

P. Limit Switches: Hoist with geared upper and lower limit switch and block operated upper limit, overload limit switch set at 115% of full load. Trolley and bridge with travel limit switches.

1.4 SUBMITTALS

A. Shop Drawings and Equipment Data

1. Submit for approval, Shop Drawings showing complete details and dimensions.
2. Manufacturers catalog data.
3. Wiring schematics – ship with crane

B. Operation and Maintenance Manuals

1. Equipment function, normal operating characteristics, and limiting conditions.
2. Assembly, installation, alignment, and maintenance instructions.
3. Lubrication and maintenance instructions.
4. Guide to “troubleshooting”.
5. Parts list.
6. As-built drawing.
7. Test results.

1.5 QUALITY ASSURANCE

A. Manufacturers shall have documented experience for ten (10) years, having successfully designed and built installations of similar scope.

B. Manufacturer shall be responsible for providing equipment of highest quality and workmanship that will perform specific functions reliably and safely.

1.6 DELIVERY, STORAGE AND HANDLING

A. Unloading and storage of crane shall be under the direct supervision of manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Konecranes, Inc. CXTS or equal.

B. Hoists, trolleys, bridge end trucks, drives and controls shall all be from one suppler and shall meet the requirements of this specification:

2.2 RUNWAY ELECTRIFICATION

A. The runway conductors shall be Figure-8, rolled galvanized steel bar as supplied by Duct-o-wire Corporation. The minimum capacity of the conductor bar shall be sized to carry the necessary ampere load without undue heating.

A. A four-conductor configuration shall be provided with all brackets, hangers, splice covers, power feeds, expansion gap assemblies and collectors as required by Conductix, Insul8 or Duct-o-wire.

2.3 RUNWAY BEAMS AND RAILS

A. Runway beams shall be designed by a Registered Professional Engineer to meet the requirements of AISC and shall be supplied by the crane manufacturer.

B. Rails shall be ASCE rails, sized according to the crane wheel loads and shall be supplied by the crane manufacturer.

C. The runway rails shall be attached to the runway beams using hook bolts, rail clips or clamps, as determined by the crane manufacturer.

2.4 EQUIPMENT

A. Hoist and Trolley

1. Under-running single girder crane shall utilize the CXT low head room trolley hoist as manufactured by Konecranes, Inc.
2. The hoist shall be equipped with an electro-mechanical load-limiting device that shall prevent lifting more than 115% of the rated load.
3. Hoist and trolley motors shall be per 1.01B above, as applicable.
4. Hoisting motor(s) shall be two-speed/two winding squirrel cage type with a speed ratio of 6:1.
5. Hoisting motor(s) shall be totally enclosed with IP55 protection, minimum class F insulation, Klixon type bimetal switch for thermal protection and shall have a 60% ED rating.
6. Trolley shall be furnished with an adjustable frequency inverter drive and two-step or infinitely variable speed control for smooth acceleration and deceleration.
7. Trolley motors shall be inverter duty motors with minimum class “F” insulation and motor enclosures shall be TENV [totally enclosed non-ventilated].
8. Rotary cam type limit switch equipped with 4 micro-switches shall be provided. Limit switch shall provide upper and lower limit of hoist travel, hoist slow down prior to reaching upper limit and phase sequence supervision at upper limit.
9. Hoist motor brake shall be DC disc type with adequate torque to stop and hold over 125% of the hoist rated load.
10. Large diameter rope drum with minimum of 36:1 drum to wire rope diameter ration. Groove depth shall be at least 35% of rope diameter. The rope drum shall be equipped with a rope guide to help keep the rope aligned in the grooves of the drum.
11. Wire rope shall be constructed from galvanized steel having a minimum safety factor of 5.
12. Hoist reeving shall be single reeved. Lateral hook drift shall not exceed 1/8 inch per foot of vertical travel on single reeved models.
13. The hoist nameplate is to carry a CSA c/us rating. The actual hoist control enclosure rating shall be at least equivalent to IP55 / NEMA 4 type.
14. Hooks shall be made of forged alloy steel (34CrMo4QT or 34CrNiMo6QT) and shall be fitted with a spring-loaded flipper-type safety latch.
15. Hoist shall have a duty rating suitable for the load class and load cycles of the application (reference appendix A).
16. AGMA quality class 12 machine cut, hardened and precision ground hoist gearing. The gears inside the hoist gearboxes on models up to 5 ton capacity are lubricated by semi-

fluid grease. On models over 5 ton capacity the gears inside the hoist gearbox are lubricated with semi-fluid grease or oil.

17. AGMA quality class 10, hardened and precision ground trolley drive gearing, lubricated by semi-fluid grease.
18. Trolleys shall have safety drop lugs and energy absorbing bumpers.

B. Bridge Girder

1. Bridge girder shall be per 1.01B above, as applicable.
2. Bridge girders shall be constructed from welded box girders or Structural beams, Steel, ASTM A36 , A50 or A992, as required.

C. End Trucks and Bridge Drive:

1. End trucks shall be designed in accordance with CMAA specifications as applicable for the type crane.
2. End trucks shall be bolted (not welded) to bridge girder.
3. Bridge drive shall be dual motor (A-4 arrangement per CMAA)
4. Bridge drive shall be designed to stop bridge within CMAA specifications.
5. End trucks shall be equipped with rail sweeps and energy-absorbing rubber bumpers.
6. Travel limit switches to be provided as necessary for safe operation.
7. Bridge shall be furnished with an adjustable frequency inverter drive and two-step or infinitely variable speed control for smooth acceleration and deceleration.
8. Bridge motors shall be inverter duty motors with minimum class “F” insulation and motor enclosures shall be TENV [totally enclosed non-ventilated].
9. AGMA quality class 10, hardened and precision ground bridge drive gearing, lubricated by semi-fluid grease.
10. Bridge girder shall be per 1.01B above, as applicable.
11. Bridge girders shall be constructed from welded box girders or Structural beams, Steel, ASTM A36 A50 or A992, as required.

D. Power Supply

1. Power supply for the hoist shall be 208 volt, 3 ph., 60 Hz. All power required for the operation of the hoist, trolley, and end trucks shall be developed from this source.
2. Runway electrification shall be 4-bar safety type rigid conductors as manufactured by Insul-8, Duct-O-Wire Company or Wampfler. Wall mounted disconnect switch and power to runway conductors provided by Electrical Contractor.
3. Cross bridge electrification shall be flat cable style festoon system with terminal box, multi-conductor cord, plug connectors (when available) and accessories. Cables are to be hardwired when plug connectors are not available.

E. Controls

1. Six-way operation, plug-in pushbutton pendant suspended from independent festoon track. Radio control may be included as an option.
2. Pendant shall include Start (momentary) button, Emergency Stop (push to maintain-turn to release) that controls a mainline contactor in the bridge panel.
3. Pushbutton shall be clearly marked with hoist, trolley and bridge travel directions.
4. Hoist shall be 2 speed magnetic reversing type (standard) or variable frequency inverter control (optional) and the trolley and bridge controls shall be variable frequency inverter control (standard), as required per section 1.01.B.
5. Electrical control enclosures shall be IP55 or NEMA 4 type. Pushbutton enclosure shall be non corrosive, non conductive and have a rating of IP65, NEMA 4X, 4 or 5.

PART 3 - EXECUTION

3.1 INSTALLATION AND INSPECTION (IF APPLICABLE TO MANUFACTURER)

A. Inspect structure and crane rail erection for conformance with reviewed shop drawings and contract documents prior to installation of equipment. Bring nonconforming work to the attention of the customer prior to proceeding with crane installation. Non-conforming runway structure or installation must be corrected prior to load testing of crane system. Costs of delays or additional work due to nonconforming runway structure will be reimbursed by the Owner.

B. Bridge crane shall be installed in conformance with manufacturer's instructions and inspected by a manufacturer's representative. Provide all necessary accessories to make bridge crane complete, usable, and capable of meeting the operating requirements specified in the Operating Requirements. Test, adjust and clean equipment for acceptance by Owner.

3.2 TESTING

A. All crane equipment shall be operated through a complete lift and lowering cycle and through a complete travel of the bridge and trolley to determine that the equipment shall perform smoothly and safely and that pendant cable length is sufficient to permit operation from desired floor levels. All tests shall be carried out with the bridge crane equipment loaded at 100 percent of capacity, not to exceed 125 percent of capacity. The bridge crane provider shall provide the test weight loads. Any defects shall be corrected by the bridge crane provider without any expense to the Owner.

END OF SECTION

LOMBARD
CONRAD
ARCHITECTS

VOLUME 2

PROJECT: **Moscow City Shop**
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Moscow, ID 83843

OWNER: **City of Moscow, Idaho**
504 S. Washington Street
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ARCHITECT: **Lombard-Conrad Architects**
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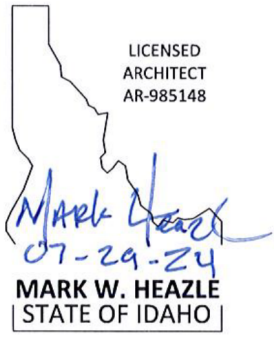

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DIVISION 21 – FIRE SUPPRESSION

SECTION 210000 - FIRE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 SCOPE:

A. General:

1. Specification Section 220000, Plumbing General Requirements, is to be included as part of this Section of the specification.

B. Work Included:

1. This section covers the work necessary to design and install a complete, satisfactory, and ready to operate wet pipe fire protection system for heated areas and dry pipe fire protection system for non-heated areas (areas subject to freezing). Hazard classification shall be as required by the State Fire Marshal, local City, IBC, IFC, and applicable NFPA Standards.

C. Qualifications of Installer:

1. All work shall be performed by a qualified, competent, licensed Fire Sprinkler Contractor who can furnish a verified list of satisfactory installations of this type and size, for a period of 5 years or more. Fire sprinkler contractor shall be licensed by the Idaho State Fire Marshal, and shall have in his employ an Engineering Technician (Level III), certified by NICET (National Institute for Certification in Engineering Technologies).

D. System Responsibility:

1. All work required for the fire protection system, including design and installation, shall be the responsibility of the Fire Sprinkler Contractor. Coordination with other trades is critical. Contractor shall coordinate his work with all ductwork, piping, electrical, etc., to ensure that all systems can be installed with a minimum of interference. Sprinkler heads shall be located in the center of ceiling tiles in the 2' dimension and quarter spaced on 12" increments in the 4' dimension. All piping penetrations through finished walls shall be provided with chrome escutcheons. Submittals which are required are only for the purpose of general coordination. Architect/Engineer assumes no responsibility or liability for the design of the system.

2. All monitoring of valves not shown on the electrical drawings shall be within the scope of work for the fire sprinkler contractor. This shall include, but not be limited to, the following: All conduit and wiring as required to monitor post indicator valves, tamper switches, and any other devices required to be supervised by the fire alarm panel. The sprinkler contractor shall also provide all power, wiring and conduit required for a complete and operational dry-pipe system (if required), unless such electrical is shown on the electrical drawings.

3. All dry piping shall be graded to drain back to the riser, regardless of location or presence of heat. Where not possible, piping may be graded to auxiliary drum drip drains. All locations of drains are to be approved by the Architect/Engineer prior to installation. All exposed piping shall be installed as close to ceilings as possible while maintaining appropriate sprinkler deflector clearances and while providing minimum pipe grade per NFPA 13 requirements. Piping shall be designed and installed in a neat and symmetrical manor and shall be coordinated with all other trades and building features.

4. All wet piping may be installed flat and level but shall be installed so as to minimize the requirements for

auxiliary drains. All exposed piping shall be installed as close to ceilings as possible while maintaining appropriate sprinkler deflector clearances. Piping shall be designed and installed in a neat and symmetrical manor and shall be coordinated with all other trades and building features.

5. Submittals are required are only for the purpose of general coordination. Architect/Engineer assumes no responsibility or liability for the design of the system.

6. The fire sprinkler system engineering documents must include as a minimum:
   a. The hazard classification, density, water flow and pressure requirements for the sprinkler system design.
   b. The storage arrangement and classification of commodities to be protected.
   c. Confirmation of adequate water supply based on water purveyor data.
   d. Riser location and feed main routing.

1.2 CODES AND STANDARDS:

A. The sprinkler system is to be designed and installed in accordance with the latest applicable building codes, State and Local Fire Marshals requirements, and all applicable NFPA Standards.

PART 2 - PRODUCTS

2.1 SUBMITTALS:

A. The Engineering Technician shall prepare and submit the following submittal data:

1. Complete equipment list of all equipment to be installed, including manufacturer's name and catalog number.

2. Layout drawing of complete sprinkler system indicating relationship of all other overhead items, including ductwork, lights, and structural members.

3. Complete details and sections as required to clearly define and clarify the design.

4. Plot plan indicating location of all underground connections, piping, valves, and related items.

5. Complete building section showing location of piping, sprinklers and applicable equipment in relation to other construction features.

6. Grooved joint couplings and fittings shall be shown on drawings and product submittals, and be specifically identified with the applicable style or series number.

7. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification or model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

8. Sprinklers valve and equipment model numbers shall be specifically identified on drawings and shall match submittal data provided.

2.2 MATERIALS AND EQUIPMENT:

A. All materials shall be as specified below, or in accordance with applicable NFPA Standards:

1. Piping shall be black steel per NFPA 13 requirements and shall have a factory applied interior MIC or corrosion resistant coating. Piping shall be new and relatively free of exterior rust or corrosion. Piping with excessive rust or corrosion may be rejected. Threadable, thin wall piping will not be allowed. CPVC is allowed for underground only.

2. Fittings shall be 125 psi screwed cast or malleable iron for all threaded piping.

3. Fittings shall be Victaulic FireLock®, Anvil Gruviok, Grinnell or Shurjoint fire protection products for all grooved or plain end piping. Couplings shall consist of two ductile iron housings conforming to ASTM A536, a pressure responsive elastomer gasket, and zinc electroplated carbon steel bolts and nuts. Rigid type or flexible type where necessary.
   a. Rigid Type: Housings shall be cast to provide system rigidity and support and hanging in accordance with NFPA 13. Tongue and recess rigid type couplings shall only be permitted if the contractor uses a torque wrench for installation. Required torque shall be in accordance with the manufacturer's recommendations. Contractor shall remove and replace any improperly installed joints. 11/4" and Larger: Standard rigid joint equal to Victaulic FireLock® Style 009 or equal.
   b. Flexible Type: Use in seismic areas where required by NFPA 13, Victaulic Style 75 or 77 or equal.

4. Dry pipe valves shall be installed in system risers per local water purveyor requirements.
   a. Dry Pipe Valve: Reliable EX Low Pressure Dry Valve (or preapproved equal, prior to award) shall be provided. Low differential, latched clapper design, black enamel coated ductile iron body, aluminum bronze clapper, with external reset and nitrogen system trim package. Valve internal parts shall be replaceable without removing the valve from the installed position and be externally resettable. Valve shall be pre-trimmed with shut-off valve, 3-way ball valve, and actuator. Required system pressure shall be per manufacturer's requirements. Valve shall have grooved ends for vertical installation only.
   b. Dry pipe systems shall not exceed 750 gallons of total system volume for any reason, regardless of code allowances. The Fire Sprinkler Contractor is to determine how many systems are required and provide the correct number of systems as determined by their design.

5. A nitrogen generator system, as manufactured by Southtech Systems **or Engineered Corrosion Solutions** (or preapproved equal prior to award), shall be sized and installed to provide system pressure and maintenance for the dry pipe systems. The system shall be equipped with a fire protection air compressor to comply with pressurization requirements of NFPA 13. Where multiple systems are required, the contractor shall properly size the generator system as needed for all cumulative dry pipe systems. Nitrogen monitoring stations shall be provided on each system per the manufactures criteria. Stations shall be located at or near the remote end of each system and shall be readily accessible from the floor level. The final location shall be coordinated with and approved by the Architect/Engineer.

6. Wet pipe risers shall be equipped with a Reliable brand (or equal) alarm valve / system check valve.

7. Butterfly control valves with supervisory tamper devices shall be installed for system control.

8. All materials and equipment shall conform to the requirements of Underwriter Laboratories (UL) or Factory Mutual Global (FMG), and shall be so stamped.

9. Pressure switches (water flow device) shall be installed in each system riser (dry pipe systems).

10. Flow switches (water flow device) shall be installed in each system riser (wet pipe systems).

11. Alarm Bell shall be 10-inch outdoor electric bell. Furnish for installation by the electrical contractor.

12. Sway Bracing, both lateral and longitudinal, shall be required and shall be installed per applicable NFPA Standards.

13. Fire Department Connection shall be provided for each system riser or manifold assembly. Install a 90-degree elbow with drain connection at each fire department connection to allow for system drainage to prevent freezing.

14. Sprinkler heads in main entry type areas and main conference room type areas shall be concealed flush mounted style with white paintable covers. All other sprinkler heads shall be Reliable Designer Model F1, (or equal), recessed with compression type escutcheon, below finished ceilings. Where surface mounted obstructions are installed, two-piece escutcheons and pendent sprinklers may be used, if required. Where sprinkler heads are subject to damage such as gymnasiums or mechanical lofts all sprinkler heads shall be provided with protective covers. Escutcheons shall be listed, supplied, and approved for use with the sprinkler by the sprinkler manufacturer. Where piping is exposed, install standard bronze upright or pendent sprinklers. Quick response dry sidewall sprinklers shall be used as required to comply with IBC requirements for exterior canopies.

15. Provide 12 extra sprinkler heads mounted together in a suitable cabinet. Include Reliable brand sprinkler head wrenches matching each type of sprinkler head. Include spares of all types of sprinklers installed in the building.

16. Hangers, drains, and Inspectors Test Connections shall be installed in accordance with applicable NFPA Standards.

17. Test and Drain Valve: Globe design valve providing test port with ½" integral orifice and drain port in one unit. Bronze body with copper alloy internals, polycarbonate sight glasses, Nitrile o-rings and EPDM valve seats.

18. Back flow prevention as required by the State and Local Fire Marshall.

19. Post indicator valves as required by the State and Local Fire Marshall, or as shown on plans.

20. All piping penetrations through finished walls shall be provided with chrome escutcheons.

B. Underground piping materials and installation shall comply with N.F.P.A. #24 and local water company specifications.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Upon completion of the system, secure the inspection of the required authorities and perform such tests as may be required to demonstrate compliance with local and state standards. Upon acceptance of the system by the inspecting authority, inform the Architect/Engineer in writing, showing proof of acceptance. Submit all required test certificates to required authorities.

B. The Fire Sprinkler Contractor shall monitor the nitrogen percentages until the system has reached 98% pure nitrogen and shall provide written verification, signed and acknowledged by the Owner's representative of such achievement. This shall occur each time that the system is taken in and out of service for any reason connected to the requirements of the project.

3.2 INSTALLATION:

A. Grooved joint piping systems shall be installed in accordance with the manufacturer's guidelines and recommendations. All grooved couplings, fittings, valves and specialties shall be supplied by a single manufacturer. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified. Gaskets shall be supplied by grooved pipe manufacturer. Grooved end shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove for proper gasket sealing. Contractor's field personnel shall be properly trained in the installation of the manufacturer's grooved piping products. A Factory trained representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed products.

B. The sprinkler bulb protector must remain in place until the sprinkler is completely installed and before the system is placed in service. Remove bulb protectors carefully by hand after installation. Do not use any tools to remove bulb protectors.

3.3 PROJECT CLOSEOUT

A. Operations & Maintenance Manual:
The Contractor shall provide an operations and maintenance manual at least thirty days prior to completion of work. The manual shall be of the three-ring binder type, entitled "Operations and Maintenance Manual", with the job name and year of completion also included. O & M manuals shall be submitted in a single package. In addition, the contractor shall provide two consolidated electronic versions on two separate thumb drives. Individual items will not be accepted independently unless approved by the Engineer. The manual shall be in accordance with NFPA 25 requirements.

END OF SECTION 210000

DIVISION 22 – PLUMBING

SECTION 220000 – PLUMBING GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1. SCOPE:

A. General:

1. The Bidding Requirements, Contract Requirements, and the General Requirements (Division 01) of these specifications shall govern all parts of the work.

B. Work Included:

1. Install work in accordance with these specifications and the accompanying plans. Furnish all labor, material, and equipment together with all incidental items not specifically shown or specified which are required by good practice to provide the complete plumbing systems as described.

C. Coordination and Site Visits:

1. This section of the work requires examination of and reference to all architectural, structural, utility, and electrical drawings for construction conditions that may affect the work. Inspect the building site and existing facilities for verification of existing conditions. Base all measurements from established benchmarks. Any discrepancy between actual measurements and those indicated, which prevents following good practices or the intent of the drawings and specifications, shall be reported to the Architect/Engineer, and work halted until instructions are received from the Architect/Engineer.

1.2. CODES, PERMITS, FEES:

A. Install all work in accordance with applicable codes and standards. Obtain all required permits; pay all required fees including utility connections or extensions, in connection with this portion of the construction. Obtain all required certificates of inspection for the work.

PART 2 - PRODUCTS

2.1. MATERIALS AND WORKMANSHIP:

A. Materials:

1. All materials and equipment shall be of first quality, new, full size and weight, standard in every respect, and suitable for the space required. Use the same manufacturer for products of similar class or service, such as valves and pumps. Protect all materials against loss, theft, or damage before and after installation.

2. Furnish and install all necessary foundations, supports, pads, bases, and piers required for all materials and equipment furnished under this contract.

3. Provide all required firestopping at piping penetrations of fire rated walls, floors, ceilings, and roofs. Firestopping shall be 3M Fire Barrier Sealant CP 25WB+ or 3M Fire Barrier Rated Foam FIP 1-Step, or approved equal.

4. Provide a heat-expanding fire collar for all non-metallic piping up to 6” size at penetrations of fire rated walls, floors, and ceilings per ASTME 814.

B. Workmanship:

1. All materials and equipment shall be installed in a neat and workmanlike manner by competent specialists for each subtrade. Work shall be installed to the satisfaction of the Architect/Engineer with unsatisfactory work removed and reinstalled to his satisfaction at no extra cost to the Owner.

2. Provide all cutting and patching necessary to install the work specified in this section. Patching shall match adjacent surfaces. No structural members shall be cut without the approval of the Architect/Engineer. Provide all sleeves and inserts required before the floors and walls are built.

3. Locate all equipment that must be serviced in fully accessible positions. Provide clearance for removal of replacement parts and components, and with necessary couplings or flanges to remove the component for maintenance.

2.2. SUBMITTALS AND SUBSTITUTIONS:

A. Prebid Approval:

1. Manufacturer’s trade names and catalog numbers stated herein are intended to indicate the quality of equipment or materials desired. All manufacturers not specifically listed require prior approval. Submit catalog data, including specifications, of the proposed equipment to the Architect/Engineer for his approval at least 10 calendar days prior to bid opening. Notice of such approvals will be published in an addendum. Approval of listed alternate equipment manufacturers is for bidding only. Final approval is to be based on requirements of the plans and specifications.

B. Submittals:

1. Within thirty days after award of this contract, provide an electronic copy of a complete list of all materials and equipment proposed for this project. List shall contain make, type, manufacturer's name, and trade designation of all materials and equipment. Submittal shall also include manufacturer's complete specification for each item, including ratings, and dimensions as required to check space requirements. The scheduled equipment is the basis of design for physical size, etc. Alternate manufacturers shall not exceed the weight or physical size. Any changes to the Architectural, Structural and Mechanical systems due to alternate manufactures shall be the responsibility of the Contractor and Supplier. Submittals for fixtures, trim, and other plumbing related items, requiring submittals, shall be submitted in a single complete package. Individual items will not be reviewed independently unless approved by the Engineer.

2. Approval of submittals shall not relieve the contractor from responsibility for deviations from the plans or specifications, unless he has, in writing, called the Architect's /Engineer's attention to deviations at the time of submission, and obtained his written approval. Approval of submittals does not relieve the contractor from responsibility for errors in shop drawings or literature.

C. Equipment Requiring Submittals:

1. Plumbing Fixtures & Trim

2. Valves

3. Cast Iron Soil Piping

4. Pipe Stands

PART 3 - EXECUTION

3.1. ACCESSIBILITY & SAFETY:

A. Accessibility:

1. All equipment which must be serviced or operated shall be located in fully accessible position. Minor changes from the drawings may be made to allow for better accessibility. All changes shall be approved prior to actual installation.

2. Access panels shall be provided if required for accessibility. Access panels to be steel, flanged, hinged doors by Cendrex, model AHD, or equal. Size as required for installation. Subcontractor shall furnish the required panels to the General Contractor and the required location for all access panels, unless otherwise specified in the Architectural specifications. Panels shall be installed by the General Contractor.

B. Safety:

1. No water piping shall run immediately over or within a 3-foot plan view clearance of any electrical panel or motor starter. Where piping must be located within these zones, install piping inside a conduit to prevent water access to electrical equipment.

3.2. COORDINATION:

A. Coordinate all work with the various trades involved to provide a complete and satisfactory installation. The exact details of piping and equipment are not shown. No additional compensation will be made for offsets or relocation required in coordination with other trades.

B. Alterations required due to improper supervision by the subcontractor shall be made at no extra cost, to the satisfaction of the Architect/Engineer.

3.3. EXCAVATION & BACKFILL:

A. Excavate trenches required for underground piping to proper elevation and grade. Provide trenches with solid bottoms to allow support of piping along entire length with excavation at bells as required for jointing and inspection. Provide repairing of finished surfaces, and all required shoring, bracing, pumping, and protection for safety of persons and property. Observe all Local or State Safety Codes. Verify that elevations of existing utilities will allow for proper grading of piping connecting to existing utilities.

B. Excavation and Backfill shall be in accordance with the requirements of Division 31, of these specifications.

3.4. IDENTIFICATION AND CODING:

A. General:

1. The Contractor shall use ASME 13 standards for all piping identifications, color coding, and compliance.

B. Painting:

1. All painting of equipment, accessories, and piping shall be furnished and applied under the Architectural section of these specifications. All painting shall be completed before any identification markings are applied.

C. Piping:

1. Piping shall be labeled with the fluid conveyed and the direction of flow:

   a. On both sides of wall or floor penetrations.

   b. Once on every straight run of pipe.

   c. No more than 20-foot intervals.

   d. No more than 10-foot intervals in congested areas.

   e. Within 3 feet of each piece of equipment, valve, or control device.

A. Label Color and Size Requirements:

All Piping shall be All pipes, and equipment shall be labeled according to ANSI standard A13.1. See table below for examples.

Label Color Schedule Per ANSI A13.1	
Water (Heating, chilled, potable, boiler feed, etc.)	Green Background with White Letters
Compressed Air	Blue Background with White Letters
Natural Gas / Refrigerant / Steam	Yellow Background with Black Letters
Fire Suppression	Red Background with White Letters
Equipment Labels*	Black Background with White Letters

*Label all equipment that is on generator power with a Red Background and White Letters

Text Height Requirements			
Equipment Labels	Main Designation Supplemental Info Large Equipment w/viewing distances beyond 10 feet		¾" high text minimum ½" high text minimum 3" high text main label
Piping	O.D. of ¾" to 1-¼" O.D. of 1-½" to 2-⅜" O.D. of 2-½" to 7-⅞" O.D. of 8" to 10" O.D. over 10"	Letter Size: ½" high Letter Size: ¾" high Letter Size: 1-¼" high Letter Size: 2-½" high Letter Size: 3-½" high	Marker Size: 8" wide Marker Size: 8" wide Marker Size: 12" wide Marker Size: 24" wide Marker Size: 32" wide
Ceiling Labels	Letter height: ½" Minimum		

D. Valves:

1. Regardless of size, all valves shall be tagged with a numbered brass tag, 1-1/2 inches by 3 inches minimum in size and 0.051 inch thick. A valve chart indicating valve tag number, location, service, and normal position shall be mounted in a suitable framed and glassed cover in the main mechanical room or as directed. Valve chart shall be duplicated in the Maintenance and Operations Manual.

E. Backflow Prevention Devices:

1. Regardless of size, all backflow prevention devices shall be tagged with a numbered brass tag, 1-1/2 inches by 3 inches minimum in size and 0.051 inch thick. A backflow prevention device chart indicating backflow prevention device tag number, location, and service shall be mounted in a suitable framed and glassed cover in the main mechanical room or as directed. A backflow prevention device chart shall be duplicated in the Maintenance and

Operations Manual.

3.5. TESTING:

A. Piping:

1. All plumbing piping (drainage, water, gas) shall be tested in accordance with the requirements of local adopted plumbing code, latest edition. Other piping systems shall be tested hydrostatically to 1.5 times the operating pressure but not less than 100 psi, for a minimum period of two hours. If the test pressure falls more than 5 percent during the test period, the leak shall be located, repaired, and the test repeated.

2. Piping shall be tested before insulation has been installed. Delicate control mechanisms shall be removed during tests to prevent shock damage. The use of chemicals or compounds to stop leaks shall not be permitted.

3. A test report shall be submitted for each piping system test. Test report forms are part of Specifications Section 220100, or are available from the Engineer.

B. Systems:

1. All plumbing systems shall be tested at the completion of the building to establish that the systems operate as specified and required.

3.6. CLEANING AND ADJUSTING:

A. Thoroughly clean all parts of the system at the completion of the work. Flush all water circulating systems with fresh water and then drain. Clean all strainers and refill system. Adjust all devices for proper operation and lubricate all equipment as required. Repaint any painted surface that has been damaged.

B. All potable water systems shall be flushed and disinfected after tests are completed. Disinfection shall be in accordance with local municipal and State Plumbing Inspector's criteria. In lieu of such criteria, the following procedure shall be followed for disinfection:

1. Completely flush system. Add alkali or acid (hydrochloric) to bring water ph level to between 7.4 and 7.6.

2. Inject chlorine (liquid, powder, tablet, or gas) throughout the system to obtain 50 to 80 mg/L residual.

3. Bleed water from outlets to ensure distribution, and test for residual at a minimum of 15 percent of the outlets.

4. Maintain disinfection in system for 24 hours.

5. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

6. Flush disinfectant from system until residual is equal to that of incoming water, or 1.0 mg/L.

7. Take samples no sooner than 24 hours after flushing, from 10 percent of the outlets and the incoming water.

3.7. PROJECT CLOSEOUT:

A. Operations & Maintenance Manual:

The Contractor shall provide an operations and maintenance manual at least thirty days prior to completion of work. The manual shall be of the three ring binder type, entitled "Operations and Maintenance Manual", with the job name and year

of completion also included. O & M manuals shall be submitted in a single package. Individual items will not be accepted independently unless approved by the Engineer. The manual shall include, as a minimum:

1. Maintenance instructions for all equipment, including lubrication requirements.

2. Fixture suppliers names, addresses, and telephone numbers.

3. Fixture catalog cuts, ratings tables, model numbers, serial numbers, and accessories.

4. Parts numbers for all replaceable parts.

5. Valve tagging chart as hereinbefore specified.

6. Guarantee letter as specified below.

7. Any additional information required to enable the Owner to properly maintain the building plumbing system.

8. After approval of the Operations and Maintenance Manual by the Architect/Engineer, the Contractor shall furnish two copies of the manual to the Owner.

B. As-Built-Drawings:

1. Provide two sets of red-line mechanical drawings showing the work as it was actually installed. The drawings shall indicate all departures from the contract drawings and shall locate all underground utility lines with dimensions from established building lines. Make all notations neat and legible, with red indelible pencil. At the completion of the work, these as-built drawings shall be signed and dated by the Plumbing Contractor and returned to the Architect/Engineer.

C. Guarantee:

1. All work furnished under this section shall be guaranteed in writing to be free from defective work or materials for a period of one year after acceptance of the contract. All repairs or replacements because of defective materials or workmanship or noncompliance with code shall be provided without additional cost to the Owner. Contractor shall furnish a letter indicating above guarantee with space for date of acceptance and expiration of guarantee. Letter shall be included in O & M Manual.

END OF SECTION 220000

SECTION 220100 - PLUMBING

PART 1 - GENERAL

1.1. SCOPE:

A. This section covers the work necessary for the plumbing system, complete. The Plumbing General Requirements, Section 220000, are to be included as a part of this section of the specifications.

1.2. CODES:

A. The plumbing system shall be installed in accordance with the requirements of local adopted plumbing code, latest edition, International Fuel Gas Code, latest edition; and all local and State Codes.

1.3. FIXTURES & EQUIPMENT:

A. General:

1. Plumbing fixtures and equipment shall be as listed on the drawings. In addition to those specifically listed, the following manufacturers are approved for bidding only. All other manufacturers require prior approval. Final approval for installation is based on submittal data furnished:
   a. Tank Type Water Closets: American Standard, Kohler, Mansfield, Sloan, Toto, & Zurn.
   b. Flush Valve Water Closets: American Standard, Briggs, Kohler, Mansfield, Sloan & Zurn.
   c. Urinals: American Standard, Briggs, Gerber, Kohler, Mansfield, Sloan, Toto & Zurn.
   d. Vitreous China Sinks: American Standard, Crane, Kohler, Mansfield, Sloan, Toto, & Zurn.
   e. Stainless Steel Sinks: Elkay, Just.
   f. Faucets: American Standard, AMTC, Aquaspec, CHG Encore Saniguard, Chicago Faucets, Delta, Elkay, Gerber, Geberit, Kohler, Moen, T&S Brass, Symmons, Speakman, Sloan & Zurn.
   g. Sensor Faucets: Chicago Faucets, Elkay, Mac Faucets, Symmons, Speakman, Sloan, & T & S Brass.
   h. Valves and Trim: Brasscraft, Dearborn Brass, ProFlo, Sloan & T&S Brass.
   i. Flush Valves: American Standard Selectronic, AMTC, Delta, Kohler, Moen (sensor-operated only) Sloan, & Zurn.
   j. Carriers and Drainage Products: Jay R. Smith, Josam, MIFAB, Neenah Foundry, NDS, Profo, Sun Drainage, Wade, Watts, Sioux Chief, & Zurn.
   k. Toilet Seats: American Standard, Beneke, Church, Kohler, Plumb Tech & Zurn.
   l. Mixing Valves: Acorn Controls, Lawler, Leonard, Powers, Stingray, Symmons, Watts, & Wilkins.
   m. Fiberglass/ Acrylic Fixtures: Aquatic, Aquaglass, Best Bath, Fiat, Intersan, MAXX, Mustee Praxis-Comfort Designs, & Swan.
   n. Drinking Fountains/ Electric Water Coolers: Elkay, Halsey Taylor, Haws, Murdock Stern Williams, & Sunroc.
   o. Safety Fixtures & Safety Mixing Valves: Acorn, Bradley, Chicago Faucets, Encon, Guardian, Haws, Lawler, Speakman, Speakman, Stingray.
   p. Security Fixtures: Acorn, Bradley, Willoughby.
   q. Wash Fountains: Acorn, Bradley, Intersan, Sloan, & Willoughby.
   r. Service Sinks: Acorn, Fiat, Mustee, Proflo, Stern Williams, & Zurn.
   s. Water Heaters (Tank): American, A.O. Smith, Bock, Bradford-White, Heat Transfer-Phoenix, Lochinvar Shield, PVI, & Rheem.
   t. Water Heaters (Instantaneous - Gas): A.O. Smith, Bradford-White, Lochinvar, Rheem, & Rinnai.
   u. Water Heaters (Instantaneous - Electric): Bradford-White, EeMax, Chronomite, & Rheem.
   v. System Valves: Apollo, Nebco & Red-White Valve Corp.

w. Backflow Preventers: Conbraco/Apollo, Watts, & Wilkins.
x. Hose Bibbs: Josam, J.R. Smith, Prier, MiFAB, Woodford, & Zurn.
y. Trench Drains: ABT, ACO, Dura Trench, J.R. Smith, NDS, Strongwell Polycast, Rapid, Wade, & Zurn.
z. Utility Sinks: Fiat, Mustee, & Proflo.

2. Plumbing Fixture Standards:
All plumbing fixtures shall meet or exceed the following standards:
a. ANSI A112.6.1 - Supports for Off-the Floor Plumbing Fixtures for Public Use.
b. ANSI A112.18.1 - Finished and Rough Brass Plumbing Fixture Fittings.
c. ANSI A112.19.1 - Enameled Cast Iron Plumbing Fixtures.
d. ANSI A112.19.2 - Vitreous China Plumbing Fixtures.
e. ANSI A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use).
f. ANSI A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures.
g. ANSI A112.19.5 - Trim for Water-Closet Bowls, Tanks, and Urinals.
h. ANSI Z124.1 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Bathtub Units.
i. ANSI Z124.2 - Gel-Coated Glass-Fiber Reinforced Polyester Resin Shower Receptor and Shower Stall Units.
j. ANSI Z358.1 - Emergency Eye Wash and Shower Equipment.
k. ARI 1010 - Drinking Fountains and Self-Contained Mechanically Refrigerated Drinking Water Coolers.
l. AWSI/ASSE 1001 – Atmospheric Vacuum Breaker
m. ANSI/ASSE 1012 - Backflow Preventers with Immediate Atmospheric Vent.
n. ANSI/ASSE 1011 - Hose Connection Vacuum Breakers.
o. ANSI/ASSE 1013 - Backflow Preventers, Reduced Pressure Principle.
p. ANSI/ASSE 1015 – Backflow Preventers, Double Check Principle
q. ANSI/ASSE 1019 - Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Types.
r. AWSI/ASSE 1020 – Pressure Vacuum Breaker
s. AWSI/ASSE – 1-52 – Hose Connection, Double Check
t. ANSI A112.21.1 - Floor Drains.
u. ANSI A112.21.2 - Roof Drains.
v. ANSI A112.26.1 - Water Hammer Arresters.
w. PDI WH-201 - Water Hammer Arresters.
x. ANSI/AWWA C606 – Grooved and Shouldered Joints
y. NSF/ANSI Standard 61 – Drinking Water System Components – Health Effects

PART 2 - PRODUCTS

2.1. PLUMBING FIXTURES & TRIM:

A. All plumbing fixtures shall be provided complete with all required trim for a complete and operational system. All piping penetrations through finished walls shall be provided with chrome escutcheons. All plumbing fixtures shall be caulked and sealed to surrounding surfaces. All sink traps shall be provided with a cleanout plug in the bottom of the trap. All interior exposed pipe, valves, and fixture trim shall be chrome plated, including kitchen compartment sinks. Braided stainless steel pipe risers are approved for concealed locations only, such as behind casework doors or lav shields. Each fixture shall be provided with stop valves and the stop valves shall be quarter-turn brass ball type. All fixtures and trim must be lead free. All floor drains and floor sinks shall be provided with trap primers (PPP, Zurn or Wade as needed for appropriate use. Provide ball valve type shut-off valve upstream of all trap primer valves).

2.2. PIPING AND FITTINGS:

A. General:

1. Underground sanitary sewer and storm drain lines shall be installed at 1/4" per foot slope, unless otherwise

indicated. If such slope is not possible due to existing inverts, approval shall be obtained from the Architect/Engineer and the authority having jurisdiction before any piping is installed at a lesser slope.

2. Connections between piping of dissimilar materials shall be made with dielectric waterway fittings or unions.

3. Provide standard manufactured water hammer arresters at all flush valves. Size and locate per manufacturers recommendations. Provide access panels for access to all water hammer arresters.

B. Domestic & Non-Potable Hot and Cold Water:

1. Piping inside building above slab or above grade in crawl space shall be ASTM B88, Type "L", hard drawn copper. Fittings shall be ANSI/ASME B16.22 cast brass, or ANSI/ASME B16.29 wrought copper. Joints shall be ANSI/ASTM B32 solder, Grade 95-5, lead free.
   a. Cold Water Only Option- ANSI/ASME B16.18 cast bronze, or ANSI/ASME B16.22 wrought copper. Joints shall be copper-tube dimensioned grooved joint couplings, and Flush Seal style gasket. (Gasket shall be UL classified in accordance with ANSI/NSF-61 for potable water service.) Victaulic Style 606, Gruvlok style 6400, Grinnell Universal Tongue and Groove 672, Shurjoint C305, or equal.
   b. Piping Option – Mechanically Formed Extruded Outlets:
      1) Mechanically formed extruded outlets shall be perpendicular to the axis of the run tube (header). They shall be formed by drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the branch wall and shall conform to ASME B31.9 and NFPA 99. T-Drill or approved equal.
      2) Branch tubes shall not restrict the flow in the run tube. To ensure this by conforming the branch tube to the shape of the inner curve of the run tube, a dimple / depth stop shall be formed in the branch tube to ensure that penetration into the collar is of the correct depth. For inspection purposes, a second dimple shall be placed 0.25 inch above the first dimple. Dimples shall be aligned with the tube run.
      3) Branches can be formed up to the run tube size as shown in ASTM F 2014. Forming procedures shall be in accordance with the tool manufacturer's recommendations.
      4) Joints shall be made with the use of approved brazing alloys BCup2 thru BCup5 (0-15% silver content). Brazed with a filler that has a melting point above 540 deg. Centigrade (1000 deg. F). **Soft soldered joints are not allowed.**
      5) K and L copper types allowed.
      6) Soft and Hard copper allowed.
      7) Each model used for making branch connections shall be permanently marked with manufacturer's name and appropriate model number.
      8) Mechanically formed extruded outlets can (but not limited to) be used on commercial and residential buildings.
      9) Fitter / Plumber shall be trained and certified to operate the equipment.

2. Piping underground within 5 feet of the building line, smaller than 4 inches, shall be ASTM B88, Type "K", hard drawn copper. Piping below floor slab, smaller than 4 inches, shall be type "K", soft annealed copper. Fittings shall be ANSI/ASME B16.29 wrought copper. Joints shall be ANSI/ASTM B32 solder, Grade 95-5, lead free. No joints shall be installed beneath concrete floor slabs, unless approved by the Engineer. Underground or underslab copper piping shall be provided with a polyethylene jacket, ANSI/AWWA C105, or shall be wrapped with double layer, half-lapped, 10 mil polyethylene tape.
   a. Underground (below slab) Piping Option- ½" to 4", High Density Polyethylene (HDPE) pressure pipe. ASTM D3350, ASTM D3035 & ASTM F714. AWWA C901 & AWWAC906, NSF. Fittings shall be HDPE, solvent weld. Piping shall be rated for not less than 150 psig.
   b. Trap Primer Piping (below floor or concealed only)
      1) ½" Wirsbo Aquapex Tubing or equal.

3. Piping underground beyond 5 feet from building line shall be Schedule 40 PVC, ASTM D1785 or D2241. Fittings shall be PVC, ANSI/ASTM D2466. Joints shall be solvent weld, ASTM D2855, or gasketed, ASTM F477. Piping shall be rated for not less than 150 psig pressure.

C. Sanitary Sewer and Vent:

1. Piping shall be cast iron CISPI 301, ASTM A888 hubless, with cast iron fittings in exposed areas. Standard Couplings shall be neoprene gaskets and stainless steel clamp-and-shield assemblies and shall conform to CISPI 310, ASTM C 1277, FM 1680, & IGC-237, and be listed NSF International. Heavy Duty Couplings shall conform to ASTM C 1540. Pipe and fittings shall be manufactured by AB&I, Charlotte, Tyler, or receive prior approval.

2. Piping and fittings shall be Schedule 40 PVC-DWV (cellular core), per ASTM F1488 and ASTM F891, solvent welded per solvent manufacturer's instructions, or ABS Schedule 40 piping and fittings per either ASTM D2661 or ASTM F628 with solvent cement conforming to ASTM D2235. All sewer risers (2 story or more) shall be service weight cast iron, no-hub or single-hub, ASTM A74. All piping penetrations through fire rated walls, floors, or ceilings, and all piping located above ceilings used as return air plenums shall also be cast iron or galvanized steel, ASTM A53. Underground PVC-DWV piping shall be installed per ASTM D-2321.

3. All sanitary waste and grease piping for commercial type kitchens shall be Schedule 40 PVC-DWV (cellular core), per ASTM F1488 and ASTM F891, solvent welded per solvent manufacturer's instructions, or ABS Schedule 40 piping and fittings per either ASTM D2661 or ASTM F628 with solvent cement conforming to ASTM D2235. Cast iron piping shall extend downstream minimum 20 feet from the steam kettle.

4. Piping and fittings beyond 5 feet from the building line shall be PVC, ASTM D3033 or D3034, SDR 35. Joints shall be ASTM F477 with elastomeric gaskets. Underground piping shall be installed per ASTM D-2321.

5. All 90 degree waste line elbows shall be formed per the latest issue of the adopted plumbing code, latest edition.

6. All exposed vent piping located in occupied areas or rooms, is to be cast iron with cast iron fittings.

7. All flush valve fixtures that are installed back to back shall have offset waste outlet fittings.

8. Cleanouts shall be provided at each horizontal drainage pipe, at its upper terminal, and each run of piping which is more than 100 feet and shall be provided for each 100 feet developed length, or fraction thereof of such piping. An additional cleanout shall be provided for each aggregate horizontal change of direction exceeding one hundred and thirty-five degrees, per applicable plumbing code. This shall be provided regardless of what is shown on the drawings.

9. All floor drains, floor sinks, and hub drains shall be installed with a trap primer.
   a. Flush Valve Primer: Trap primer shall be Precision plumbing products model FVP-1VB with vacuum breaker.
   b. Pressure Activated Primer: Trap primer shall be Precision Plumbing products Model CPO-500 with DU distribution unit if required.
   c. Tail Piece Primer: Trap primer shall be Precision Plumbing Products Model LTP-1500 with ½" clear poly flexible priming make up water line and chrome plated escutcheons plates.

10. All vent's through roof (VTR'S) shall be extended at least 1 foot above the roof surface, or to the top of the closest adjacent parapet wall, whichever is greater.

11. All piping exposed to exterior conditions with heat trace shall be insulated. Contractor to coordinate all instances with electrical.

D. Storm Drains:

1. Piping shall be cast iron CISPI 301, ASTM A888 hubless with cast iron fittings in exposed areas. Joints shall be neoprene gaskets and stainless steel clamp-and-shield assemblies, and shall conform to CISPI 310, ASTM C 1277, FM 1680, & IGC-237. Heavy duty couplings shall conform to ASTM C 1540. Pipe and fittings shall be manufactured by AB&I, Charlotte, Tyler, or receive prior approval.

2. Piping and fittings shall be Schedule 40 PVC-DWV (cellular core), per ASTM F1488 and ASTM F891, solvent welded per manufacturer's instructions, or ABS Schedule 40 piping and fittings per either ASTM D2661 or ASTM F628 with solvent cement conforming to ASTM D2235. All piping located above ceilings used as return air plenums, and all piping penetrations through fire rated walls, floors, or ceilings shall be service weight cast iron, ASTM888 no-hub or single hub, ASTM A74. Underground piping shall be installed per ASTM D-2321.

3. Piping underground beyond 5 feet from the building line shall be PVC, ASTM D3033 or D3034, SDR 35, with PVC fittings. Joints shall be ASTM F477 with elastomeric gaskets. Underground piping shall be installed per ASTM D-2321.

4. Cleanouts shall be provided at each horizontal drainage pipe, at its upper terminal, and each run of piping 2" size which is more than 50 feet and shall be provided for each 50 feet developed length. 4" size or larger which is more than 100 feet developed length, or fraction thereof of such piping. Contractor shall coordinate with architect as to exact location of all storm water cleanouts as they exit the building, as cleanouts may need to be positioned within certain block elevations. An additional cleanout shall be provided for each aggregate horizontal change of direction exceeding one hundred and thirty-five degrees, per applicable plumbing code. This shall be provided regardless of what is shown on the drawings. Final determination of cleanout spacing shall be per local jurisdiction and code requirements and shall be installed accordingly.

E. Compressed Air:

1. Piping shall be Schedule 40 black steel pipe, ASTM A53, with black banded 200 pound malleable iron fittings and couplings.

2. Piping 2" and below may be ASTM A-312, Type 304/304L, Schedule 5S stainless steel in lieu of soldered copper.
   a. Fittings shall be precision, cold drawn austenitic stainless steel with elastomer O-ring seals. (O-ring shall be grade "E" EPDM for oil free compressed air, or grade "T" Nitrile for air with oil vapors) Vic-Press 304 or equal.

3. Alternate material - Piping inside building above slab or above grade shall be ASTM B88, Type "L", hard drawn copper. Fittings shall be ANSI/ASME B16.23 cast brass or ANSI/ASME B16.29 wrought copper. Joints shall be ANSI/ASME B32 solder, Grade 95-5, lead free.

F. Natural Gas:

1. Piping shall be Schedule 40 black steel pipe, ASTM A53. Exposed fittings 2 inches and smaller shall be ANSI/ASME B16.3, screwed, black malleable iron.

2. Fittings larger than 2 inches and all underground fittings shall be Schedule 40 steel butt-welded type. Underground piping shall be provided with a polyethylene jacket, ANSI/AWWA C105, or shall be wrapped with double layer, half-lapped, 10 mil polyethylene tape.
   a. Contractors Option for Underground Pipe:
      1) Gastite Type PE flexible corrugated gas piping. NFPA-54 & 56. ASTM D2513 Category 1. ASME D-B31.8-1995.
      2) Piping and fittings underground and outside the building line may be JM Eagle UAC 2000 MDPE, medium-density polyethylene yellow gas pipe or an approved equal. Piping shall be installed in accordance with JM Eagle Publication JME-12B, "Polyethylene Yellow Gas Distribution Installation Guide." JM Eagle's UAC 2000 system can be joined by butt heat fusion, socket fusion, or saddle fusion. Installing contractor shall be licensed for fusion pipe installation of polyethylene pipe. ASTM D2513.

3. All exterior piping exposed to the weather shall be coated with a rust inhibitor - Rustoleum Professional DTM High Performance Protective Enamel or approved equal. The color shall be grey for exterior piping along walls and grey or yellow on the roof, submit for approval.

G. Condensate Drain Piping:

1. Exterior to building (connected to roof mounted equipment): Piping shall be Schedule 40 PVC. A union shall be installed directly at the roof top equipment for ease of replacement in the future.

2. Interior: Piping shall be Type L hard drawn copper, ASTM B88, with solder joints, grade 95TA, or may be Schedule 40 PVC. Copper piping shall not be used on 90% condensing type equipment. Provide a neoprene or rubber gasket at all copper piping support hangers to inhibit corrosion.
   a. Inside Mechanical Rooms: Piping shall be Type L hard drawn copper, ASTM B88, with solder joints, grade 95TA, for durability reasons.

H. Hanger and Supports:

1. Pipe hangers shall be provided to adequately support all piping systems. Hangers shall be vertically adjustable to provide for proper pitch and drainage. Hangers shall allow for expansion and contraction of the piping system. Reference "General Regulations" of the latest edition of the adopted plumbing code, latest edition.

2. Hangers for pipe sizes 1/2 to 6 inches shall be adjustable clevis type, or unistrut saddles with all-thread hanger rod.

3. Hangers for hot pipe, sizes 6 inches and over shall be adjustable steel yoke, cast iron roll, double hanger type.

4. Vertical pipes shall be supported with steel riser clamps. Spacing interval requirements per "General Regulations" of the latest edition of the adopted plumbing code, latest edition.

5. All insulated piping shall be provided with minimum 18 gauge galvanized insulation shields, 12 inches long, and oversized hangers. Pipe sizes 2 inches and over shall also be provided with 12 inch long calcium silicate insulating blocks between the piping and the galvanized insulation shield.
   a. Alternate: Insulated pipe support inserts may be provided at hanger, support, and guide locations on piping requiring insulation. The insert should consist of either Hydrous Calcium Silicate or Polyisocyanurate Foam insulation (Urethane) encircling the entire circumference of the pipe with a 360 deg. PVC (1.524 mm thick) or galvanized steel jacket and installed during the installation of the piping system. These insulated pipe support inserts shall be provided by the Mechanical Contractor and installed by the same during pipe support installation.

6. Hanger rod sizing and spacing for pipe shall be as follows:

Pipe Size	Minimum Rod Diameter	Maximum Spacing
To 1-1/4 inches	3/8 inch	6.5 feet
To 2 inches	3/8 inch	10 feet
To 3 inches	1/2 inch	10 feet
To 6 inches	5/8 inch	10 feet
8 to 12 inches	7/8 inch	12 feet
PVC & ABS (all sizes)	3/8 inch	4 feet
Cast Iron No-Hub	5/8 inch	5 feet and at joints

7. Provide hangers within 12 inches of each horizontal elbow.

8. Provide hangers with minimum 1-1/2 inches vertical adjustment.

2.3. INSULATION:

A. General:

1. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

2. Fire-Test-Response Characteristics: Insulation and related materials NFPA 255, UL Classified per UL 723 or meeting ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement containers, with appropriate markings of applicable testing and inspecting agency.
   a. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
   b. Insulation Installed Outdoors: Flame=spread index of 75 or less, and smoke-developed index of 150 or less.

B. Piping Insulation:

1. All domestic, potable & non-potable, hot and cold water lines, exposed waste and vent, and rain drains shall be insulated with preformed insulation.
   a. Fiberglass insulation with a vapor barrier jacket. Insulation shall have a conductivity not exceeding 0.28 Btu-inch/hour-sq. ft.-degrees F. Laps and butt joints shall be sealed with pressure sensitive joint sealing tape of the same finish as the insulation jacket to provide a continuous vapor seal. Fittings and valves shall be insulated with PVC fitting covers and fiberglass insulation inserts, or with hydraulic setting insulating cement and four ounce canvass jacket with vapor barrier adhesive.
   b. Alternate material for Cross-Linked Polyethylene Tubing (PEX): One piece preformed flexible elastomeric closed cell foam with built-in vapor barrier. Seal laps and butt joints with moisture resistant adhesive to provide a continuous vapor seal. Insulation shall have a conductivity rating not exceeding 0.27 Btu-inch/hour-sq. ft.-°F.

   Insulation thicknesses shall be as follows:

System	Pipe Sizes ½" and above
Domestic Cold Water (pot. & non-pot.)	½"
Domestic Hot Water & Recirc. (pot. & non-pot.)	1"
Roof Drain Piping	½"
Overflow Drain Piping	½"
Waste and Vent Piping (Exposed to exterior conditions)	½"

2. Roof and overflow drain sumps shall be insulated with 1/2" thick fiberglass with a vapor barrier, extending 2" onto adjacent insulation.

3. Insulation shall be installed in strict accordance with manufacturer's instructions.

4. Insulation shall be continuous through penetrations.

5. All insulation shall be installed in a neat and workmanlike manner.

Fiberglass insulation with a vapor barrier jacket. Insulation shall have a conductivity not exceeding 0.28 Btu-inch/hour-sq. ft.-degrees F. Laps and butt joints shall be sealed with pressure sensitive joint sealing tape of the same finish

2.4. VALVE & STRAINERS:

A. Globe Valves:

1. Valves 2-inches and smaller shall be cast bronze body, ASTM B-62, renewable composition disc, 200 psi WOG, ASTM B-62, rising stem and hand wheel. Stems shall be of dezincification-resistant silicon bronze, ASTM B-371, or low-zinc alloy, ASTM B-99, NSF/ANSI 61-8 Annex F&G, NSF 372 Lead Free. Valves over 2-inches shall be iron body, bronze trim, rising stem and hand wheel, plug type disc, flanged ends. Valves shall comply with MSS SP-85. Valves mounted higher than 7'-0" A.F.F. shall be provided with chain, wheel and guides. Basis of design: Apollo #120T-LF/120S-LF Lead Free Bronze, Apollo #711F-LF Lead Free Cast Iron, or equal.

B. Ball Valves:

1. Valves 2-inches and smaller shall be lead free cast bronze body, chrome-plated brass ball, teflon seats, and lever handle, 600 psi CWP. Valves shall comply with MSS SP-110, NSF/ANSI 61, NSF/ANSI 372 Lead Free. Valves over 2-inches shall be cast steel body, chrome plated steel ball, teflon seats, and lever handle. Victaulic, Anvil Gruvlok, Grinnell, or Shurjoint ball valves are acceptable if grooved piping is used. Valves mounted higher than 7'-0" A.F.F. shall be provided with chain, wheel, and guides. Basis of design: Apollo #77CLF-A Series or equal.

C. Butterfly Valve:

1. Valves 12-inches and smaller shall be ductile iron lug body, ASTM A-536, 316 stainless steel disc, EPDM Liner, 316 stainless steel stem, and safety twist-lock multi-position lever handle with open-closed lockout capabilities. Valve shall be rated at 175 psig WOG. Valves mounted higher than 7'-0" A.F.F. shall be provided with chain wheel and guides. Valves shall comply with MSS SP-67. Victaulic, Anvil Gruvlok, Grinnell, or Shurjoint butterfly valves are acceptable if grooved piping is used.

D. Check Valves:

1. Valves 2-inches and smaller shall be bronze body Y-pattern, ASTM B-62, swing check, bronze disc, 200 psi WOG. Valves shall comply with MSS SP-80, NSF/ANSI 61-8 F&G, NSF/ANSI 372 Lead Free. Valves, over 2-inches shall be iron body, ASTM A-126, bronze trim, swing check, renewable disc and seat. Valves shall comply with MSS SP-71. Victaulic, Anvil Gruvlok, Grinnell, or Shurlock check valves are acceptable if grooved piping is used. Basis of design: Apollo # 161T-LF/161S-LF Lead Free Bronze, Apollo # 920F-LF Lead Free Cast Iron, or equal.

2. Swing check valves with outside lever and spring (not center guided) is to be used on sewage ejector or storm-water sump pumps. Basis of design: Apollo # 910FLW-LF Lead Free Cast Iron or equal.

E. Pressure Reducing Valves:

1. Valves 2-inches and smaller shall be bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, and single union end. Basis of design: Apollo # 36ELF Series Lead Free Bronze or equal.

F. Balance Valve:

1. Valve shall have a twin tube 316 S.S. design with blowout proof attachment to station body. Ports shall include ¾" port for thermometer, ¼" port for pressure gauge, air vent, and ½" drain port.

2. The instrument station shall be 120/150-flanged construction.

3. The butterfly valve shall be lug pattern with a rating of 200 WP, 250 deg. F. The valve shall have an infinite. Position operator with memory stop (6" and smaller), worm gear with memory stop (8" and larger).

G. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.

2. End Connections: Threaded ends for NPS 2 (DN 50) and smaller; flanged ends for NPS 2-1/2 (DN 65) and larger.

3. Strainer Screen: 40-mesh startup strainer and perforated stainless-steel basket with 50 percent free area.

4. CWP Rating: 125 psig (862 kPa).

H. Install strainers on inlet side of each control valve, pressure-reducing valve, solenoid valve, inline pump, and elsewhere as indicated. Install NPS ¾ (DN 20) nipple and ball valve in blowdown connection of strainers NPS 2 (DN 50) and larger. Match size of strainer blow-off connection for strainers smaller than NPS (DN50).

PART 3 - EXECUTION

3.1. WORKMANSHIP:

A. General:

1. Install all piping, fixtures, equipment, and accessories as shown, and in strict accordance with the plumbing laws, rules, and regulations of the State and/or City. All work shall be done in a neat and orderly fashion and left in a condition satisfactory to the Architect/Engineer.

B. Piping:

1. All piping shall be run parallel or perpendicular to established building lines. Install piping so as to allow for expansion. Waste and vent piping occurring above floor slab shall be installed true and plumb. Extend vents at least 1 foot above roof, or to the top of the closest adjacent parapet wall, whichever is greater, and provide watertight flashing sleeves. Excavation and backfill shall be in accordance with Section 220000 of these specifications.

C. Fixtures:

1. Install fixtures true and plumb with building walls. Caulk all plumbing fixtures at joints along walls, countertops, and other intersecting surfaces. Locate fixtures as shown and per manufacturer's instructions. Furnish all required trim for fixtures to provide a complete and workable installation.

3.2. TESTS:

A. General:

1. All piping, fixtures, and equipment shall be inspected and approved before concealing or covering. All work shall be tested as required by Section 220000 of these specifications and shall be leak proof before inspection is requested. All tests shall be repeated if required by those making the inspection.

2. All potable water systems shall be flushed and disinfected in accordance with Section 220000 of these specifications. Following disinfection, system shall be flushed and water sampled to show compliance with requirements of public health authority having jurisdiction. If tested water does not meet requirements, disinfecting shall be repeated until water quality meets requirements.

3. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Gasket shall be molded and produced by Victaulic Company, Gruvlok, or Grinnell Mechanical Products, or equal. Verify gasket grade is suitable for the intended service. The grooved coupling manufacturer's factory trained representative shall provide on-site training for contractor's field personnel the use of grooving tools, application of groove, and installation of grooved end products.
   a. All grooved joint couplings, fittings, valves and specialties shall be the products of Victaulic Company, Gruvlok, Grinnell Mechanical Products, or equal.

4. Install the grooved piping in accordance with the latest recommendations as published by the manufacturer. Pipe shall be square cut, +/-0.30", properly deburred and cleaned. Mark pipe ends at the required location using a gauge supplied by the manufacturer to ensure full insertion into the coupling or fitting during assembly. Use a manufacturer's tool with the proper sized jaw for pressing.

B. Fixtures and Equipment:

1. Fill all plumbing fixtures with water and check for leaks or retarded flow. Repair as required. Adjust each piece of plumbing equipment as required to ensure proper functioning. Leave all fixtures and equipment in first class operating condition.

2. The Plumbing Contractor is responsible for all backflow devices to be inspected by a certified backflow technician before use of the building potable water system.

C. Smoke Test:

1. A smoke test shall be performed on the entire waste and vent system before building occupancy. After all fixtures are permanently connected and traps are filled with water, fill entire drainage systems with smoke under pressure of 1.3 pKa (1 inch of water) with a smoke machine. If leaks are detected, they shall be repaired and the smoke test shall be performed again until no leaks are found.

MUSGROVE ENGINEERING
234 S. Whisperwood Way
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PIPING SYSTEM TEST REPORT

STRUCTURE/BUILDING: _____ TEST NUMBER: _____

LOCATION: _____ CONTRACT NO._____

DESCRIPTION OF SYSTEM/PIPING BEING TESTED: _____

_____

_____

Description of Test Performed	Test Pressure	Test Duration	Pass/Fail
Hydrostatic: _____	P.S.I.	_____	_____
Inert Gas: _____	P.S.I.	_____	_____
Compressed Air: _____	P.S.I.	_____	_____
Waste & Vent Smoke Test**:** _____	1" Water Column	_____	_____

NAME AND TITLE OF PERSON IN CHARGE OF PERFORMING TEST'S FOR CONTRACTOR:

Name: _____ *Title:* _____

Signature: _____

I hereby certify that the above described system has been tested as indicated above and found to be entirely satisfactory as required in the contract specifications.

Signature of Inspector: _____ *Date:* _____

REMARKS: _____

_____

_____

_____

_____

END OF SECTION 220100

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING

SECTION 230000 - HVAC GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 SCOPE:

A. General:

1. The Bidding Requirements, Contract Requirements, and the General Requirements (Division 1) of these specifications shall govern all parts of the work.

B. Work Included:

1. Install work in accordance with these specifications and the accompanying plans. Furnish all labor, material, and equipment together with all incidental items not specifically shown or specified which are required by good practice to provide the complete mechanical systems as described.

2. The HVAC Contractor(s) and all Sub-tier Contractors shall provide installed equipment cut sheets and purchase orders required for utility rebates.

C. Coordination and Site Visits:

1. This section of the work requires examination of and reference to all architectural, structural, utility, and electrical drawings for construction conditions that may affect the work. Inspect the building site and existing facilities for verification of existing conditions. Base all measurements from established benchmarks. Any discrepancy between actual measurements and those indicated, which prevents following good practices or the intent of the drawings and specifications, shall be reported to the Architect/Engineer, and work halted until instructions are received from the Architect/Engineer.

1.2 CODES, PERMITS, FEES:

A. Install all work in accordance with applicable codes and standards. Obtain all required permits; pay all required fees including utility connections or extensions, in connection with this portion of the construction. Obtain all required certificates of inspection for the work.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP:

A. Materials:

1. All materials and equipment shall be of first quality, new, full size and weight, standard in every respect, and suitable for the space required. Use the same manufacturer for products of similar class or service, such as valves, pumps, controls, and air handlers. Protect all materials against loss, theft, or damage before and after installation.

2. Furnish equipment that will operate under all conditions of load without any sound or vibration that is objectionable in the opinion of the Architect/Engineer. Vibration or noise considered objectionable will be corrected by the

Subcontractor at his expense.

3. Furnish and install all necessary foundations, supports, pads, bases, and piers required for all materials and equipment furnished under this contract.

4. Provide all required firestopping at duct and piping penetrations of fire rated walls, floors, ceilings, and roofs. Firestopping shall be 3M Fire Barrier Sealant CP 25WB+ or 3M Fire Barrier Rated Foam FIP 1-Step, or approved equal.

5. Piping penetrations through walls, finished floors, and ceilings shall include one-piece stamped-steel escutcheons or one-piece floor plates.

B. Workmanship:

1. All materials and equipment shall be installed in a neat and workmanlike manner by competent specialists for each subtrade. Work shall be installed to the satisfaction of the Architect/Engineer with unsatisfactory work removed and reinstalled to his satisfaction at no extra cost to the Owner.

2. Provide all cutting and patching necessary to install the work specified in this section. Patching shall match adjacent surfaces. No structural members shall be cut without the approval of the Architect/Engineer. Provide sleeves at all piping penetrations of exterior walls and floors on grade. Provide all sleeves and inserts required before new floors and walls are built.

3. Locate all equipment that must be serviced in fully accessible positions. Provide clearance for removal of replacement parts and components, and with necessary couplings or flanges to remove the component for maintenance.

C. Protection of Equipment During Construction:

1. At the end of each shift, all duct openings and open ends shall be covered with a plastic poly sheeting film to protect against dust and construction contamination from entering the ductwork.

2.2 SUBMITTALS AND SUBSTITUTIONS:

A. Prebid Approval:

1. Manufacturer’s trade names and catalog numbers stated herein are intended to indicate the quality of equipment or materials desired. All manufacturers not specifically listed require prior approval. Submit catalog data, including specifications, of the proposed equipment to the Architect/Engineer for his approval at least 10 calendar days prior to bid opening. Notice of such approvals will be published in an addendum. Approval of listed alternate equipment manufacturers is for bidding only. Final approval is to be based on requirements of the plans and specifications.

B. Submittals:

1. Within thirty days after award of this contract, provide an electronic copy of a complete list of all materials and equipment proposed for this project. List shall contain make, type, manufacturer's name, and trade designation of all materials and equipment. Submittal shall also include manufacturer's complete specification for each item, including capacities, ratings, etc., and dimensions as required to check space requirements. The scheduled equipment is the basis of design for capacity, weights, physical size, etc. Alternate manufacturers shall not exceed the weight or physical size. Any changes to the Architectural, Structural, Mechanical, Electrical, and Control systems due to alternate manufactures shall be the responsibility of the Contractor and Supplier. Submittals for each major trade (i.e., dryside HVAC, wetside HVAC, or Plumbing) shall be submitted in a single complete package. Individual items will not be reviewed independently unless approved by the Engineer.

2. Approval of submittals shall not relieve the contractor from responsibility for deviations from the plans or specifications, unless he has, in writing, called the Architect's /Engineer's attention to deviations at the time of submission, and obtained his written approval. Approval of submittals does not relieve the contractor from responsibility for errors in shop drawings or literature.

C. Equipment Requiring Submittals:

1. Louvers
2. Penthouses
3. Split system air Conditioning (95% gas)
4. Exhaust Fans
5. Ceiling Fans
6. Electric heater
7. Vehicle Exhaust Gas Detection
8. Gas Fired Unit heaters
9. Grilles / Diffusers
10. Pipe Stands
11. Flex Duct

PART 3 - EXECUTION

3.1 ACCESSIBILITY & SAFETY:

A. Accessibility:

1. All equipment which must be serviced or operated shall be located in fully accessible position. Minor changes from the drawings may be made to allow for better accessibility. All changes shall be approved prior to actual installation.

2. Access panels shall be provided if required for accessibility. Access panels to be steel, flanged, hinged doors by Cendrex, or equal. Sized as required for installation. Subcontractor shall furnish the required panels to the General Contractor and the required location for all access panels, unless otherwise specified in the Architectural specifications. Panels shall be installed by the General Contractor.

B. Safety:

1. Subcontractor shall provide guards for all belt drives and rotating machinery.

3.2 COORDINATION:

A. Coordinate all work with the various trades involved to provide a complete and satisfactory installation. The exact details of ductwork and equipment are not shown. No additional compensation will be made for offsets or relocation required in coordination with other trades.

B. Alterations required due to improper supervision by the subcontractor shall be made at no extra cost, to the satisfaction of the Architect/Engineer.

3.3 ELECTRICAL:

A. Electric motors required for equipment specified in this section shall be provided and installed by this Subcontractor. Motor starters, disconnects, relays, pilot lights, etc., are in general, to be furnished and installed by the Electrical Contractor. Starters, relays, controls, etc., which are factory assembled into packaged equipment shall be furnished by the Mechanical Contractor under this section of the specifications.

B. All motors shall be provided with adequate starting and protective equipment as specified or required. Motor capacity shall be sufficient to operate driven device under all conditions of operation and load without overload. Minimum horsepower shall be as specified.

3.4 IDENTIFICATION AND CODING:

A. Painting:

1. All painting of mechanical equipment, accessories and ductwork shall be furnished and applied under the Architectural section of these specifications. All painting shall be completed before any identification markings are applied.

B. Pipe Labeling:

1. Piping shall be labeled with the fluid conveyed and the direction of flow:

a. On both sides of wall or floor penetrations.

b. Once on every straight run of pipe.

c. No more than 20-foot intervals.

d. No more than 10-foot intervals in congested areas.

e. Within 3 feet of each piece of equipment, valve, or control device.

C. Equipment Labeling:

2. Equipment tags shall be color coded and attached in visible location. Labels shall include:

a. Component identification designation (coordinated with construction drawings).

b. Area served (including areas or equipment of critical impact if equipment is shut-off).

c. Filter Size (when applicable).

d. Power Source (coordinated with electrical).

D. Label Color and Size Requirements

All Piping shall be All pipes, and equipment shall be labeled according to ANSI standard A13.1. See table below for examples.

Label Color Schedule Per ANSI A13.1	
Water (Heating, chilled, potable, boiler feed, etc.)	Green Background with White Letters
Compressed Air	Blue Background with White Letters
Natural Gas / Refrigerant / Steam	Yellow Background with Black Letters
Fire Suppression	Red Background with White Letters
Equipment Labels*	Black Background with White Letters
Supply Duct	Green Background with White Letters
Exhaust Air Duct	Yellow Background with Black Letters
Return / Relief Duct	Blue Background with White Letters
Outside Air Duct	Blue Background with White Letters

*Label all equipment that is on generator power with a Red Background and White Letters

Text Height Requirements			
Equipment Labels	Main Designation Supplemental Info Large Equipment w/viewing distances beyond 10 feet		¾" high text minimum ½" high text minimum 3" high text main label
Piping	O.D. of ¾" to 1-¼" O.D. of 1-½" to 2-⅜" O.D. of 2-½" to 7-⅞" O.D. of 8" to 10" O.D. over 10"	Letter Size: ½" high Letter Size: ¾" high Letter Size: 1-¼" high Letter Size: 2-½" high Letter Size: 3-½" high	Marker Size: 8" wide Marker Size: 8" wide Marker Size: 12" wide Marker Size: 24" wide Marker Size: 32" wide
Ducts	All Duct Sizes	Letter Height: 3.5"	
Ceiling Labels	Letter height: ½" Minimum		

3.5 TESTING:

A. Systems:

1. All systems, including heating, ventilating and air conditioning, shall be tested at the completion of the building to establish that the systems operate as specified and required. Testing shall be performed after air balancing is completed.

2. All controls shall be calibrated accurately and all equipment shall be adjusted for satisfactory operation. Excessive vibration or noise from any system shall be corrected.

3. The air conditioning system shall be tested for satisfactory operation when the outside air temperature reaches 60 degrees F. or warmer. All other systems shall be tested at building completion. All tests shall be performed in the presence of the Architect/Engineer or his representative.

3.6 BALANCING:

A. Scope:

1. Prior to final acceptance by the Owners, all air systems shall be balanced to deliver the quantities as specified or directed. The air balance shall be performed by an independent agency specializing in balancing and is certified by the National Environmental Balancing Bureau.

2. Balance contractor's main office shall be located within 100 miles from the project site.

3. The Mechanical Contractor shall provide assistance to the Balancing Contractor by identifying all installed mechanical systems and assisting access to all installed mechanical systems. All mechanical systems shall be completely operational and functional prior to the Balancing Contractor performing their specified work.

B. Air balancing:

1. Balancing of the air system shall consist of:
   a. Adjust all air volumes to the quantities shown, with allowable variation of plus 10, minus 10 percent.
   b. Record all system, zone, diffuser, grille, and register C.F.M. Use volume control devices to regulate air quantities only to the extent that adjustments do not create objectionable air motion or sound levels. Balancing Engineer shall work with the Contractor to set minimum & maximum CFM quantities for zone dampers, or zone dampers/heaters.
   c. Test and record all system static pressures, inlet and discharge, on all packaged units, fans, and terminal units. Vary total system air quantities by adjustment of fan speeds. Provide drive changes as necessary. Vary branch air quantities by damper regulation.
   d. Test and record motor full load amps and nameplate amps.
   e. Test and record entering and leaving temperatures at all coils.
   f. Adjust all automatically operated dampers, in cooperation with the Control Contractor, to the required settings. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions within specified tolerances. Where modulating dampers or economizers are provided, take measurements at full return air, minimum outside air, and 100 percent outside air mode of operation.
   g. Adjust diffusers and grilles for proper deflection, throw, and coverage. Eliminate drafts and excessive noise where possible.
   h. Mark final positions of all balance dampers with a red felt pen.
   i. Air systems shall be balanced in accordance with standard procedures and recognized practices of the Associated Air Balance Council, and the Testing Adjusting, and Balancing Bureau.

C. Quality Assurance:

1. The Balancing Contractor shall demonstrate to the Engineer of record, flow verification for at least 10% of the balanced devices as selected by the Engineer. If more than 25% of the tested devices do not meet the designed or balance report, then the entire system balance must be rebalanced.

D. Balance Reports:

1. Submit four copies of the air system balance report to the Architect/Engineer for evaluation and approval. Reports shall be on TABB/SMACNA forms that indicate information addressing each of the testing methods, readings, and adjustments.

3.7 CLEANING AND ADJUSTING:

A. Thoroughly clean all air conditioning units, air handling units, and all associated parts of the system at the completion of the work. Install new, clean air filters in all systems. Adjust all devices for proper operation and lubricate all equipment as required. Repaint any painted surface that has been damaged.

3.8 PROJECT CLOSEOUT:

A. Operations & Maintenance Manual:
The Contractor shall provide an operations and maintenance manual at least thirty days prior to completion of work. The manual shall be of the three-ring binder type, entitled "Operations and Maintenance Manual", with the job name and year of completion also included. O & M manuals shall be submitted in a single package. In addition, the contractor shall provide two consolidated electronic versions on two separate thumb drives with sections digitally bookmarked. Individual items will not be accepted independently unless approved by the Engineer. The manual shall include, as a minimum:

1. Maintenance instructions for all equipment, including lubrication requirements.

2. Equipment suppliers' names, addresses, and telephone numbers.

3. Equipment catalog cuts, ratings tables, model numbers, serial numbers, and accessories.

4. Parts numbers for all replaceable parts.

5. Air and/or water systems balance report as hereinbefore specified.

6. Control diagram or drawing and operation sequence.

7. Valve tagging chart as hereinbefore specified.

8. Filter chart listing unit callout, size of filters, and quantity of filters.

9. Guarantee letter as specified below.

10. Any additional information required to enable the Owner to properly maintain the building mechanical system.

11. Mechanical Equipment Start-up forms, which are included in this specification, if they are required.

12. After approval of the Operations and Maintenance Manual by the Architect/Engineer, the Contractor shall furnish two copies of the manual to the Owner.

B. Mechanical System Training Period:

1. After the mechanical system is completely installed and operational, the mechanical contractor shall provide a minimum of 8 hours training and instruction time for the building Owner or his representative. During this period, the contractor shall instruct the Owner in the operation and maintenance of all parts of the mechanical system, using the O & M manual where applicable. The contractor shall provide a copy of the Project Owner Mechanical Systems Training Form (attached to this specification), with proper signatures, to the Engineer prior to substantial completion and ensure that a copy is inserted into the project O & M manuals.

2. Video Taping – The mechanical contractor is to perform videotaping of the Owner training and instruction. Provide two (2) thumb drive USB to Owner and one (1) copy to be inserted into the O & M Manuals.

C. As-Built-Drawings:

1. Provide two sets of red-line mechanical drawings showing the work as it was actually installed. The drawings shall indicate all departures from the contract drawings. Make all notations neat and legible, with red indelible pencil. At the completion of the work, these as-built drawings shall be signed and dated by the Mechanical Contractor, and returned to the Architect/Engineer.

D. Guarantee:

1. All work furnished under this section shall be guaranteed in writing to be free from defective work or materials for a period of one year after acceptance of the contract. All repairs or replacements because of defective materials

or workmanship or noncompliance with code shall be provided without additional cost to the Owner. Contractor shall furnish a letter indicating above guarantee with space for date of acceptance and expiration of guarantee. Letter shall be included in O & M Manual.

END OF SECTION 230000

NAME OF PROJECT: _____

_____

OWNER MECHANICAL SYSTEM TRAINING FORM

Upon completion of the equipment and systems installation and connections, the contractor shall assemble all required equipment factory representative and subcontractors together for system Owner training.

These people shall assist in Owner training their system(s) and remain at the site until the total system operations is acceptable and understood by the Owner's representative(s), maintenance and/or operation personnel, on operation and maintenance of their equipment. To prove acceptance of operation and instruction by the Owner's representative(s), the contractor shall provide a copy of this form, with proper signatures, to the Engineer prior to substantial completion, and ensure that a copy is inserted into the project Operation and Maintenance manuals.

> "I, the Contractor, associated factory representative and subcontractors, have started each system and the total system(s); and have proven their normal operation to the Owner's representative(s) and maintenance/operation personnel and have instructed him/them _____, hours in the operation and maintenance thereof."

_____	_____
Owner's Representative	Contractor
_____	_____
Signature	Signature
_____	_____
Date	Date

SECTION 230100 - HEATING, VENTILATING, AND AIR CONDITIONING

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the work necessary for the heating, ventilating, and air conditioning system, complete. The HVAC General Requirements, Section 230000, is to be included as a part of this section of the specifications.

1.2 CODES & STANDARDS

A. The heating, ventilating, and air conditioning system shall be installed in accordance with the latest edition of the following codes and standards:

1. International Mechanical Code (IMC)
2. International Building Code (IBC)
3. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
4. National Fire Protection Association (NFPA)
5. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)

PART 2 - PRODUCTS

2.1 AIR DISTRIBUTION

A. Ductwork:

1. Low pressure ductwork shall be fabricated from galvanized sheet metal, unless otherwise indicated. Construction requirements shall be in accordance with SMACNA - HVAC Duct Construction Standards, metal and flexible, latest edition. All sheet metal ductwork shall be sealed with McGill United Sheet Duct Sealer or equal, in accordance with the International Energy Compliance Code, latest edition. Adjustable (twist) elbows are not allowed. Low pressure ductwork shall be constructed to the following SMACNA static pressure standards:
   a. Supply air ductwork = 2" W.G.
   b. Return, Exhaust, Outside Air Intake ductwork = 1" W.G.

2. Low pressure ductwork located exposed in exposed ceiling areas, shall be standard galvanized sheet metal, paint-lock spiral ductwork is not acceptable. All ductwork which is to be installed in exposed ceiling areas shall be stored inside from the time of manufacturing to installation; no outside storage shall be acceptable. Sheet metal shall have a clean, uniform color. Joints shall be sealed evenly and in a professional manner with silver silicon. Discolored or damaged ductwork unacceptable to the Engineer shall be replaced at the Contractors expenses.
   a. Joints: 0” to 20” diameter, interior slip coupling beaded at center, fastened to duct with screws and with sealing compound applied continuously around joint before assembling and after fastening. Sealing compound shall be applied in an evenly and professional manner.
   b. Joints 22” – 72” diameter, use 3-piece, gasketed, flanged joints consisting of 2 internal flanges (with integral mastic sealant) split to accommodate minor differences in duct diameter, and one external closure

band designed to compress gasketing between internal flanges. The manufacturer shall be Ductmate Spiralmate or equal.

c. All takeoff or branch entrances shall be by means of factory-fabricated fittings. Field taps shall not be allowed.

3. Low pressure ductwork which is exposed or located in mechanical rooms shall be fabricated from galvanized sheet metal. Construction requirements shall be in accordance with SMACNA HVAC Duct Construction Standards, metal and flexible, latest edition.

4. Low or medium pressure, double wall acoustically insulated ductwork shall have a minimum 1" insulation, & perforated metal lining, & shall be McGill Acousti-k27, Metaltec, or equal.

5. Vehicle exhaust ductwork sealant shall be rated for minimum of 250 deg. F.

6. Type – 1 Kitchen Hood exhaust ductwork shall be fabricated from minimum 16 gauge welded steel and shall be constructed in strict accordance with the latest edition of the International Mechanical Code.

   Type – 2 Kitchen Hood exhaust ductwork shall be fabricated from aluminum sheet metal, in accordance with SMACNA Standards

7. Ductwork penetrating protective elements of fire-rated corridor walls, with no openings into corridor, shall be constructed of minimum 26-gauge galvanized steel.

8. Ductwork where humidifier grid is located shall be constructed of a minimum 304 stainless steel ductwork 18" prior to the grid and 24" after the grid. No interior liner shall be installed at the locations noted. The exterior of the duct shall be wrapped per the specifications as noted to meet energy code.

9. Exterior exposed ductwork shall be fabricated from galvanized sheets. All joints and seams shall be standing-seam type with sealing mastic to provide watertight construction. All ductwork shall be internally insulated as hereinafter specified. All exposed surfaces shall be primed and painted two coats of exterior enamel paint, color as selected by the Architect.

10. Shower and locker room exhaust ductwork shall be constructed of galvanized sheet metal, in accordance with SMACNA standards.

11. Flexible ducts shall be listed per UL-181 standard as Class 1 flexible, acoustical insulated air duct and complying with NFPA Standards 90A and 90B. Ducts shall be insulated with a minimum R-6 value and shall have a maximum vapor transmission value of .05 perms. Ducts shall be factory made with and composed of: a PE liner duct permanently bonded to a coated spring steel wire helix. Duct shall be chlorine free and carry a ten-year warranty for the labor to replace the duct should there be a factory defect. Low permeability outer vapor barrier of fiberglass bidirectional reinforced metalized laminate shall complete the composite. Pressure rating shall be 6" w.g. and maximum length shall be 6 feet. Attach to duct take-off, diffuser, register, or grille only, with nylon or stainless-steel duct clamp or tie. Flexmaster 1-M, or approved equal.

B. Duct Accessories:

1. Turning vanes shall be installed in all rectangular or square elbows. Vanes shall be installed in vane side rails. Vanes shall be single wall vanes and be fabricated and installed per SMACNA standards.

2. Volume dampers shall be fabricated from galvanized steel in accordance with SMACNA standards. Dampers shall have a continuous galvanized steel shaft on ducts 13" diameter or larger, with damper regulators and end bearings. Dampers located above inaccessible ceilings (hard ceilings) shall be furnished with concealed ceiling damper regulators. Dampers shall be pressure rated equal to the design duct pressure rating. Dampers shall be provided at all diffuser and supply/exhaust grille takeoffs, regardless if indicated on the plans. Dampers are not

required on the return air takeoffs unless specifically indicated.

3. Flexible connections shall be provided at all rotating fan equipment. Connectors shall be of fire, water, and weather resistant material.

4. Fire dampers shall be UL-labeled with frame, locking assembly, accordion style folded blades, and fusible link. Dampers shall be Style B with blades stored outside of the air stream. Provide duct inspection door at each fire damper. Minimum size shall be 8" x 8". Inspection door shall be provided with a steel frame with gasketing around periphery, and a hinged panel. Dampers located in moisture laden air conditions shall have all metal parts made of stainless steel.

5. Combination smoke and fire dampers are to be fusible link type with factory sleeve and electric operator located exterior to duct 120 V. operator to be spring return, fail closed with 212 degrees F link and UL label. Provide duct inspection door at each damper. Minimum size shall be 8" x 8". Inspection door shall be provided with a steel frame with gasketing around periphery, and a hinged panel. Dampers located in moisture laden air conditions shall have all metal parts made of stainless steel. Belimo operators/actuators only.

6. Smoke dampers are to be ultra-low leakage (less than 4CFM/ft^2) type with factory sleeve and electric operator located exterior to duct 120 V. operator to be spring return, fail closed and UL label. Provide duct inspection door at each damper. Minimum size shall be 8" x 8". Inspection door shall be provided with a steel frame with gasketing around periphery, and a hinged panel. Dampers located in moisture laden air conditions shall have all metal parts made of stainless steel. Belimo operators/actuators only.

7. A plastic flex elbow support by Flexible Technologies Inc., Titus FlexRight, or approved equal, is required at all flex duct elbows supplying ceiling diffusers & return grilles. Elbow support shall be fully adjustable, or be of universal design, to support flexible diameters 6” – 16”, sized to fit flex duct. Elbow supports shall be UL rated for use in return air plenum spaces. At the Contractor’s option, a hard elbow may be used in lieu of a flexible elbow.

C. Diffusers, Registers, Louvers, Grilles, Weathercaps:

1. See Drawings for requirement.

D. Duct Cleanliness:

1. Ductwork Delivery to Site
   a. During ductwork being delivered from the premises of the manufacturer, care must be taken to prevent damage during transportation and off-loading.

2. Temporary Storage
   a. Job site duct material storage areas should be clean, dry, and located away from high dust generating processes such as masonry or tile cutters, cutoff saws, drywall sanding, mortar and plaster mixers, roof pitch kettles, portable electric generators, and main walkways that will be constantly broom swept. The general contractor should designate a suitable area for temporary storage.
   b. To prevent ductwork material damage from standing water, storage locations should include pallets or blocking to keep fabricated metal ductwork above the floor surface. If there is a risk of water runoff from above or dusty areas cannot be avoided, coverage should be used to protect stored materials.

3. Installation
   a. Before the installation of individual duct sections, they are to be inspected to ensure that they are free from all debris.
   b. All ductwork risers must be covered to prevent the entry of debris into the duct.
   c. Access covers shall be firmly fitted in position on completion of each section of the work. Open ends on completed ductwork and overnight work-in-progress shall be sealed.
   d. The working area should be clean and dry and protected from the elements.

e. The internal surfaces of the uninsulated ductwork shall be wiped to remove excess dust immediately prior to installation.

2.2 INSULATION

A. General:

1. All insulation shall have composite fire and smoke hazard ratings, as tested by ASTM E-84, NFPA 255, and UL 723, not exceeding:

Flame Spread	25
Smoke Developed	50

B. Ductwork - External Insulation:

1. Insulation shall be fiberglass insulation with aluminum foil scrim kraft facing. All joints shall be taped with UL listed tape to provide a continuous vapor barrier. The following ducts shall be externally insulated:
   a. Supply ducts in unconditioned spaces (unless internally insulated)
   b. Return ducts in unconditioned spaces (unless internally insulated)
   c. Combustion air ducts
   d. Outside air intake ducts
   e. Exposed ductwork located within conditioned spaces shall not be externally insulated

2. Insulation thickness & "R" values shall be as follows:
   a. R-6 – ducts located in unconditioned spaces (such as above ceiling, but below roof insulation) and outside air intake ducts.
   b. R-12 – ducts located outside of the building's insulation envelope (such as above the attic insulation).

C. Ductwork - Internal Insulation:

1. Insulation shall be flexible fiberglass duct liner. Liner shall be attached with 100% coverage of manufacturers recommended adhesive and welded or mechanically fastened galvanized steel pins. All exposed edges of liner shall be coated with adhesive. Duct dimensions shown are net air side face-to-face of duct liner. The following ducts shall be internally insulated:
   a. Supply and Return ducts within 15'-0" of air handler
   b. Supply and Return ducts in mechanical rooms
   c. 15’-0” downstream of VAV terminal units.
   d. 15’-0” downstream of fan coil units.
   e. Exterior ducts (located outdoors)
   f. Buried ductwork below concrete slab
   g. Ducts as indicated on plans

2. Insulation thickness & "R" values shall be as follows:
   a. R-6 – ducts located in unconditioned spaces (such as above ceiling, but below roof insulation, or buried ductwork) and outside air ducts located outside of the building envelope.
   b. R-12 – ducts located outside of the building's insulation envelope (such as above the roof).

E. Piping Insulation - Refrigerant Piping:

1. Insulation on refrigerant suction piping shall be one-piece preformed flexible formed tubing with built-in closed cell vapor barrier. Seal laps and butt joints with moisture resistant adhesive to provide a continuous vapor seal. Cover all insulated suction lines exposed on the exterior of the building with E-Flex Guard by Airex Manufacturing, Inc. At exterior wall penetration provide Titan outlet by Airex Manufacturing, Inc. or equal with an Insulation thickness

as follows:

Refrigerant line set type	Nominal Pipe Diameter 1" and less	1" to < 1½"	1 ½" and above
Located with-in the conditioned spaces			
Suction	½"	1"	1"
Liquid	not required		
Discharge (hi/low pressure)	1"	1"	1"
Located outside the conditioned spaces			
Suction	½"	1"	1"
Liquid	not required		
Discharge (hi/low pressure)	1 ½"	1 ½"	2"

F. Piping Insulation - Exterior (Outdoor) Piping:

1. Piping located outdoors shall be insulated as specified above. In-addition piping shall be covered with a weather-proof aluminum alloy 3003 or 3105 jacket meeting ASTM standard B209, minimum 0.016" think, installed per the manufacturer's installation requirements. At a minimum the following installation shall occur. The jacketing overlap shall be a minimum of 2". Horizontal piping shall have the jacket seams located at the 3 o'clock or 9 o'clock position with the seam joint openings point downward to shed moisture. Vertical piping shall have the upper jacket seams overlap the lower seam to shed moisture. Valve handles and gauges shall be positioned on the bottom to help prevent water penetration. Banding shall be used to secure the jacketing; screws, rivets, and all other fasteners capable of penetrating the underlying vapor retarder shall be prohibited. Jacketing sealant shall be applied to all longitudinal and circumferential joints and the sealant shall be located between the aluminum jacket, not at the outer lip.

G. Equipment Insulation:

1. Equipment shall be insulated with 2" thick fiberglass, minimum 6 pounds/cubic foot density. Insulation shall be finished with hydraulic setting insulating cement (1/2" thick), 6-ounce canvas, and one layer of Arabol over entire surface. Equipment to be insulated includes the following:
   a. Hot water expansion tank
   b. Air separator
   c. Domestic hot water storage tank

2.3 VIBRATION ISOLATION

A. General:

1. All rotating equipment and appurtenances connected to rotating equipment shall be vibration isolated from the supporting structure. No metal-to-metal contact will be permitted between fixed and floating parts. All metal isolators exposed to weather shall be hot dipped galvanized after fabrication. Piping connected to rotating equipment shall be hung with spring hangers for the first 50 pipe diameters.

B. Floor Mounted Spring Isolators:

1. Isolators shall be free standing, laterally stable, and include acoustical friction pads and leveling bolts. Isolators shall have a minimum ratio of spring diameter to operating spring height of 1.0 and an additional travel to solid equal to 50% of rated deflection.

C. Floor Mounted Neoprene Pads:

1. Isolators shall be neoprene waffle or combination neoprene and cork sandwich. Pads shall be sized and selected as per manufacturers loading requirements.

D. Spring Hangers:

1. Vibration hanger shall contain a spring and double deflection neoprene element in series. Spring shall have a diameter not less than 0.8 of compressed operating spring height. Spring shall have a minimum additional spring travel of 50 percent between design height and solid height. Spring shall permit a 15-degree angular misalignment without rubbing on hanger box.

2.4 SEISMIC SUPPORTS

A. All equipment, ductwork, and piping shall be seismically supported as required by the International Building Code, latest edition. Support details shall be as indicated on the Drawings.

2.5 CONTROL SYSTEM

A. General:

1. The Mechanical Contractor shall be responsible for a complete and operable control system, including equipment, installation, and accessories required to perform the required control functions. All control conduit and wiring shall be furnished by the Electrical Contractor. Thermostats, sub-base switches, remote control devices, etc., shall be supplied by the Mechanical Contractor and installed and connected by the Mechanical Contractor. The Mechanical Contractor shall furnish the Electrical Contractor with wiring diagrams for all mechanical equipment and controls.

2. The Mechanical Contractor shall be responsible for installing all control valves, water flow switches, temperature wells, control dampers, and related equipment which is furnished by the Control Contractor.

4. The control system shall be basically electric, with supplementary electronic devices as required.

5. The Control Contractor shall be a contractor who is regularly engaged in control system work and can furnish a verified list of satisfactory installations of this type and size, for a period of 5 years or more.

B. Control Equipment and Accessories:

1. Control Dampers:
   a. All control dampers are to be furnished under this section, except those specified to be furnished with the air handling units. Damper blades shall be fabricated of 22-gauge galvanized sheet steel and frames shall be not less than 16-gauge galvanized steel. Blades shall be maximum 10 inches wide, 50 inches long, and shall be provided with neoprene gasketed edges and oilite bronze or nylon bearings. Dampers shall be ultra-low leakage, opposed blade type for proportional action and parallel blade type for two-position action. Leakage performance shall be a maximum of 3 cfm per sq, ft. @ a pressure differential of 1” w.g. Provide damper operators for all motorized dampers and louvers. Belimo or approved equal. Submittals shall include leakage and pressure drop data for all control dampers. All outside air dampers shall fail closed.

2. Control Valves:
   a. Control valves 2-1/2" and smaller shall be screwed, 3" and larger shall be grooved or flanged. Screwed valves shall be bronze or cast brass, grooved valves shall be ductile iron, and flanged valves shall be cast iron or cast steel. Three-way valves shall have contoured plugs for linear flow characteristics and constant total flow throughout the stem travel. Straight-thru valves shall be single seated and have equal percentage

characteristics for water service. Flat discs shall be used for on-off control only. All valves shall be stainless steel stems, replaceable seats, and self-adjusting Teflon or rubber packing. All heating control valves shall fail open. Belimo or approved equal.

3. Air Duct Smoke Detector:
   a. Smoke detectors shall be products of combustion detector and shall be UL listed. The unit shall be designed for detection of combustion gases, fire, and smoke in air ducts in compliance with NFPA Pamphlet 90A. The sheet metal contractor shall provide a minimum 18”x18” hinged access door, in inaccessible ceilings, for each detector that is furnished. The sheet metal contractor is also responsible for providing all necessary transitions in the ductwork for mounting of the duct detector.

4. Thermostats:
   a. Thermostats shall be 7-day programmable type, with automatic changeover from heating to cooling, be provided with auxiliary contacts.
   b. Thermostats shall be provided with lockable covers.
   c. Thermostats installed on exterior walls shall be mounted on an insulating block, or on foam insulation filled J-box.
   d. All thermostats shall have a mounting height of 46 inches, to the centerline of the device, unless otherwise noted on electrical drawings.

5. Equipment Control Schematics:
   a. See Drawings for schematics and sequence of operations.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. General:

1. Install all materials and equipment as shown and in strict accordance with the applicable codes for the State and/or city. Plans do not attempt to show exact details of all piping and ductwork, and no extra payment will be allowed for offsets required due to obstructions by other trades. All work shall be done in a neat and orderly fashion and left in a condition satisfactory to the Architect/Engineer.

2. All piping shall be run parallel or perpendicular to established building lines. Install piping to allow for expansion. Install all valves with stems horizontal or above. Install air vents at all high points. Provide all piping which passes through walls, floors, or ceilings with standard weight pipe sleeves.

3. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Gasket shall be molded and produced by the grooved coupling manufacturer. Verify gasket grade is suitable for the intended service. The grooved coupling manufacturer’s factory trained representative shall provide on-site training for the contractor’s field personnel in the use of grooving tools, application of groove, and installation of groove end products.

4. Install the grooved piping and fittings in accordance with the latest recommendations as published by the manufacturer. Pipe shall be square cut, +/-0.030”, properly deburred and cleaned. Mark pipe ends at the required location using a gauge supplied by the Manufacturer to ensure full insertion into the coupling or fitting during assembly. Use a manufacturer’s tool with proper sized jaw for pressing.

B. Insulation:

1. All piping insulation shall be applied over clean, dry surfaces after the system has been pressure tested and any

leaks corrected. The finished appearance of all insulation shall be smooth and continuous. Provide coat of insulating cement where needed to obtain this result.

2. Flexible duct insulation shall be secured to duct surface with 4-inch-wide bands of adhesive applied on maximum 18-inch centers. Additional galvanized tie-wire support shall be furnished as required and recommended by the insulation manufacturer.

C. Diffusers, Registers and Grilles:

1. All diffusers, grilles, and registers shall be installed tight on their respective mounting surfaces and shall be accurately centered on ceiling tile, recesses, windows, or doors.

D. Ductwork:

1. All sheet metal work shall be done by qualified, experienced mechanics in accordance with the requirements of ASHRAE and the latest edition of the applicable SMACNA Manual. All ductwork shall be installed in a neat and orderly manner, and shall be adequately supported to prevent vibration or sagging. All sheet metal ductwork shall be sealed with United-Sheet Metal Duct Sealer or equal.

E. Air Conditioning Units:

1. Units shall be installed approximately where shown on the plans to provide access space for filter changing, motor, drive and bearing servicing, and fan shaft and coil removal. Pipe drain pan connection through a running trap to floor drain. Unit shall not be operated until filters are installed. Isolate sheet metal ducts from all fans with flexible connectors.

F. Condensing Units/ Heat Pumps:

1. Units located at grade shall be positioned such that they are beyond the roof drip line. Units shall be installed on a 6” concrete pad.

2. Units located on flat rooftops shall be provided with Miro Industries Model HD, or equal, heavy duty galvanized roof support with adjustable legs, sized 6 inches larger, in each direction, than equipment footprint.

END OF SECTION 230100

SECTION 260100 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:
1. Definitions.
2. Code compliance.
3. Drawings and specifications.
4. Submittals.
5. Guarantee of installation.
6. Record documents.
7. Maintenance manuals.
8. Delivery, storage and handling.
9. Temporary Electrical services.
10. Instruction of Owners personnel.
11. Rough-ins.
12. Fees and permits.
13. Electrical installations.
14. Cutting and patching.
15. Excavation and backfilling.

B. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in all Sections of Division 26 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation. All specified products shall be installed in accordance with all manufacturers' instructions and requirements.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and electrical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.4 CODE COMPLIANCE

A. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to the following:
   1. Occupational Safety and Health Act Standards (OSHA).
   2. ANSI/IEEE C-2 - National Electrical Safety Code.
   3. ADAAG (ADA) Standards - Americans with Disabilities Act.
   4. CABO-ANSI A117.1.
   5. IEEE Standards.
   6. Underwriter's Laboratory – U.L. All products shall be U.L. Listed.
   7. NFPA – National Fire Protection Association Codes and Standards of Installation.
      a. NFPA 70 – National Electric Code
      b. NFPA 72 – National Fire Alarm Code
      c. NFPA 101 – Life Safety Code
      d. NFPA 110 – Standard for Emergency and Standby Power Systems
   8. NECA - Standard of Installation.
   9. NEMA – Standard of Installation
   10. International Building Code
   11. International Fire Code
   12. International Energy Conservation Code.

B. Work to be executed and inspected in accordance with local codes and ordinances. Permits, fees or charges for inspection or other services shall be paid for by this Contractor. Local codes and ordinances are to be considered as minimum requirements and must be properly executed without expense to the Owner; but do not relieve the Contractor from work shown that exceeds minimum requirements.

1.5 DRAWINGS AND SPECIFICATIONS

A. All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.

B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.

1.6 SUBMITTALS

A. General: Follow the procedures specified in Division 01 Section "SUBMITTALS".

B. Substitutions and Material Submittals: By specific designation and description, standards are established for specialties and equipment.

C. Other makes of specialties and equipment of equal quality will be considered, provided such proposed substitutions are submitted to the Architect for approval at least seven (7) calendar days prior to bid opening. A schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed as a substitution shall be submitted together with a single copy of the manufacturer's complete specifications. A list of approved substitutions will be published as an Addendum.

D. Within thirty (30) days after award of contract, the Contractor shall submit in six (6) copies a schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed for use and implementation. This schedule shall be accompanied by the manufacturer's complete specification, in six (6) copies, for each equipment item or materials used, give complete information as to capacities, ratings, kind of material used, finish guarantee, etc., and such dimensions as are necessary to check space requirements. When approved, such schedule and drawing shall be in addition to these specifications and shall be in equal force in that no variation shall be permitted. The Architect is to be the sole judge as to the quality of any material offered as an equal. See General Conditions and Supplementary Conditions to the Contract.

E. Design is based on equipment as listed in schedules on drawings and included in these specifications. All changes in foundations, bases, supports, connections, controls, space, openings, walls and ceilings and sound and vibration isolation, seismic support, and electrical and mechanical characteristics required by alternate equipment specified, submitted and approved shall be made at no additional cost to the Owner.

F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

G. Increase, by the quantity listed below, the number of electrical related shop drawings, product data and samples submitted to allow for required distribution plus two (2) copies of each submittal required, which will be retained by the Electrical Consulting Engineer.

1. Shop Drawings – Initial Submittal: one (1) additional print(s).
2. Shop Drawings – Final Submittal: one (1) additional print(s).
3. Product Data: one (1) additional copy of each item(s).

H. Additional copies may be required by individual sections of these Specifications.

1.7 ELECTRONIC SUBMITTAL PROCEDURES

A. Summary:

1. Shop drawings and product data submittals shall be transmitted to Architect in electronic (PDF) format using a website service designed specifically for transmitting submittals between construction team members.
2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. The electronic submittal process is not intended for color samples, color charts, or physical material samples.

B. Procedures:
1. Create submittal log by inserting required submittals listed in individual specification section.

2. Submittal Preparation – Contractor may use any or all of the following options:

    a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via the website.
    b. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via email.
    c. Subcontractors and Suppliers provide paper submittals to Scanning Service which electronically scans and converts to PDF format.

3. Printed Submittals: Provide two printed sets of submittals for shop drawings for structural framing in addition to electronic submittals.
4. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
5. Contractor shall transmit each submittal to Architect using the website.
6. Architect / Engineer review comments will receive email notice of completed review.
7. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
8. Submit paper copies of any reviewed submittals not submitted electronically at project closeout for record purposes in accordance with Section 017700 – CLOSEOUT PROCEDURES.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not a as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable. Include the following information, as applicable.
    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specification.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

3. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printing performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
4. Submit Product Data before or concurrent with Samples.
5. Submit Product Data in the following format.
    a. Electronic (PDF) format.

D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not bas Shop Drawings on reproductions of the contract Documents or standard data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the Following information, as applicable:
    a. Identification of products.

b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets a least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm)
3. Submit Shop Drawings in the following format:
   a. Electronic (PDF) format.

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number title of application Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Sample not incorporated with Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

F. Coordination Drawings: Comply with requirements specified in Division 01 Section "PROJECT MANAGEMENT AND COORDINATION."

G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects names and addresses, contact information of architects and owners, and other information specified.

H. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

J. Manufacturer Certificates: Submit written statements on manufacture's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

M. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indication and interpreting test results of material for compliance with requirements in the Contract Documents

N. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency

O. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "QUALITY REQUIREMENTS."

P. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

Q. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

R. Field Test Reports: Submit reports indicating and interpreting results of field test performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

S. Maintenance Data: Comply with requirements specified in Division 01 Section "OPERATION AND MAINTENANCE DATA."

T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page number.

1.8 GUARANTEE OF INSTALLATION

A. All work under this section shall be guaranteed in writing to be free of defective work, materials, or parts for a period of one (1) year from the date of Substantial Completion.

A. Manufacturer's specific warranties and those specified in this Section shall be included in the Contractor's Guarantee of Installation.

B. Repair, revision or replacement of any and all defects, failure or inoperativeness shall be done by this section at no cost to the Owner.

1.9 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, indicate the following installed conditions:
   1. Conduit racks, size, location, and routing, for interior locations. Show all wiring device locations and connections (including routing), control locations, disconnect switch locations, and final equipment locations including actual dimensions.
   2. Luminaire locations and wiring connections and raceway routings.
   3. Update luminaire schedule to reflect actual manufacturer's components used complete with updated part numbers and lists.
   4. Underground ductbank locations, routings, and quantity of conduits utilized.
   5. All approved substitutions, Contract Modifications and actual equipment and materials installed.
   6. Contract Modifications, actual equipment and materials installed.

1.10 MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, include the following information for equipment and systems:
   1. Description of function, normal operating characteristics and limitations, performance and engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
   2. Manufacturer's printed operating procedures to include start-up, break-in and routine and normal operating instructions, regulation, control, stopping shutdown and emergency instructions.
   3. Maintenance procedures for routine preventative maintenance and troubleshooting, disassembly, repair and reassembly, aligning and adjusting instructions.
   4. Servicing instructions and schedules.
   5. Complete inventory list of ALL spare and loose parts delivered to Owner at completion of work. Inventory list shall include the applicable specification section, description of parts, manufacturer make/model, quantity and current list pricing.

1.11 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle materials in a manner to prevent damage or interference with traffic conditions.

B. Protect equipment from weather and dampness.

C. All material stored on site shall be protected to Owner's standards. Owner may reject any or all material documented to have been improperly stored. Replacement of improperly stored material shall be solely at the contractor's expense.

1.12 TEMPORARY ELECTRICAL SERVICES

A. Temporary wiring for construction light and power for the general contractor or other subcontractors shall not be included as a part of this section of the work. Refer to Division 01 regarding payment for the electrical energy used for construction light and power and testing of the new installation.

1.13 INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall conduct an on-site instructional tour of the entire project. The personnel designated by the Owner shall be instructed in: operation of all electrical systems, elementary trouble-shooting procedures, preventive maintenance procedures, uses of Operation and Maintenance Manuals, relamping and cleaning of lighting fixtures and operation of all communication systems. Refer to Division 1 for additional requirements.

1.14 PRODUCT SOURCE LIMITATIONS

A. Products specified in Division 26 Section " SWITCHBOARDS", "PANELBOARDS" and "ENCLOSED SWITCHES AND CIRCUIT BREAKERS" shall be obtained through one source through a single manufacturer. Source limitations in these individual sections shall not be construed to allow sourcing within these individual sections on an independent basis.

1.15 INCENTIVES AND REBATES

A. All incentives and rebates offered by outside agencies relating to Energy Efficiency or Tax Incentives offered by Governmental agencies shall be considered property of the Owner and shall not be granted to any contractor performing work on the project.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 FEES AND PERMITS

A. Arrange and pay for any fees, permits, connections charges, hook-up fees, etc. required with local governing bodies, utilities, etc.

3.2 UTILITY SERVICES

A. Arrange with Utility Company for permanent electrical services to the facility.

B. Install electrical service entrance in accordance with Utility Company's rules and regulations.

C. Make arrangements with Utility Company to obtain permanent electric services to the project.

D. Coordinate meter and metering conductors provided and installed by Utility Company.

3.3 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in all other Divisions of work for rough-in requirements.

3.4 ELECTRICAL INSTALLATIONS

A. General: Sequence, coordinate and integrate the various elements of electrical systems, materials and equipment. Comply with the following requirements:
   1. Coordinate electrical systems, equipment and materials installation with other building components. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain serviceability and code compliance.
   2. Verify all dimensions by field measurements.
   3. Arrange for chases, slots and openings in other building components during progress of construction to allow for electrical installations.
   4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components as they are constructed.
   5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the Building.
   6. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
   7. Install systems, materials and equipment to conform with approved submittal data, including coordination drawings, to the greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirement, refer conflict to the Architect.
   8. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components where installed exposed in finished spaces.
   9. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components and as required by Code. As much as practical, connect equipment for ease of disconnecting with minimum of interference with other installations.
      a. All electrical items, equipment, etc. requiring access and maintenance to be provided with access panels by electrical contractor when located behind hard inaccessible finished surfaces. See Architectural ceiling plans for ceiling and wall finish types.
   10. Install access panel or doors where equipment is concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section “ACCESS DOORS”.
   11. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
   12. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
   13. Provide foreman in charge of this work at all times.
   14. Where the specifications call for an installation to be made in accordance with Manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the Owner's representative.

3.5 QUALITY ASSURANCE

A. Provide a meaningful Quality Assurance program. To assist the Contractor in this program, the specifications contained herein are set forth as the minimum acceptable requirements. This does not relieve the Contractor from executing other Quality Assurance measures to obtain a complete operating facility within the scope of this project.

B. The Contractor shall insure that all workmanship, all materials employed, all required equipment and the manner and method of installation conforms to accepted construction and engineering practices, and that each piece of equipment is in satisfactory working condition to satisfactorily perform its functional operation.

C. Provide quality assurance tests and operational check on all components of the electrical distribution system, all lighting fixtures, and communication systems.

3.6 SECURITY HARDWARE

A. All visible hardware in detention areas shall be detention-grade, torx-type heads with center-pin reject configuration.

B. Detention areas shall include all holding areas, and holding movement areas.

3.7 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 01 Section "CUTTING AND PATCHING." In addition to the requirements specified in Division 01, the following requirements apply:
   1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
   2. No joists, beams, girders, structural columns, or other structural assemblies/components shall be cut by any contractor without obtaining written permission from the Architect.

B. Perform cutting, fitting and patching of electrical equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
   1. Patch finished surfaces and building components using new materials specified for the original installation and experienced Installers. Installer's qualifications refer to the materials and methods required for the surface and building components being patched.
      a. Refer to Division 01 Section "REFERENCES" for definition of "Experienced Installer."

3.8 EXCAVATION AND BACKFILL

A. General: Perform excavation and backfilling in accordance with Civil Documents. In addition to the requirements specified, the following requirements apply:
   1. Protection of Installed Work: During excavating and backfilling operations, protect adjacent installations.

B. Perform excavating and backfilling for electrical equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

END OF SECTION 260100

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Metal-clad cable, Type MC, rated 600 V or less.
3. Connectors, splices, and terminations rated 600 V and less.

B. Related Requirements:

1. DIVISION 26 Section "SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS, CABLING" for installation requirements for sleeves, sleeve seals, non-rated penetration, and fire rated penetrations.
2. DIVISION 26 Section "CONTROL-VOLTAGE ELECTRICAL POWER CABLES" for control systems communications cables and Classes 1, 2, and 3 control cables.
3. DIVISION 27 Section "COMMUNICATIONS HORIZONTAL CABLING" for twisted pair cabling used for data circuits.

1.3 DEFINITIONS

A. RoHS: Restriction of Hazardous Substances.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: Indicate type, use, location, and termination locations.

1.5 CLOSEOUT SUBMITTALS

A. Field quality-control test and reports.

1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alcan Products Corporation; Alcan Cable Division.
2. American Insulated Wire Corp.; a Leviton Company.
3. General Cable Corporation.
4. Senator Wire & Cable Company.
5. Southwire Company.
6. Republic Wire Company.

2.3 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

D. Conductor Insulation. Comply with NEMA WC70 for the following types:
1. Type THHN and Type THWN-2: Comply with UL 83.

2.4 METAL-CLAD CABLE, TYPE MC

A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.

3. RoHS compliant.
4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Circuits:

1. Single circuit.

D. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

E. Ground Conductor: Insulated.

F. Conductor Insulation. Comply with NEMA WC70 for the following:

1. Type TFN/THHN/THWN-2: Comply with UL 83.

G. Armor: Steel, interlocked.

2.5 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, and marked for intended location and use.

B. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

C. Jacketed Cable Connectors: For steel jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.

D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Copper.
2. Type: Two hole with long barrels.
3. Termination: Compression.

2.6 IDENTIFICATION

A. Identify and color-code conductors and cables according to DIVISION 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Stranded Copper.

B. Branch Circuits: Stranded Copper.

3.2 CONDUCTOR INSULATION, APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.

B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces, Ceiling Spaces and Service Areas: Type THHN-THWN–2, single conductors in raceway.

F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

G. Branch Circuits Concealed in Ceilings: Type THHN-THWN-2, single conductors in raceway.

H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

3.3 MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Branch circuit wiring connections between wiring devices within office-area framed interior partition walls: Type MC.

B. Branch circuit wiring connections between wiring devices within office-area millwork: Type MC.

C. Branch circuit wiring connections to devices installed in office-area storefront glazing assemblies: Type MC.

D. Luminaire flexible cable assemblies not greater than 72 inches (1.83m) in length and without dimming connections: Type MC.

E. Devices, Systems, equipment connections, and areas of the building where MC cable is prohibited:

1. Where prohibited by NFPA 70.
2. Server Room, IDF Rooms.
3. Mechanical Rooms.
4. Electrical rooms.
5. Maintenance Bay(s).

6. Exterior walls.
7. Roof areas, attic areas, or within roof cavities.
8. Dedicated equipment branch circuit connections.
9. Mechanical, HVAC, and plumbing equipment circuit connections.
10. Signage equipment circuit connections.
11. Lighting control circuit connections.

3.4 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal raceways with conductors and cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Division 26 Section "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."

3.5 INSTALLATION OF MULTICONDUCTOR CABLES

A. Conceal cables in finished walls or constructed components where cables are permitted unless otherwise indicated.

B. Do not exceed manufacturer’s recommended maximum pulling tensions and sidewall pressure valves.

C. Support cables according to Division 26 Section “HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS.”

3.6 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.7 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Division 26 Section "SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING."

3.8 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "PENETRATION FIRESTOPPING."

END OF SECTION 260519

SECTION 260523 - CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. UTP cabling.
2. RS-232 cabling.
3. RS-485 cabling.
4. Low-voltage control cabling.
5. Control-circuit conductors.
6. Identification products.

1.3 RELATED SECTIONS

A. Division 26 Section “LIGHTING CONTROL DEVICES” for installation requirements for low-voltage lighting control devices.

B. Division 26 Section “LED INTERIOR LIGHTING” for installation requirements for low-voltage dimming drivers.

C. Division 26 Section “LED EXTERIOR LIGHTING” for installation requirements for low-voltage dimming drivers.

1.4 DEFINITIONS

A. EMI: Electromagnetic interference.

B. IDC: Insulation displacement connector.

C. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.

D. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).

E. UTP: Unshielded twisted pair.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Maintenance Data: For wire and cable to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Test cables upon receipt at Project site.

1. Test each pair of UTP cable for open and short circuits.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install UTP and other cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. Support of Open Cabling: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.

1. Support brackets with cable tie slots for fastening cable ties to brackets.
2. Lacing bars, spools, J-hooks, and D-rings.
3. Straps and other devices.

B. Conduit and Boxes: Comply with requirements in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS."

1. Outlet boxes shall be no smaller than 4 inches square by 2 ½ inches deep.

2.2 UTP CABLE

A. Comply with requirements of Division 27 Section “COMMUNICATIONS HORIZONTAL CABLING.”

2.3 UTP CABLE HARDWARE

A. Comply with requirements of Division 27 Section “COMMUNICATIONS HORIZONTAL CABLING.”

2.4 RS-232 CABLE

A. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
2. Plastic insulation.
3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
4. Plastic jacket.
5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned-copper drain wire.
6. Flame Resistance: Comply with NFPA 262.

2.5 RS-485 CABLE

A. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
2. Fluorinated ethylene propylene insulation.
3. Unshielded.
4. Fluorinated ethylene propylene jacket.
5. Flame Resistance: NFPA 262, Flame Test.

2.6 LOW-VOLTAGE CONTROL CABLE

A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. One pair, twisted, No. 16 AWG (minimum size), stranded tinned-copper conductors.
2. PVC insulation.
3. Shielded or Unshielded (based on application or manufactures requirements).
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

B. 0-10V Dimming Paired Cable: NFPA 70, Type CMP, Class 1 Control.

1. One pair (purple, gray), twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. Fluorinated ethylene propylene insulation.
3. Unshielded.
4. Plastic jacket.
5. Flame resistance: NFPA 262, flame test.

2.7 CONTROL-CIRCUIT CONDUCTORS

A. Class 1 Control Circuits: Stranded copper, Type THHN-THWN, in raceway.

B. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, in raceway.

C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or Type TF, complying with UL 83.

2.8 IDENTIFICATION PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Brady Corporation.
2. HellermannTyton.
3. Kroy LLC.
4. Panduit Corp.

B. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

C. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

2.9 SOURCE QUALITY CONTROL

A. Factory test UTP cables on reels according to TIA/EIA-568-B.1.

B. Factory test UTP cables according to TIA/EIA-568-B.2.

C. Cable will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 INSTALLATION OF PATHWAYS

A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.

B. Comply with requirements in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS" for installation of conduits and wireways.

C. Install manufactured conduit sweeps and long-radius elbows if possible.

D. Pathway Installation in Equipment Rooms:

1. Position conduit ends adjacent to a corner on backboard if a single piece of plywood is installed or in the corner of room if multiple sheets of plywood are installed around perimeter walls of room.
2. Install cable trays to route cables if conduits cannot be located in these positions.
3. Secure conduits to backboard if entering room from overhead.
4. Extend conduits 3 inches (75 mm) above finished floor.
5. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.

3.2 INSTALLATION OF CONDUCTORS AND CABLES

A. Install Plenum Rated cables in all areas classified as plenum spaces.

B. Comply with NECA 1.

C. Comply with installation requirements of referenced and related sections of work.

D. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
8. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.

E. UTP Cable Installation:

1. Comply with TIA/EIA-568-B.2.
2. Install 110-style IDC termination hardware unless otherwise indicated.
3. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

F. Installation of Control-Circuit Conductors:

1. Install wiring in raceways. Comply with requirements specified in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS."

G. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches (200 mm) above ceilings by cable supports not more than 60 inches (1525 mm) apart.
3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

H. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (305 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (305 mm).

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.3 REMOVAL OF CONDUCTORS AND CABLES

A. Remove abandoned conductors and cables.

3.4 CONTROL-CIRCUIT CONDUCTORS

A. Minimum Conductor Sizes:

   1. Class 1 remote-control and signal circuits, No 14 AWG.
   2. Class 2 low-energy, remote-control, and signal circuits, No. 16 AWG.
   3. Class 3 low-energy, remote-control, alarm, and signal circuits, No 12 AWG.

3.5 FIRESTOPPING

A. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."

B. Comply with TIA/EIA-569-A, Annex A, "Firestopping."

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.6 GROUNDING

A. For data communication wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

B. For low-voltage wiring and cabling, comply with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

3.7 IDENTIFICATION

A. Identify system components, wiring, and cabling according to TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.8 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Visually inspect UTP and cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not after cross connection.

   a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

C. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.

D. End-to-end cabling will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION 260523

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes grounding systems and equipment, plus the following special applications:

1. Underground distribution grounding.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control reports.

C. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems based on NFPA 70B.

a. Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
b. Include recommended testing intervals.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 12 inches (6.3 by 305 mm) minimum dimensions in cross section, with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.

2.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.

E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

F. Conduit Hubs: Mechanical type, terminal with threaded hub.

G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with socket set screw.

H. Lay-in Lug Connector: Mechanical type, copper rated for direct burial terminal with set screw.

I. Straps: Solid copper, copper lugs. Rated for 600 A.

J. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.

K. Water Pipe Clamps:

1. Mechanical type, two pieces with stainless-steel bolts.

   a. Material: Die-cast zinc alloy.
   b. Listed for direct burial.

2. U-bolt type with malleable-iron clamp and copper ground connector.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Stranded Copper unless otherwise indicated.

B. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors.
3. Connections to Ground Rods: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 GROUNDING SEPARATELY DERIVED SYSTEMS

A. Generator: Install grounding electrode(s) at the generator location. The electrode shall be connected to the equipment grounding conductor and to the frame of the generator.

3.4 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2 grounding requirements.

B. Grounding Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.

C. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches (150 mm) from the foundation.

3.5 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeder and branch circuits.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

C. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Signal and Communication Equipment: In addition to grounding and bonding required by NFPA 70, provide a separate grounding system complying with requirements in TIA/ATIS J-STD-607-A.

1. For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
2. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-4-by-12-inch (6.3-by-100-by-300-mm) grounding bus.
3. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

E. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.6 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

D. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end. Water services include both domestic and fire sprinkler water services.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.

E. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

F. Grounding for Steel Building Structure: Welded visible connection to structural steel. Bond multiple connections together where steel structure is not continuously connected.

G. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70; use a minimum of 20 feet (6 m) of bare copper conductor not smaller than No. 4 AWG or size shown on drawings.

1. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building's grounding grid or to grounding electrode external to concrete.

H. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

3.7 LABELING

A. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS" Article for instruction signs. The label or its text shall be green.

3.8 FIELD QUALITY CONTROL

A. Engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

C. Grounding system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
2. Substations and Pad-Mounted Equipment: 5 ohms.
3. Manhole Grounds: 10 ohms.

F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

B. Related Sections include the following:

1. Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS" for products and installation requirements necessary for compliance with seismic criteria.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 QUALITY ASSURANCE

A. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "ROOF ACCESSORIES."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.; a division of Cooper Industries.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Tyco International, Ltd.
g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) Hilti Inc.
2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

   a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      1) Cooper B-Line, Inc.; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti Inc.
      4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

   1. Secure raceways and cables to these supports with single-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete or as shown on drawings. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Nonmetallic conduits and fittings.
3. Metal wireways and auxiliary gutters.
4. Boxes, enclosures, and cabinets.

B. Related Requirements:

1. Division 07 Section “PENETRATION FIRESTOPPING” for installation requirements for requirements for fire-rated penetrations.

2. Division 26 Section "UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS" for exterior ductbanks, manholes, handholes, and underground utility construction.

3. Division 26 Section “SLEEVES AND SLEEVE SEALS FOR ELECTRICAL SYSTEMS” for installation requirements for sleeves, sleeve seals, and non-rated penetrations.

1.3 DEFINITIONS

A. GRC: Galvanized rigid steel conduit.

B. IMC: Intermediate metal conduit.

C. EMT: Electrical metallic tubing.

D. EPDM: Ethylene-propylene-diene terpolymer rubber.

E. FMC: Flexible metal conduit.

F. LFMC: Liquidtight flexible metal conduit.

G. NBR: Acrylonitrile-butadiene rubber.

H. RNC: Rigid nonmetallic conduit.

1.4 ACTION SUBMITTALS

A. Product Data: For raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Republic Conduit.
10. Wheatland Tube Company.

B. Metal Conduit:
1. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Raceway Finishes:

a. Factory pigmented/colored raceways shall be utilized for sub-parts of the electrical system scheduled on Drawings and in Division 26 Section “IDENTIFICATION FOR ELECTRICAL SYSTEMS.”
b. Factory pigmented/colored raceways shall be available in at least eight (8) unique colors and in Trade Sizes ½” – 4”.
c. Factory pigmentation/color shall be organic, corrosion resistant coating.

3. GRC: Comply with ANSI C80.1 and UL 6.
4. IMC: Comply with ANSI C80.6 and UL 1242.
5. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.

a. Comply with NEMA RN 1.
b. Coating Thickness: 0.040 inch (1 mm), minimum.

6. EMT: Comply with ANSI C80.3 and UL 797.
7. FMC: Comply with UL 1; zinc-coated steel or aluminum.
8. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

C. Metal Fittings:
1. Comply with NEMA FB 1 and UL 514B.
2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. Fittings, General: Listed and labeled for type of conduit, location, and use.

4. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
5. Fittings for EMT:

    a. Material: Steel or die cast.
    b. Type: Setscrew or compression.

6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
7. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
8. Bushings for Steel Connector Fittings:
    a. For fittings 1” and smaller: Integral insulated throat bushings.
    b. For fittings 1 ¼” and Larger: Threaded plastic bushings.

D. Joint Compound for IMC, GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.; Pipe & Plastics Group.
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; a Hubbell Company.
12. Thomas & Betts Corporation.

B. Nonmetallic Conduit:
1. Listing and Labeling: Nonmetallic conduit shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. RNC: Type EPC-40-PVC or Type EPC-80-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.

C. Nonmetallic Fittings:
1. Fittings, General: Listed and labeled for type of conduit, location, and use.
2. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
3. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 or Type 3R unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type unless otherwise indicated.

E. Finish: Manufacturer's standard enamel finish.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
6. O-Z/Gedney; a unit of General Signal.
7. RACO; a Hubbell Company.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet Division.
10. Spring City Electrical Manufacturing Company.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.

E. Metal Floor Boxes:

1. Material: Sheet metal.
2. Type: Semi-adjustable.
3. Shape: Rectangular.
4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

F. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.

G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

H. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.

I. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

J. Device Box Dimensions: 4 inches square by 2-1/2 inches deep. Minimum size for all electrical systems operating at greater than 120V nominal to ground, and for fire alarm systems.

K. Device Box Dimensions: 4 11/16 inches square by 2 ½ inches deep minimum size for all communications systems, audio/visual systems, security system components, elsewhere as described in other sections, or where required by code or manufacturers' specific requirements.

L. Gangable boxes are allowed. Do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

M. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 or Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

N. Cabinets:

1. NEMA 250, Type 1 or Type 3R galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: EMT with compression fittings.
2. Concealed Conduit, Aboveground: EMT.
3. Underground Conduit: RNC, Type EPC-40-PVC or Type EPC-80-PVC, direct buried or concrete encased.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed at least 48” above floor levels, and Not Subject to Physical Damage: EMT, with compression fittings.
2. Exposed and Subject to Severe Physical Damage or additional protection required: GRC. Raceway locations include the following:
   a. Maintenance Bays with 48” of the floor.
3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
5. Damp or Wet Locations: GRC.
6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size, 1-inch trade size for communications, security, and audio/visual systems.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
3. EMT: Use setscrew or compression, steel fittings. Comply with NEMA FB 2.10.
4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Comply with requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" for hangers and supports.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control, communications, security, and audio/visual wiring conduits, for which no more than the equivalent of two 90-degree bends are allowed. Support within 12 inches (300 mm) of changes in direction.

G. Conceal conduit and within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

H. Support conduit within 12 inches (300 mm) of enclosures to which attached.

I. Install conduit under concrete floor slabs on grade.
   1. Change from RNC, Type EPC-40-PVC, to PVC coated GRC conduit, before rising above the floor. Elbows shall be PVC-Coated GRC.

J. Stub-ups to Above Recessed Ceilings:

   1. Use EMT, IMC, or RMC for raceways.
   2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

K. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

L. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

M. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

N. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

O. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

P. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

Q. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

R. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

S. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

T. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

   1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
   2. Where an underground service raceway enters a building or structure.
   3. Where otherwise required by NFPA 70.

U. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

V. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC in damp or wet locations not subject to severe physical damage.

W. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

X. Recessed Boxes in Masonry Walls: Locate to require cutting of masonry unit edge only. Saw-cut opening for box, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box.

Y. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

Z. Locate boxes so that cover or plate will not span different building finishes.

AA. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

BB. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

CC. Set metal floor boxes level and flush with finished floor surface.

DD. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

EE. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.

FF. Locate and install boxes to allow access.

GG. Locate and install boxes to maintain headroom and to present a neat appearance.

HH. Provide knockout closures for unused openings.

II. Use multiple-gang boxes where more than one device are mounted together. Install boxes in walls without damaging wall insulation.

JJ. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

KK. Position outlets to locate luminaires as shown on reflected ceiling plans.

LL. In inaccessible ceiling areas, position outlets and junction boxes within six inches of recessed luminaire, to be accessible through luminaire ceiling opening.

MM. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud

bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

NN. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

OO. For boxes installed in metal construction, use rigid support metal bar hangers or metal bar fastened to two studs or with metal screws to metal studs.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:
1. Comply with Division 26 Section “UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS”.
2. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "EARTH MOVING" for pipe less than 6 inches (150 mm) in nominal diameter.
3. Install backfill as specified in Division 31 Section "EARTH MOVING”.
4. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "EARTH MOVING."
5. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
6. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
    b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.

7. Warning Planks: Bury warning planks approximately 12 inches (300 mm) above direct-buried conduits but a minimum of 6 inches (150 mm) below grade. Align planks along centerline of conduit.
8. Underground Warning Tape: Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.4 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Division 26 Section "SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING."

3.5 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."

3.6 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes for the following components:

1. Metal conduits and fittings, including GRC and PVC-coated steel conduit.
2. Rigid nonmetallic duct.
3. Duct accessories.

1.3 DEFINITIONS

A. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.

B. Duct: A single duct or multiple ducts. Duct may be either installed singly or as component of a duct bank.

C. Duct Bank:

1. Two or more ducts installed in parallel, with or without additional casing materials.
2. Multiple duct banks.

D. GRC: Galvanized rigid (steel) conduit.

E. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include duct-bank materials, including spacers and miscellaneous components.
2. Include duct, conduits, and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Include underground-line warning tape.

1.5 FIELD CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Construction Manager's written permission.

B. Ground Water: Assume ground-water level is at grade level unless a lower water table is noted on Drawings.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Republic Conduit.
10. Wheatland Tube Company.

B. GRC: Comply with ANSI C80.1 and UL 6.

C. Coated Steel Conduit: PVC-coated GRC.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch (1 mm), minimum.

D. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

2.2 RIGID NONMETALLIC DUCT

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems.
2. ARNCO Corporation.
3. Beck Manufacturing.
4. Cantex, Inc.
5. CertainTeed Corp.
6. Condux International, Inc.
7. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
8. Electri-Flex Company.
9. IPEX Inc.
10. Lamson & Sessions; Carlon Electrical Products.
11. Manhattan Wire Products; a Belden company.

B. Underground Plastic Utilities Duct: Type EPC-40-PVC or Type EPC-80-PVC RNC, complying with NEMA TC 2 and UL 651, with matching fittings complying with NEMA TC 3 by same manufacturer as duct.

C. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

D. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 DUCT ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems.
2. ARNCO Corporation.
3. Beck Manufacturing.
4. Cantex, Inc.
5. CertainTeed Corp.
6. Condux International, Inc.
7. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
8. Electri-Flex Company.
9. IPEX Inc.
10. Lamson & Sessions; Carlon Electrical Products.
11. Manhattan Wire Products; a Belden company.

B. Duct Spacers: Factory-fabricated, rigid, PVC interlocking spacers; sized for type and size of duct with which used, and selected to provide minimum duct spacing indicated while supporting duct during concreting or backfilling.

C. Underground-Line Warning Tape: Comply with requirements for underground-line warning tape specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate layout and installation of ducts and, duct banks, with final arrangement of other utilities, site grading, and surface features as determined in the field. Notify Architect if there is a conflict between areas of excavation and existing structures or archaeological sites to remain.

B. Coordinate elevations of ducts and duct-banks entrances into building slabs with final locations and profiles of duct and duct banks, as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations as required to suit field conditions and to ensure that duct and duct bank will drain away from building and as approved by Architect.

C. Clear and grub vegetation to be removed, and protect vegetation to remain according to Division 31 Section "SITE CLEARING." Remove and stockpile topsoil for reapplication according to Division 31 Section "SITE CLEARING."

3.2 UNDERGROUND DUCT APPLICATION

A. Duct for Electrical Feeders 600 V and Less: Type EPC-80-PVC RNC, direct-buried unless otherwise indicated.

B. Duct for Electrical Branch Circuits: Type EPC-40-PVC RNC, direct-buried unless otherwise indicated.

C. Stub-ups: PVC-coated GRC.

3.3 EARTHWORK

A. Excavation and Backfill: Comply with Division 31 Section "EARTH MOVING," but do not use heavy-duty, hydraulic-operated, compaction equipment.

B. Restoration: Replace area immediately after backfilling is completed or after construction vehicle traffic in immediate area is complete.

C. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

3.4 DUCT AND DUCT-BANK INSTALLATION

A. Where indicated on Drawings, install duct, spacers, and accessories into the duct-bank configuration shown. Duct installation requirements in this Section also apply to duct bank.

B. Install duct according to NEMA TCB 2.

C. Slope: Pitch duct a minimum slope of 1:300 down and away from buildings and equipment.

D. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1200 mm), both horizontally and vertically, at other locations unless otherwise indicated.

1. Duct shall have maximum of two 90 degree bends or the total of all bends shall be no more 180 degrees between pull points.

E. Joints: Use solvent-cemented joints in duct and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent duct do not lie in same plane.

F. Sealing: Provide temporary closure at terminations of duct. Seal duct at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.

G. Pulling Cord: Install 200-lbf- (1000-N-) test nylon cord in empty ducts.

H. Direct-Buried Duct and Duct Bank:

1. Excavate trench bottom to provide firm and uniform support for duct. Comply with requirements in Division 31 Section "EARTH MOVING" for preparation of trench bottoms for pipes less than 6 inches (150 mm) in nominal diameter.
2. Width: Excavate trench 3 inches (75 mm) wider than duct on each side.
3. Depth: Refer to schedules on drawings.

4. Set elevation of bottom of duct bank below frost line.
5. Support ducts on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
6. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than five spacers per 20 feet (6 m) of duct. Place spacers within 24 inches (600 mm) of duct ends. Stagger spacers approximately 6 inches (150 mm) between tiers. Secure spacers to earth and to ducts to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
7. Install duct with a minimum of 3 inches (75 mm) between ducts for like services and 6 inches (150 mm) between power and communications duct.
8. Elbows: Install manufactured duct elbows for stub-ups, at building entrances, and at changes of direction in duct direction unless otherwise indicated.
9. Install manufactured GRC elbows for stub-ups, at building entrances, and at changes of direction in duct.

    a. Couple RNC duct to GRC with adapters designed for this purpose.
    b. Stub-ups shall be minimum 12 inches (300 mm) above finished floor and minimum 3 inches (75 mm) from conduit side to edge of slab.

10. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches (100 mm) over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction. Comply with requirements in Division 31 Section "EARTH MOVING" for installation of backfill materials.

    a. Place minimum 3 inches (75 mm) of sand as a bed for duct. Place sand to a minimum of 6 inches (150 mm) above top level of duct.

I. Underground-Line Warning Tape: Bury conducting underground line specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS" no less than 12 inches (300 mm) above all duct banks and approximately 12 inches (300 mm) below grade. Align tape parallel to and within 3 inches (75 mm) of centerline of duct bank. Provide an additional warning tape for each 12-inch (300-mm) increment of duct-bank width over a nominal 18 inches (450 mm). Space additional tapes 12 inches (300 mm) apart, horizontally.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and duct banks.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 12-inch- (300-mm-) long mandrel equal to duct size minus 1/4 inch (6 mm). If obstructions are indicated, remove obstructions and retest.

B. Correct deficiencies and retest as specified above to demonstrate compliance.

3.6 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

END OF SECTION 260543

SECTION 260544 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
2. Grout.
3. Silicone sealants.

B. Related Requirements:

1. Division 07 Section "PENETRATION FIRESTOPPING" for penetration firestopping installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers, with and without penetrating items.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Wall Sleeves:

1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.

C. Sleeves for Rectangular Openings:

1. Material: Galvanized sheet steel.
2. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
b. For sleeve cross-section rectangle perimeter 50 inches (1270 mm) or more and one or more sides larger than 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.2 GROUT

A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.3 SILICONE SEALANTS

A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
2. Sealant shall have VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

A. Comply with NECA 1.

B. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:

1. Interior Penetrations of Non-Fire-Rated Walls and Floors:

a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "JOINT SEALANTS."

b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.

2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level. Install sleeves during erection of floors.

C. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies:

1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
2. Seal space outside of sleeves with approved joint compound for gypsum board assemblies.

D. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

E. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

F. Underground, Exterior-Wall and Floor Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.2 SLEEVE INSTALLATION FOR FIRE-RATED ELECTRICAL PENETRATIONS

A. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."

B. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "PENETRATION FIRESTOPPING."

END OF SECTION 260544

SECTION 260548 - VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Isolation pads.
2. Restrained spring isolators.
3. Channel support systems.
4. Restraint cables.
5. Hanger rod stiffeners.
6. Anchorage bushings and washers.

B. Related Sections include the following:

1. Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" for commonly used electrical supports and installation requirements.

1.3 DEFINITIONS

A. The IBC: International Building Code.

B. ICC-ES: ICC-Evaluation Service.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Site Class as Defined in the IBC: See Structural Documents.
2. Assigned Seismic Use Group or Building Category as Defined in the IBC: See Structural Documents.

    a. Component Importance Factor: See Structural Documents.
    b. Component Response Modification Factor: See Structural Documents.
    c. Component Amplification Factor: See Structural Documents.

3. Design Spectral Response Acceleration at Short Periods (0.2 Second): See Structural Documents
4. Design Spectral Response Acceleration at 1.0-Second Period: See Structural Documents.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.

a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an evaluation service member of ICC-ES.
b. Annotate to indicate application of each product submitted and compliance with requirements.

3. Restrained-Isolation Devices: Include ratings for horizontal, vertical, and combined loads.

B. Delegated-Design Submittal: For vibration isolation and seismic-restraint details indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation, seismic forces required to select vibration isolators and seismic restraints.

a. Coordinate design calculations with wind-load calculations required for equipment mounted outdoors. Comply with requirements in other Division 26 Sections for equipment mounted outdoors.

2. Indicate materials and dimensions and identify hardware, including attachment and anchorage devices.
3. Field-fabricated supports.
4. Seismic-Restraint Details:

a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
c. Preapproval and Evaluation Documentation: By an evaluation service member of ICC-ES, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

C. Coordination Drawings: Show coordination of seismic bracing for electrical components with other systems and equipment in the vicinity, including other supports and seismic restraints.

D. Qualification Data: For professional engineer and testing agency.

E. Field quality-control test reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

E. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ace Mountings Co., Inc.
2. Amber/Booth Company, Inc.
3. California Dynamics Corporation.
4. Isolation Technology, Inc.
5. Kinetics Noise Control.
6. Mason Industries.
7. Vibration Eliminator Co., Inc.
8. Vibration Isolation.
9. Vibration Mountings & Controls, Inc.

B. Restrained Spring Isolators for engine generator sets: Freestanding, steel, open-spring isolators with seismic or limit-stop restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to weight being removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, neoprene or rubber isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
2. Restraint: Seismic or limit-stop as required for equipment and authorities having jurisdiction.
3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.

6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.2 SEISMIC-RESTRAINT DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amber/Booth Company, Inc.
2. California Dynamics Corporation.
3. Cooper B-Line, Inc.; a division of Cooper Industries.
4. Hilti Inc.
5. Loos & Co.; Seismic Earthquake Division.
6. Mason Industries.
7. TOLCO Incorporated; a brand of NIBCO INC.
8. Unistrut; Tyco International, Ltd.

B. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by an evaluation service member of ICC-ES.

1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.

C. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.

D. Restraint Cables: ASTM A 603 galvanized-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.

E. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections or Reinforcing steel angle clamped to hanger rod. Do not weld stiffeners to rods.

F. Bushings for Floor-Mounted Equipment Anchor: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchors and studs.

G. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices.

H. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

I. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.

J. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless

steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.3 FACTORY FINISHES

A. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.

1. Powder coating on springs and housings.
2. All hardware shall be galvanized. Hot-dip galvanize metal components for exterior use.
3. Baked enamel or powder coat for metal components on isolators for interior use.
4. Color-code or otherwise mark vibration isolation and seismic-control devices to indicate capacity range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for application by an evaluation service member of ICC-ES.

B. Hanger Rod Stiffeners: Install hanger rod stiffeners where required to receive them and where required to prevent buckling of hanger rods due to seismic forces.

C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

3.3 SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Equipment and Hanger Restraints:

1. Install restrained isolators on engine generator equipment.
2. Install resilient, bolt-isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch (3.2 mm).
3. Install seismic-restraint devices using methods approved by an evaluation service member of ICC-ES providing required submittals for component.

B. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

C. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

D. Drilled-in Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in runs of raceways, cables, wireways, cable trays, and busways where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where they terminate with connection to equipment that is anchored to a different structural element from the one supporting them as they approach equipment.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
5. Test to 90 percent of rated proof load of device.
6. Measure isolator restraint clearance.

7. Measure isolator deflection.
8. Verify snubber minimum clearances.
9. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.

D. Remove and replace malfunctioning units and retest as specified above.

E. Prepare test and inspection reports.

3.6 ADJUSTING

A. Adjust isolators after isolated equipment is at operating weight.

B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

C. Adjust active height of spring isolators.

D. Adjust restraints to permit free movement of equipment within normal mode of operation.

3.7 ELECTRICAL VIBRATION-CONTROL AND SEISMIC-RESTRAINT DEVICE SCHEDULE

A. Supported or Suspended Equipment:
1. Grouped Raceway Systems

B. Free-Standing Equipment
1. Switchboards
2. Transfer Switches
3. Engine generators and fuel tanks

C. Vibration Isolation and Restraint:
1. Engine Generators

END OF SECTION 260548

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Color and legend requirements for raceways, conductors, and warning labels and signs.
2. Labels.
3. Bands and tubes.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.
8. Paint for identification.
9. Fasteners for labels and signs.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: For each piece of electrical equipment and electrical system components to be an index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

D. Delegated-Design Submittal: For arc-flash hazard study.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 600 V or Less:

1. Factory pigmented/colored raceways shall be used for all associated connections related to the following systems. See Division 26 Section “RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.”
   a. Fire Alarm: Red

B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color shall be factory applied.
2. Colors for 208/120-V Circuits:

   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.

3. Color for Neutral: White.
4. Color for Equipment Grounds: Bare copper, Green or Green with a yellow stripe.

C. Warning labels and signs shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."
3. All warning information required by NFPA 70 and NFPA 70E

D. Equipment Identification Labels:

1. Black letters on a white field unless otherwise noted.
2. Refer to typical details shown on Drawings for labeling layout and information required.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

B. Self-Adhesive Wraparound Labels: Preprinted, 3-mil- (0.08-mm-) thick, polyester flexible label with acrylic pressure-sensitive adhesive.

1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.

2. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

C. Self-Adhesive Labels: Polyester, thermal, transfer-printed, 3-mil- (0.08-mm-) thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Minimum Nominal Size:

a. 1-1/2 by 6 inches (37 by 150 mm)for raceway and conductors.
b. 3-1/2 by 5 inches (76 by 127 mm)for equipment.
c. As required by authorities having jurisdiction.

2.4 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide; compounded for outdoor use.

C. Floor Marking Tape: 2-inch- (50-mm-) wide, 5-mil (0.125-mm) pressure-sensitive vinyl tape, with yellow and black stripes and clear vinyl overlay.

D. Underground-Line Warning Tape:
1. Tape:

a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
b. Printing on tape shall be permanent and shall not be damaged by burial operations.
c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

2. Color and Printing:

a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".
d. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core; bright colored,compounded for direct-burial service.
e. Width: 3 inches (75 mm).
f. Overall Thickness: 5 mils (0.125 mm).
g. Foil Core Thickness: 0.35 mil (0.00889 mm).
h. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
i. Tensile according to ASTM D 882: 70 lbf (311.3 N) and 4600 psi (31.7 MPa).

2.5 TAGS

A. Write-on Tags:
1. Polyester Tags: 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment.
2. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
3. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.6 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:
1. Engraved legend.
2. Thickness:

a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
c. Engraved legend with finishes noted on Drawings.
d. Punched or drilled for mechanical fasteners with 1/4-inch (6.4-mm) grommets in corners for mounting or Self-adhesive.
e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.7 CABLE TIES

A. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D 638: 7000 psi (48.2 MPa).
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
5. Color: Black.

2.8 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of each item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.

H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

I. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer.

J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.

K. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.

L. Self-Adhesive Wraparound Labels: Secure tight to surface at a location with high visibility and accessibility.

M. Self-Adhesive Labels:

1. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.

N. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.

O. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

P. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.

Q. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
2. Limit use of underground-line warning tape to direct-buried cables.
3. Install underground-line warning tape for direct-buried cables and cables in raceways.

R. Write-on Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using plenum-rated cable ties.

S. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use labels 2 inches (50 mm) high.

T. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. Field-paint junction box covers according to raceway color schedule. System legends shall be as follows:

1. "POWER." (Normal, standby)
2. "LIGHTING." (Normal, standby)
3. Fire Alarm (Red)
4. Network Systems (Blue)

D. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use self-adhesive wraparound labels and self-adhesive vinyl tape to identify the phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

E. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive labels with the conductor or cable designation, origin, and destination.

F. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with the conductor designation.

G. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

H. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturer for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

I. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.

J. Workspace Indication: Apply floor marking tape to finished surfaces. Show working clearances in the direction of access to live parts. Workspace shall comply with NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

K. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.

L. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive labels.

1. Apply to exterior of door, cover, or other access.
2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:

a. Power-transfer switches.
b. Controls with external control power connections.

M. Arc Flash Warning Labeling: Self-adhesive labels.

N. Operating Instruction Signs: Laminated acrylic or melamine plastic signs.

O. Emergency Operating Instruction Signs: Laminated acrylic or melamine plastic signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer.

P. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.

2. Outdoor Equipment: Laminated acrylic or melamine sign.
3. Equipment to Be Labeled:

    a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be in the form of a self-adhesive, engraved, laminated acrylic or melamine label.
    b. Enclosures and electrical cabinets.
    c. Access doors and panels for concealed electrical items.
    d. Switchboards.
    e. Enclosed switches.
    f. Push-button stations.
    g. Power-transfer equipment.
    h. Remote-controlled switches, dimmer modules, and control devices.
    i. Power-generating units.
    j. Monitoring and control equipment.

END OF SECTION 260553

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Indoor occupancy and vacancy sensors.

B. Related Requirements:

   1. Division 26 Section "WIRING DEVICES" for wall-box dimmers, non-networkable wall-switch occupancy sensors, and manual light switches.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

   1. Show installation details for the following:

      a. Occupancy sensors.
      b. Vacancy sensors.

   2. Interconnection diagrams showing field-installed wiring.
   3. Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.

   1. Failures include, but are not limited to, the following:

      a. Faulty operation of lighting control software.
      b. Faulty operation of lighting control devices.

2. Warranty Period: Two year(s) from date of Substantial Completion.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.7 COORDINATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 INDOOR OCCUPANCYAND VACANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hubbell Lighting.
2. Leviton Mfg. Company Inc.
3. Lithonia Lighting; Acuity Lighting Group, Inc.
4. Watt Stopper (The).
5. Lutron

B. General Requirements for Sensors:

1. Wall or Ceiling-mounted, solid-state indoor occupancy and vacancy sensors.
2. Dual technology.
3. Separate power pack.
4. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
5. Operation:

a. Occupancy Sensor: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
b. Vacancy Sensor: Unless otherwise indicated, lights are manually turned on and sensor turns lights off when the room is unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
c. Combination Sensor: Unless otherwise indicated, sensor shall be programmed to turn lights on when coverage area is occupied and turn them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

6. Sensor Output: Sensor is powered from the power pack.
7. Power: Line voltage.

8. Power Pack: Dry contacts rated for 20-A LED load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
9. Mounting:

    a. Sensor: Suitable for mounting in any position on a standard outlet box.
    b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
    c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

10. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
11. Bypass Switch: Override the "on" function in case of sensor failure.
12. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lux); turn lights off when selected lighting level is present.

C. Dual-Technology Type: Wall or Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.

2.2 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.

B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SENSOR INSTALLATION

A. Comply with NECA 1.

B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.

C. Install and aim sensors in locations to achieve not less than 90-percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.3 CONTACTOR INSTALLATION

A. Comply with NECA 1.

B. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.4 WIRING INSTALLATION

A. Comply with NECA 1.

B. Wiring Method: Comply with Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES." Minimum conduit size is 3/4 inch (19 mm).

C. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.

E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.5 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

1. Identify controlled circuits in lighting contactors.
2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

B. Label time switches and contactors with a unique designation.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Lighting control devices will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 260923

SECTION 262413 - SWITCHBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Service and distribution switchboards rated 600 V and less.
2. Surge protection devices.
3. Disconnecting and overcurrent protective devices.
4. Accessory components and features.
5. Identification.

1.3 ACTION SUBMITTALS

A. Product Data: For each switchboard, overcurrent protective device, surge protection device, ground-fault protector, accessory, and component.

1. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

B. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
7. Include time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Include selectable ranges for each type of overcurrent protective device.
8. Include diagram and details of proposed mimic bus.
9. Include schematic and wiring diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Data: Certificates, for switchboards, overcurrent protective devices, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

a. Routine maintenance requirements for switchboards and all installed components.
b. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

2. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

B. Remove loose packing and flammable materials from inside switchboards and install temporary electric heating (250 W per section) to prevent condensation.

C. Handle and prepare switchboards for installation according to NEMA PB 2.1.

1.8 FIELD CONDITIONS

A. Installation Pathway: Remove and replace access fencing, doors, lift-out panels, and structures to provide pathway for moving switchboards into place.

B. Environmental Limitations:

1. Do not deliver or install switchboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above switchboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

   a. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
   b. Altitude: Not exceeding 6600 feet (2000 m).
   c. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

      1) Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
      2) Indicated method of providing temporary electric service.
      3) Do not proceed with interruption of electric service without Construction Manager's written permission.
      4) Comply with NFPA 70E.

   d. Coordinate layout and installation of switchboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

   e. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

C. Unusual Service Conditions: NEMA PB 2, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

1.9 COORDINATION

A. Coordinate layout and installation of switchboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace switchboard enclosures, buswork, overcurrent protective devices, accessories, and factory installed interconnection wiring that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion.

B. Manufacturer's Warranty: Manufacturer's agrees to repair or replace surge protection devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Switchboards shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation. Shake-table testing shall comply with ICC-ES AC156.
2. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.2 MANUFACTURED UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial – Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric

B. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

2.3 SWITCHBOARDS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 2.

C. Comply with NFPA 70.

D. Comply with UL 891.

E. Front-Connected, Front-Accessible Switchboards:

1. Main Devices: Fixed, individually mounted.
2. Branch Devices: Panel mounted.
3. Sections front and rear aligned.

F. Nominal System Voltage: 208Y/120V

G. Main-Bus Continuous: 1,600A

H. Seismic Requirements: Fabricate and test switchboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation. Shake-table testing shall comply with ICC-ES AC156.
   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

I. Indoor Enclosures: Steel, NEMA 250, Type 1.

J. Enclosure Finish for Indoor Units: Factory-applied finish in manufacturer's standard gray finish over a rust-inhibiting primer on treated metal surface.

K. Barriers: Between adjacent switchboard sections.

L. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.

M. Service Entrance Rating: Switchboards intended for use as service entrance equipment shall contain from one to six service disconnecting means with overcurrent protection, a neutral bus with disconnecting link, a grounding electrode conductor terminal, and a main bonding jumper.

N. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.

O. Removable, Hinged Rear Doors and Compartment Covers: Secured by standard bolts, for access to rear interior of switchboard.

P. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.

Q. Buses and Connections: Three phase, four wire unless otherwise indicated.

1. Provide phase bus arrangement A, B, C from front to back, top to bottom, and left to right when viewed from the front of the switchboard.
2. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity, silver-plated.
3. Copper feeder circuit-breaker line connections.
4. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with compression connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.

5. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with compression connectors for feeder and branch-circuit ground conductors.
6. Main-Phase Buses and Equipment-Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
7. Disconnect Links:

    a. Isolate neutral bus from incoming neutral conductors.
    b. Bond neutral bus to equipment-ground bus for switchboards utilized as service equipment or separately derived systems.
8. Neutral Buses: 100 percent of the ampacity of phase buses unless otherwise indicated, equipped with compression connectors for outgoing circuit neutral cables.
9. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.

R. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

2.4 SURGE PROTECTION DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial – Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. SPDs: Comply with UL 1449, Type 2.

C. Features and Accessories:

1. Integral disconnect switch.
2. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
3. Indicator light display for protection status.
4. Form-C contacts rated at 2 A and 24-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
5. Surge counter.

D. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 320 kA per phase. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

E. Protection modes and UL 1449 VPR for grounded wye circuits with 208Y/120 V, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 700 V for 208Y/120 V.
2. Line to Ground: 1200 V for 208Y/120 V.
3. Line to Line: 1000 V for 208Y/120 V.

F. SCCR: Equal or exceed 100 kA.

G. Nominal Rating: 20 kA.

2.5 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
   1. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:
      a. Instantaneous trip.
      b. Long- and short-time pickup levels.
      c. Long and short time adjustments.
      d. Ground-fault pickup level, time delay, and I squared t response.
   2. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
   3. MCCB Features and Accessories:
      a. Standard frame sizes, trip ratings, and number of poles.
      b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor material.
      c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
      d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
      e. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
      f. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
      g. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
      h. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
      i. Single-phase protection relays: integrally mounted relay and sensing coils to trip main upon loss of at least one phase.

2.6 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Mounting Accessories: For anchors, mounting channels, bolts, washers, and other mounting accessories, comply with requirements in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS" or manufacturer's instructions.

2.7 IDENTIFICATION

A. Service Equipment Label: NRTL labeled for use as service equipment for switchboards with one or more service disconnecting and overcurrent protective devices.

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

B. Remove loose packing and flammable materials from inside switchboards and install temporary electric heating (250 W per section) to prevent condensation.

C. Handel and prepare switchboards for installation according to NEMA PB 2.1.

3.2 EXAMINATION

A. Receive, inspect, handle, and store switchboards according to NEMA PB 2.1.

1. Lift or move switchboards with spreader bars and manufacturer-supplied lifting straps following manufacturer's instructions.
2. Use rollers, slings, or other manufacturer-approved methods if lifting straps are not furnished.
3. Protect from moisture, dust, dirt, and debris during storage and installation.
4. Install temporary heating during storage per manufacturer's instructions.

B. Examine switchboards before installation. Reject switchboards that are moisture damaged or physically damaged.

C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work or that affect the performance of the equipment.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1.

B. Equipment Mounting: Install switchboards on concrete base, 4-inch (100-mm) nominal thickness. Comply with requirements for concrete base specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

1. Install conduits entering underneath the switchboard, entering under the vertical section where the conductors will terminate. Install with couplings flush with the concrete base. Extend 2 inches (50-mm) above concrete base after switchboard is anchored in place.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
3. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to switchboards.

6. Anchor switchboard to building structure at the top of the switchboard if required or recommended by the manufacturer.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, straps and brackets, and temporary blocking of moving parts from switchboard units and components.

D. Comply with mounting and anchoring requirements specified in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

E. Operating Instructions: Frame and mount the printed basic operating instructions for switchboards, including control and key interlocking sequences and emergency procedures. Fabricate frame of finished metal and cover instructions with clear acrylic plastic. Mount on front of switchboards.

F. Install filler plates in unused spaces of panel-mounted sections.

G. Install overcurrent protective devices and surge protection devices.

1. Set field-adjustable switches and circuit-breaker trip ranges.

H. Comply with NECA 1.

3.4 CONNECTIONS

A. Bond conduits entering underneath the switchboard to the equipment ground bus with a bonding conductor sized per NFPA 70.

B. Support and secure conductors within the switchboard according to NFPA 70.

C. Extend insulated equipment grounding cable to busway ground connection and support cable at intervals in vertical run.

3.5 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

C. Device Nameplates: Label each disconnecting and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Acceptance Testing:

a. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit. Open control and metering circuits within the switchboard, and remove neutral connection to surge protection and other electronic devices prior to insulation test. Reconnect after test.
b. Test continuity of each circuit.

2. Test ground-fault protection of equipment for service equipment per NFPA 70.
3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
4. Correct malfunctioning units on-site where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
5. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Switchboard will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.7 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges.

3.8 PROTECTION

A. Temporary Heating: Apply temporary heat, to maintain temperature according to manufacturer's written instructions, until switchboard is ready to be energized and placed into service.

3.9 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories, and to use and reprogram microprocessor-based trip, monitoring, and communication units.

END OF SECTION 262413

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Distribution panelboards.
2. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

A. SVR: Suppressed voltage rating.

B. SPD: Surge Protection Device.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.5 SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include wiring diagrams for power, signal, and control wiring.

7. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. include selectable ranges for each type of overcurrent protective device.

C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

E. Panelboard Schedules: For installation in panelboards.

F. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer, except for fusible branch circuit panelboards.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

F. Testing Agency Qualifications: Member company of NETA or NRTL.
1. Testing Agency’s Field Supervisor: Certified by NETA to supervise on-site testing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.8 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

a. Ambient Temperature: Not exceeding minus 22 deg F (minus 30 deg C) to plus 104 deg F (plus 40 deg C).
b. Altitude: Not exceeding 6600 feet (2000 m).

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Construction Manager's written permission.
3. Comply with NFPA 70E.

1.9 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace surge protection devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

1.11 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Extra materials specified are in addition to spares noted on drawings.

1. Keys: Two spares for each type of panelboard cabinet lock. All locks shall be keyed alike.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

B. Enclosures: Surface-mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
b. Outdoor Locations: NEMA 250, Type 3R.

2. Front: For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover; door in door type with (2) full length piano hinged connections.
4. Finishes:

a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
b. Back Boxes: Galvanized steel.

5. Directory Card: Inside panelboard door, mounted in transparent card holder.

C. Incoming Mains Location: Top or Bottom. Coordinate lug locations with field conditions.

D. Phase, Neutral, and Ground Buses:

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Mechanical type.
3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

1. For doors more than 36 inches (914 mm) high, provide two latches, keyed alike.

D. Mains: Circuit breaker or Lugs only as indicated.

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

F. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: Circuit breaker or lugs only as indicated.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

    a. Instantaneous trip.
    b. Long- and short-time pickup levels.
    c. Long- and short-time time adjustments.
    d. Ground-fault pickup level, time delay, and I^2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
7. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Shunt-trip: 120V coil energized from separate circuit, set to trip at 75 percent of rated voltage.
    f. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.
    g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
    h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

2.5 PANELBOARD SURGE PROTECTION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Surge Protection Device: IEEE C62.41-compliant, integrally mounted, bolt-on, solid-state, parallel-connected, modular (with field-replaceable modules) type, with sine-wave tracking suppression and filtering modules, UL 1449, third edition, short-circuit current rating matching or exceeding the panelboard short-circuit rating, and with the following features and accessories:

1. Accessories:

   a. Fuses rated at 200-kA interrupting capacity.
   b. Fabrication using bolted compression lugs for internal wiring.
   c. Integral disconnect switch.
   d. Redundant suppression circuits.
   e. Redundant replaceable modules.
   f. Arrangement with wire connections to phase buses, neutral bus, and ground bus.
   g. LED indicator lights for power and protection status.
   h. Audible alarm, with silencing switch, to indicate when protection has failed.
   i. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of system operation. Contacts shall reverse position on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
   j. Six-digit, transient-event counter set to totalize transient surges.

2. Peak Single-Impulse Surge Current Rating: 80 kA per mode/160 kA per phase.
3. Minimum single-impulse current ratings, using 8-by-20-mic.sec. waveform described in IEEE C62.41.2.

   a. Line to Neutral: 70,000 A.
   b. Line to Ground: 70,000 A.
   c. Neutral to Ground: 50,000 A.

4. Withstand Capabilities: 12,000 IEEE C62.41, Category C3 (10 kA), 8-by-20-mic.sec. surges with less than 5 percent change in clamping voltage.
5. Protection modes and UL 1449 SVR for grounded wye circuits with 208Y/120-V, three-phase, four-wire circuits shall be as follows:

   a. Line to Neutral: 400 V for 208Y/120.
   b. Line to Ground: 400 V for 208Y/120.
   c. Neutral to Ground: 400 V for 208Y/120.

2.6 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Equipment Mounting: Install distribution panelboards on concrete bases, 4-inch (100-mm) nominal thickness. Comply with requirements for concrete base specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.
2. For panelboards, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to panelboards.
5. Attach panelboard to the vertical finished or structural surface behind the panelboard.

C. Install Lighting & Appliance Branch Circuit Panelboards, and secured to wall with minimum four (4) anchors.

D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

E. Comply with mounting and anchoring requirements specified in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

F. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.

G. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

H. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

I. Install filler plates in unused spaces.

J. Stub four 1-inch (27-GRC) empty conduits from each panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slabs not on grade.

K. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

L. Comply with NECA 1.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Directory shall accurately, uniquely, and specifically identify electrical loads, and rooms served for each circuit. General language such as “Lighting”, “Receps”, etc. will not be allowed. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.4 FIELD QUALITY CONTROL

A. Engage a qualified testing agency to perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters. Disconnect any/all Surge Protection Devices during acceptance testing that involves continuous test voltages that exceed SPD manufacturers’ continuous voltage tolerances.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges.

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.

1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.6 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Receptacles with integral USB charger.
3. Twist-locking receptacles.
4. Receptacles with integral surge protection units.
5. Snap switches.
6. Pendant cord-connector devices.
7. Cord and plug sets.
8.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

E. SPD: Surge Protective Device.

F. UTP: Unshielded twisted pair.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Receptacles for Owner-Furnished Equipment: Match plug configurations.
2. Cord and Plug Sets: Match equipment requirements.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

1.6 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing-label warnings and instruction manuals that include labeling conditions.

1.8 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.9 EXTRA MATERIALS

A. Furnish extra materials described in subparagraphs below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. SPD Receptacles: One for every 10 of each type installed, but no fewer than two of each type.
   2. Straight Blade Receptacles: One for every 10 but no fewer than ten.
   3. Receptacle Coverplates: One for every 10 but no fewer than ten for Duplex and Double Duplex type.
   4. Straight Blade GFCI: One for every 10 but no fewer than ten.
   5. GFCI Coverplates: One for every 10 but no fewer than ten for Duplex and Double Duplex type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

   1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
   2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
   3. Leviton Mfg. Company Inc. (Leviton).
   4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. All wiring devices shall be listed as “Specification” Grade, no exceptions.

B. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NFPA 70.

D. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:

1. Connectors shall comply with UL 2459 and shall be made with stranded building wire.
2. Devices shall comply with the requirements in this Section.

2.3 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

B. USB Charging Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, UL 1310, and FS W-C-596. Compatible with USB 1.1/2.0/3/0 devices, including Apple products.

2.4 GFCI RECEPTACLES

A. General Description:

1. Straight blade, non-feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
4. Include internal “self-test” capabilities that automatically monitor GFCI functionality with integral visual and audible indication in accordance with UL 943.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

2.5 SPD RECEPTACLES

A. General Description: Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 1449, and FS W-C-596, with integral SPD in line to ground, line to neutral, and neutral to ground.

1. SPD Components: Multiple metal-oxide varistors; with a nominal clamp-level rating of 400 V and minimum single transient pulse energy dissipation of 240 J, according to IEEE C62.41.2 and IEEE C62.45.
2. Active SPD Indication: Visual and audible, with light visible in face of device to indicate device is "active" or "no longer in service."

B. Duplex SPD Convenience Receptacles:

1. Description: Straight blade, 125 V, 20 A; NEMA WD 6 Configuration 5-20R.

2.6 TWIST-LOCKING RECEPTACLES

A. Single Convenience Receptacles: Comply with NEMA WD 1, NEMA WD 6, and UL 498. Configurations as scheduled on Drawings.

2.7 PENDANT CORD-CONNECTOR DEVICES

A. Description:

1. Matching, locking-type plug and receptacle body connector.
2. NEMA WD 6, heavy-duty grade, and FS W-C-596.
3. Body: Nylon, with screw-open, cable-gripping jaws and provision for attaching external cable grip.
4. External Cable Grip: Woven wire-mesh type made of high-strength, galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.
5. Configurations as scheduled on drawings.

2.8 CORD AND PLUG SETS

A. Description:

1. Match voltage and current ratings and number of conductors to requirements of equipment being connected.
2. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and ampacity of at least 130 percent of the equipment rating.
3. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.9 TOGGLE SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

B. Switches, 120/277 V, 20A, Single Pole, Double Pole, 3-Way, and 4-Way Configurations.

C. Pilot-Light Switches, 20 A:

1. Description: Single pole, with neon-lighted handle, illuminated when switch is "off."

D. Key-Operated Switches, 120/277 V, 20 A:

1. Description: Single pole, with factory-supplied key in lieu of switch handle.

2.10 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished stainless steel,.
3. Material for Unfinished Spaces: Galvanized steel.

4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover; “EXTRA-DUTY” Rated.

2.11 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: Gray, unless otherwise indicated or required by NFPA 70 or device listing.
2. Wiring Devices Connected to Generator Power System: Red.
3. SPD Devices: Blue.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

a. Cut back and pigtail, or replace all damaged conductors.
b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.

2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on box-side face of coverplate.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or

similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

C. Wiring device will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Nonfusible switches.
2. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.5 SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).
4. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
5. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Field quality-control reports.

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

E. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NFPA 70.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).
2. Altitude: Not exceeding 6600 feet (2010 m).

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without Construction Manager's written permission.
4. Comply with NFPA 70E.

1.8 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 NONFUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper neutral conductors.
3. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.2 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Comply with NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters. Disconnect any/all Surge Protection Devices during acceptance testing that involves continuous test voltages that exceed SPD manufacturers' continuous voltage tolerances.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION 262816

SECTION 263213 - ENGINE GENERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes packaged engine-generator sets for standby power supply with the following features:

1. Diesel engine.
2. Unit-mounted cooling system.
3. Unit-mounted control and monitoring.
4. Outdoor enclosure.
5. Integral accessory power panel.

B. Related Sections include the following:

1. Division 26 Section "TRANSFER SWITCHES" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

A. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 SUBMITTALS

A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:

1. Thermal damage curve for generator.
2. Time-current characteristic curves for generator protective device.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.

3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
4. Wiring Diagrams: Power, signal, and control wiring.

C. Manufacturer Seismic Qualification Certification: Submit certification that day tank, engine-generator set, batteries, battery racks, accessories, and components will withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Qualification Data: For installer.

E. Source quality-control test reports.

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.
7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

F. Field quality-control test reports.

G. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.

H. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 200 miles (321 km) of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

C. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with ASME B15.1.

F. Comply with NFPA 37.

G. Comply with NFPA 70.

H. Comply with NFPA 110 requirements for Level 1 emergency power supply system.

I. Comply with UL 2200.

J. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

K. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Architect no fewer than seven days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Architect's written permission.

B. Environmental Conditions: Engine-generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: Minus 15 to plus 40 deg C.
2. Relative Humidity: 0 to 95 percent.
3. Altitude: Sea level to 7,000 feet (2134 m).

C. Select higher capacities for unit as necessary to accommodate manufacturers de-rating due to environmental conditions.

1.7 COORDINATION

A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, Manufacturer’s offering products that may be incorporated into the Work include, but are not limited to the following:

1. Caterpillar; Engine Div.
2. Kohler Co.; Generator Division.
3. Onan/Cummins Power Generation; Industrial Business Group.

2.2 ENGINE-GENERATOR SET

A. Factory-assembled and -tested, engine-generator set.

B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.

C. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated, with capacity as required to operate as a unit as evidenced by records of prototype testing.
2. Output Connections: Three-phase, four wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

D. Generator-Set Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

A. Fuel: Fuel oil, Grade DF-2.

B. Rated Engine Speed: 1800 rpm.

C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).

D. Lubrication System: The following items are mounted on engine or skid:

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

E. Engine Fuel System:

1. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
2. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.

G. Governor: Adjustable isochronous, with speed sensing.

H. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine-generator-set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.

    a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

I. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

1. Minimum sound attenuation of 25 dB at 500 Hz.
2. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall be 85 dBA or less.

J. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

K. Starting System: 24-V electric, with negative ground.

1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least twice without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article. Include accessories required to support and fasten batteries in place.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg C to plus 60 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
    e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    f. Enclosure and Mounting: Install Integral to generator housing.

2.4 FUEL OIL STORAGE

A. Comply with NFPA 30.

B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:

1. Tank level indicator.
2. Capacity: Fuel for 24 hours' continuous operation at 100 percent rated power output.
3. Vandal-resistant fill cap.
4. Containment Provisions: Comply with requirements of authorities having jurisdiction.

2.5 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown.

When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.

C. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the generator set. Mounting method shall isolate the control panel from generator-set vibration.

D. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:

1. AC voltmeter.
2. AC ammeter.
3. AC frequency meter.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Running-time meter.
8. Ammeter-voltmeter, phase-selector switch(es).
9. Generator-voltage adjusting rheostat.
10. Fuel tank derangement alarm.
11. Fuel tank high-level shutdown of fuel supply alarm.
12. Generator overload.

E. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

F. Remote Alarm Annunciator: Comply with NFPA 99. An LED labeled with proper alarm conditions shall identify each alarm event and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

2.6 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Generator Circuit Breaker: Molded-case, thermal-magnetic type; 100 percent rated; complying with NEMA AB 1 and UL 489.

1. Tripping Characteristic: Designed specifically for generator protection.
2. Trip Rating: Matched to generator rating.
3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
4. Mounting: Adjacent to or integrated with control and monitoring panel.

B. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector shall perform the following functions:

1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
2. Under single or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the generator set.
4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

C. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set alarm indications.

2.7 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H or Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Dripproof.

G. Instrument Transformers: Mounted within generator enclosure.

H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.

1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.

I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

K. Subtransient Reactance: 12 percent, maximum.

2.8 OUTDOOR GENERATOR-SET ENCLOSURE

A. Description: Vandal-resistant, sound-attenuated weatherproof steel housing, wind resistant up to 100 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure. Muffler shall be within enclosure.

B. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.

2.9 ACCESSORY POWER PANEL

A. Description: Factory installed, U.L. Listed panelboard assembly integral to Generator Set enclosure with factory installed and connected circuitry for batter charger, block heater, and other line voltage loads required at generator set.

B. Characteristics:
1. 120V, single-phase source, 30A main breaker.
2. Minimum 12-position assembly with branch circuit breakers sized for accessory load connections.
3. Construct per Division 26 Section “PANELBOARDS.”
4. Comply with NFPA 70
5. Enclosure: NEMA ‘3R’

C. Install to be accessible from Generator Set enclosure access panels.

2.10 VIBRATION ISOLATION DEVICES

A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.11 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.12 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Full load run.
3. Maximum power.
4. Voltage regulation.
5. Transient and steady-state governing.
6. Single-step load pickup.
7. Safety shutdown.
8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine-generator performance.

B. Examine roughing-in of piping systems and electrical connections. Verify actual locations of connections before packaged engine-generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.

B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

C. Install packaged engine generator with restrained spring isolators having a minimum deflection of 1 inch (25 mm) on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

E. Fill all fuel tanks to full capacity with specified fuel prior to testing.

3.3 CONNECTIONS

A. Ground equipment according to Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

B. Connect wiring according to Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

3.4 IDENTIFICATION

A. Identify system components according to Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Engage a qualified testing agency to perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Perform tests recommended by manufacturer and each electrical test and visual and mechanical inspection for "AC Generators and for Emergency Systems" specified in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

   a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
   b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
   c. Verify acceptance of charge for each element of the battery after discharge.
   d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine-generator system before and during system operation. Check for air, exhaust, and fluid leaks.

6. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Harmonic-Content Tests: Measure harmonic content of output voltage under 25 percent and at 100 percent of rated linear load. Verify that harmonic content is within specified limits.
10. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations on each property line, and compare measured levels with required values.

D. The contractor shall conduct a 2-hour full load test on the generator. The load test shall be conducted at a time that will not cause any noise problems for the Owner, preferably after hours or on weekends. Record readings as indicated and include readings log in O&M manuals. Readings shall be taken every 10 minutes to include but not limited to the following measurements:
1. Load Amperage
2. KVA
3. Voltage (line to line, and line to neutral for all phases).
4. Frequency
5. Engine RPM
6. Water Temperature
7. Oil Pressure

E. Coordinate tests with tests for transfer switches and run them concurrently.

F. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.

G. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

H. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

I. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

J. Remove and replace malfunctioning units and retest as specified above.

K. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

L. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

M. Upon testing completion, change oil, change all filters, and fill all fuel tanks to full capacity.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "DEMONSTRATION AND TRAINING."

END OF SECTION 263213

SECTION 263600 - TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes transfer switches rated 600 V and less, including the following:

1. Automatic transfer switches.

B. Related Sections include the following:

1. Division 26 Section "ENGINE GENERATORS" for automatic transfer switches for Engine Generators.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.

1. Single-Line Diagram: Show connections between transfer switch, power sources, and load.

C. Manufacturer Seismic Qualification Certification: Submit certification that transfer switches accessories, and components will withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Qualification Data: For manufacturer.

E. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. Features and operating sequences, both automatic and manual.
2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

F. Warranty: Special Warranty specified in this section.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Maintain a service center capable of providing training, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification.

B. Source Limitations: Obtain automatic transfer switches through one source from a single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NEMA ICS 1.

E. Comply with NFPA 70.

F. Comply with NFPA 110.

G. Comply with UL 1008 unless requirements of these Specifications are stricter.

1.5 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service:

1. Notify Architect no fewer than seven days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Architect's written permission.

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to , the following:

1. Contactor Transfer Switches:
   a. Caterpillar; Engine Div.
   b. Emerson; ASCO Power Technologies, LP.
   c. Kohler Power Systems; Generator Division.
   d. Onan/Cummins Power Generation; Industrial Business Group.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

A. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.

B. Tested Fault-Current Closing and Withstand Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.

1. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall exceed indicated fault-current value at installation location.

C. Solid-State Controls: Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

D. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.

E. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.

F. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.

1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are not acceptable.
2. Switch Action: Double throw; mechanically held in both directions.

3. Contacts: Silver composition or silver alloy for load-current switching. Conventional automatic transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.

G. Neutral Switching. Where four-pole switches are indicated, provide neutral pole switched simultaneously with phase poles.

H. Oversize Neutral: Ampacity and switch rating of neutral path through units indicated for oversize neutral shall be double the nominal rating of circuit in which switch is installed.

I. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, either by color-code or by numbered or lettered wire and cable tape markers at terminations. Color-coding and wire and cable tape markers are specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.

J. Enclosures: General-purpose NEMA 250, Type 1, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.3 AUTOMATIC TRANSFER SWITCHES

A. Comply with Level 1 equipment according to NFPA 110.

B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.

C. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.

D. Manual Switch Operation: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.

E. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.

F. In-Phase Monitor: Factory-wired, internal relay controls transfer so it occurs only when the two sources are synchronized in phase. Relay compares phase relationship and frequency difference between normal and emergency sources and initiates transfer when both sources are within 15 electrical degrees, and only if transfer can be completed within 60 electrical degrees. Transfer is initiated only if both sources are within 2 Hz of nominal frequency and 70 percent or more of nominal voltage.

G. Motor Disconnect and Timing Relay: Controls designate starters so they disconnect motors before transfer and reconnect them selectively at an adjustable time interval after transfer. Control connection to motor starters is through wiring external to automatic transfer switch. Time delay for reconnecting individual motor loads is adjustable between 1 and 60 seconds, and settings are as indicated. Relay contacts handling motor-control circuit inrush and seal currents are rated for actual currents to be encountered.

H. Automatic Transfer-Switch Features:

1. Undervoltage Sensing for Each Phase of Normal Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
2. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.

    a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
    b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts: Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings are for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:

    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings.
    c. Integral battery operation of time switch when normal control power is not available.

2.4 SOURCE QUALITY CONTROL

A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Design each fastener and support to carry load indicated by seismic requirements and according to seismic-restraint details. See Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

B. Floor-Mounting Switch: Anchor to floor by bolting.

1. Concrete Bases: 4 inches (100 mm) high, reinforced, with chamfered edges. Extend base no more than 4 inches (100 mm) in all directions beyond the maximum dimensions of switch, unless otherwise indicated or unless required for seismic support. Construct concrete bases according to Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."

C. Identify components according to Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

3.2 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Ground equipment according to Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

C. Connect wiring according to Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Engage a qualified testing agency to perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installation, including connections, and to assist in testing.
2. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages

and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.

a. Check for electrical continuity of circuits and for short circuits.
b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
c. Verify that manual transfer warnings are properly placed.
d. Perform manual transfer operation.

5. After energizing circuits, demonstrate interlocking sequence and operational function for each switch at least three times.

a. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
b. Simulate loss of phase-to-ground voltage for each phase of normal source.
c. Verify time-delay settings.
d. Verify pickup and dropout voltages by data readout or inspection of control settings.
e. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.
f. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.

6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.

a. Verify grounding connections and locations and ratings of sensors.

C. Coordinate tests with tests of generator and run them concurrently.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

E. Remove and replace malfunctioning units and retest as specified above.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment as specified below. Refer to Division 01 Section "DEMONSTRATION AND TRAINING."

B. Coordinate this training with that for generator equipment.

END OF SECTION 263600

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes LED luminaires as scheduled on Drawings.

B. Related Requirements:

1. Division 26 Section "LIGHTING CONTROL DEVICES" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
2. Division 26 Section "NETWORK LIGHTING CONTROLS" for manual or programmable control systems with low-voltage control wiring or data communication circuits.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color Rendering Index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. LED: Light-emitting diode.

F. Lumen: Measured output of lamp and luminaire, or both.

G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaires.
4. Include emergency lighting units, including batteries and chargers.
5. Include life, output (lumens, CCT, and CRI), and energy efficiency data.
6. Photometric data and adjustment factors based on laboratory tests, complying with IES Lighting Measurements Testing and Calculation Guides, of each luminaire type. The

adjustment factors shall be for lamps and accessories identical to those indicated for the luminaire as applied in this Project IES LM-80.

a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Shop Drawings: For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

C. Sustainable Design Submittals:

1. Product Data: Indicating luminaire is certified by ENERGY STAR and Design lights Consortium (DLC).

2. Include Samples of luminaires and accessories involving color and finish selection.

3. Include Samples of luminaires and accessories to verify finish selection.

D. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Luminaires.
2. Suspended ceiling components.
3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches (300 mm) of the plane of the luminaires.
4. Structural members to which equipment and or luminaires will be attached.
5. Initial access modules for acoustical tile, including size and locations.
6. Items penetrating finished ceiling, including the following:

a. Other luminaires.
b. Air outlets and inlets.
c. Speakers.
d. Sprinklers.
e. Access panels.
f. Ceiling-mounted projectors.

7. Moldings.

B. Seismic Qualification Certificates: For luminaires, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

C. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Product Certificates: For each type of luminaire.

E. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Provide luminaires from a single manufacturer for each luminaire type.

C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

B. Warranty Period: Minimum of Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE 7.

B. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.

1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified."

2.2 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Standards:
   1. ENERGY STAR certified.
   2. Design Lighting Consortium (DLC) Certified.
   3. UL Listing: All products shall be U.L. Listed.
   4. Recessed luminaires shall comply with NEMA LE 4.

C. CRI: 80 minimum.

D. CCT of 3500 K (interior) and 4000k (exterior) or as scheduled in Luminaire Schedule.

E. Rated lamp life minimum: 50,000 hours to L70.

F. Light Engines shall be dimmable from 100 percent to 0 percent of maximum light output.

2.3 LED DRIVERS

A. Internal to Luminaire unless otherwise noted.

B. Input Voltage: As scheduled in Luminaire Schedule. Multi-Tap types shall be utilized unless strict manufacture requirements indicate specific voltage connections.

C. Dimming: 0-10V, unless otherwise specified; dimming from 100% to 0%.

2.4 EMERGENCY LED POWER UNIT (DRIVER)

A. Description: Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body and compatible with driver. Comply with UL 924.

   1. Emergency Connection: Operate one LED lamp(s) continuously at a minimum output of 1400 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire driver.
   2. Nightlight Connection: Operate one LED lamp continuously.
   3. Test Push Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.

      a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
      b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

   4. Battery: Sealed, maintenance-free, nickel-cadmium type.
   5. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
   6. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.

7. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

B. External Type: Self-contained, modular, battery-inverter unit, suitable for powering one or more LED lamps, remote mounted from luminaire. Comply with UL 924.

1. Emergency Connection: Operate one LED lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire driver.
2. Nightlight Connection: Operate one LED lamp in a remote luminaire continuously.
3. Battery: Sealed, maintenance-free, nickel-cadmium type.
4. Charger: Fully automatic, solid-state, constant-current type.
5. Housing: NEMA 250, Type 1 enclosure.
6. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
7. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
8. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
9. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.5 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

C. Diffusers and Globes:
1. Acrylic Diffusers: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
2. Glass: Annealed crystal glass unless otherwise indicated.
3. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.

D. Housings:

1. Extruded-aluminum housing and heat sink.
2. Powder-coat painted finish as scheduled.

E. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following luminaire characteristics:

a. "USE ONLY" and include specific mounting allowances.
b. CCT and CRI for all luminaires.

2.6 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.7 LUMINAIRE SUPPORT

A. Comply with requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" for channel and angle iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.

C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

D. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting and install new lamps.

3.3 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and vertical force of 400 percent of luminaire weight.

D. Flush-Mounted Luminaire Support:

1. Secured to outlet box.
2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
3. Trim ring flush with finished surface.

E. Wall-Mounted Luminaire Support:

1. Attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.

F. Ceiling-Mounted Luminaire Support:

1. Ceiling mount with two 5/32-inch- (4-mm-) diameter aircraft cable supports adjustable to.

G. Suspended Luminaire Support:

1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and wire support for suspension for each unit length of luminaire chassis, including one at each end.
4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

H. Ceiling-Grid-Mounted Luminaires:

1. Secure to any required outlet box.
2. Secure luminaire to the luminaire opening using approved fasteners in a minimum of four locations, spaced near corners of luminaire.
3. Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

I. Comply with requirements in Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" for wiring connections.

J. Comply with requirements in Division 26 Section “CONTROL-VOLTAGE ELECTRICAL POWER CABLES” for control wiring connections.

3.4 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.6 STARTUP SERVICE

A. Comply with requirements for startup specified in Division 26 Section "NETWORK LIGHTING CONTROLS."

END OF SECTION 265119

SECTION 265219 - EMERGENCY AND EXIT LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Emergency lighting units.
2. Exit signs.
3. Luminaire supports.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color Rendering Index.

C. Emergency Lighting Unit: A lighting unit with internal or external emergency battery powered supply and the means for controlling and charging the battery and unit operation.

D. Fixture: See "Luminaire" Paragraph.

E. Lumen: Measured output of lamp and luminaire, or both.

F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of emergency lighting unit, exit sign, and emergency lighting support.

1. Include data on features, accessories, and finishes.
2. Include physical description of the unit and dimensions.
3. Battery and charger for light units.
4. Include life, output of luminaire (lumens, CCT, and CRI), and energy-efficiency data.
5. Include photometric data and adjustment factors based on laboratory tests, complying with IES LM-45, for each luminaire type.
   a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Product Schedule:

1. For emergency lighting units. Use same designations indicated on Drawings.
2. For exit signs. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Luminaires.
2. Suspended ceiling components.
3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches (300 mm) of the plane of the luminaires.
4. Structural members to which equipment will be attached.
5. Size and location of initial access modules for acoustical tile.
6. Items penetrating finished ceiling including the following:

   a. Other luminaires.
   b. Air outlets and inlets.
   c. Speakers.
   d. Ceiling-mounted projectors.
   e. Sprinklers.
   f. Access panels.

7. Moldings.

B. Product Certificates: For each type of luminaire.

C. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
4. Provide seismic qualification certificate for each piece of equipment.

D. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in emergency, operation, and maintenance manuals.

1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.7 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two year(s) from date of Substantial Completion.

B. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Emergency Power Unit Batteries: Five years from date of Substantial Completion. Full warranty shall apply for the entire warranty period.
2. Warranty Period for Self-Powered Exit Sign Batteries: Two years from date of Substantial Completion. Full warranty shall apply for the entire warranty period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified."

2.2 GENERAL REQUIREMENTS FOR EMERGENCY LIGHTING

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NRTL Compliance: Fabricate and label emergency lighting units, exit signs, and batteries to comply with UL 924.

C. Comply with NFPA 70 and NFPA 101.

D. Comply with NEMA LE 4 for recessed luminaires.

E. Internal Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body and compatible with driver.

1. Emergency Connection: Operate one lamp(s) continuously at an output of 1400 lumens each upon loss of normal power. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire ballast.

2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
3. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

    a. Ambient Temperature: Less than 0 deg F (minus 18 deg C) or exceeding 104 deg F (40 deg C), with an average value exceeding 95 deg F (35 deg C) over a 24-hour period.
    b. Ambient Storage Temperature: Not less than minus 4 deg F (minus 20 deg C) and not exceeding 140 deg F (60 deg C).
    c. Humidity: More than 95 percent (condensing).
    d. Altitude: Exceeding 3300 feet (1000 m).

4. Test Push-Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.

    a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

5. Battery: Sealed, maintenance-free, nickel-cadmium type.
6. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
7. Remote Test: Switch in handheld remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
8. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

F. External Type: Self-contained, modular, battery-inverter unit, suitable for powering one or more lamps, remote mounted from luminaire.

1. Emergency Connection: Operate one LED lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire driver.
2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
3. Nightlight Connection: Operate lamp in a remote luminaire continuously.
4. Battery: Sealed, maintenance-free, nickel-cadmium type.
5. Charger: Fully automatic, solid-state, constant-current type.
6. Housing: NEMA 250, Type 1 enclosure listed for installation inside, on top of, or remote from luminaire. Remote assembly shall be located no less than half the distance recommended by the emergency power unit manufacturer, whichever is less.
7. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
8. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

9. Remote Test: Switch in handheld remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
10. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.3 EMERGENCY LIGHTING

A. General Requirements for Emergency Lighting Units: Self-contained units.

2.4 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:

1. Input Voltage: As scheduled in Luminaire Schedule Multi-Tap inputs shall be utilized where offered by manufacturer.
2. Lamps for AC Operation: LEDs; 50,000 hours minimum rated lamp life.
3. Self-Powered Exit Signs (Battery Type): Internal emergency power unit.

2.5 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access:

1. Smooth operating, free of light leakage under operating conditions.
2. Designed to permit relamping without use of tools.
3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

2.6 METAL FINISHES

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 LUMINAIRE SUPPORT COMPONENTS

A. Comply with requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" for channel and angle iron supports and nonmetallic channel and angle supports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of luminaires.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Install lamps in each luminaire.

D. Supports:

1. Sized and rated for luminaire and emergency power unit weight.
2. Able to maintain luminaire position when testing emergency power unit.
3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of luminaire weight.

E. Wall-Mounted Luminaire Support:

1. Attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.

F. Suspended Luminaire Support:

1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and wire support for suspension for each unit length of luminaire chassis, including one at each end.
4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

G. Ceiling Grid Mounted Luminaires:

1. Secure to any required outlet box.

2. Secure emergency power unit using approved fasteners in a minimum of four locations, spaced near corners of emergency power unit.
3. Use approved devices and support components to connect luminaire to building structure in a minimum of four locations, spaced near corners of luminaire.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.5 STARTUP SERVICE

A. Perform startup service:

1. Charge emergency power units and batteries minimum of one hour and depress switch to conduct short-duration test.

END OF SECTION 265219

SECTION 265613 - LIGHTING POLES AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Poles and accessories for support of luminaires.

1.3 DEFINITIONS

A. EPA: Equivalent projected area.

B. Luminaire: Complete luminaire.

C. Pole: Luminaire-supporting structure, including tower used for large-area illumination.

D. Standard: See "Pole."

1.4 ACTION SUBMITTALS

A. Product Data: For each pole, accessory, and luminaire-supporting device, arranged as indicated.

1. Include data on construction details, profiles, EPA, cable entrances, materials, dimensions, weight, rated design load, and ultimate strength of individual components.
2. Include finishes for lighting poles and luminaire-supporting devices.
3. Anchor bolts.
4. Manufactured pole foundations.

B. Shop Drawings:

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of poles and pole accessories.
4. Foundation construction details, including material descriptions, dimensions, anchor bolts, support devices, and calculations, signed and sealed by a professional engineer licensed in the state of installation.
5. Anchor bolt templates keyed to specific poles and certified by manufacturer.
6. Method and procedure of pole installation. Include manufacturer's written installations.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For poles to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include pole inspection and repair procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store poles on decay-resistant skids at least 12 inches (300 mm) above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

B. Retain factory-applied pole wrappings on metal poles until right before pole installation. Handle poles with web fabric straps.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of pole(s) that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within a specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs from special warranty period.

1. Warranty Period: Five years from date of Substantial Completion.
2. Warranty Period for Corrosion Resistance: Five years from date of Substantial Completion.
3. Warranty Period for Color Retention: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Foundation and pole shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified."
2. Component Importance Factor: 1.0.

B. Structural Characteristics: Comply with AASHTO LTS-6-M.

C. Dead Load: Weight of luminaire and its horizontal and vertical supports, and supporting structure, applied according to AASHTO LTS-6-M.

D. Live Load: Single load of 500 lbf (2200 N) distributed according to AASHTO LTS-6-M.

E. Ice Load: Load of 3 lbf/sq. ft. (145 Pa), applied according to AASHTO LTS-6-M for applicable areas on the Ice Load Map.

F. Wind Load: Pressure of wind on pole and luminaire, calculated and applied according to AASHTO LTS-6-M.

1. Basic wind speed for calculating wind load for poles 50 feet (15 m) high or less is 100 mph (45 m/s).

a. Wind Importance Factor: 1.0.
b. Minimum Design Life: 25 years.
c. Velocity Conversion Factor: 1.0.

G. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

2.2 STEEL POLES

A. Source Limitations: Obtain poles from single manufacturer or producer.

B. Poles: Comply with ASTM A 500/A 500M, Grade B carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet (12 m) in height with access handhole in pole wall.

1. Shape: Square, straight.
2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.

C. Brackets for Luminaires: Detachable, cantilever, without underbrace.

1. Adaptor fitting welded to pole, allowing the bracket to be bolted to the pole-mounted adapter, then bolted together with stainless-steel bolts.
2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire. Match pole material and finish.

D. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.

E. Fasteners: Stainless steel, size and type as determined by manufacturer. Corrosion-resistant items compatible with support components.

1. Materials: Compatible with poles and standards as well as the substrates to which poles and standards are fastened and shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.

F. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS," listed for attaching grounding and bonding conductors of type and size indicated, and accessible through handhole.

G. Handhole: Oval shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.

H. Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported load multiplied by a 5.0 safety factor.

2.3 FINISHES

A. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces according to SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, according to SSPC-SP 5/NACE No. 1 or SSPC-SP 8.
2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high gloss, high-build polyurethane enamel.

a. Color: As indicated by manufacturer's designations.

2.4 POLE ACCESSORIES

A. Base Covers: Manufacturers' standard metal units, finished same as pole, and arranged to cover pole's mounting bolts and nuts.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine poles, luminaire-mounting devices, and pole accessories before installation. Components that are scratched, dented, marred, wet, moisture damaged, or visibly damaged are considered defective.

C. Examine roughing-in for foundation and conduit to verify actual locations of installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 POLE FOUNDATION

A. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123 M; and with top-plate and mounting bolts to match pole-base flange and strength required to support pole, luminaire, and accessories. Concrete, reinforcement, and formwork are specified in Division 03 Section "CAST-IN-PLACE."

B. Pre-Cast Foundations: Factory fabricated, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole-base flange and strength required to support pole, luminaire, and accessories. Concrete, reinforcement, and formwork are specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

C. Anchor Bolts: Install plumb using manufacturer-supplied plywood template, uniformly spaced.

3.3 POLE INSTALLATION

A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on pole.

B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on drawing.

1. Fire Hydrants and Water Piping: 60 inches (1520 mm).
2. Water, Gas, Electric, Communications, and Sewer Lines: 10 feet (3 m).
3. Trees: 15 feet (5 m) from tree trunk.

C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

D. Foundation-Mounted Poles: Mount pole with leveling nuts and tighten top nuts to torque level according to pole manufacturer's written instructions.

1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
3. Install base covers unless otherwise indicated.
4. Use a short piece of 1/2 -inch (13-mm) diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.

E. Poles and Pole Foundations Set in Concrete-Paved Areas: Install poles with a minimum 6-inch- (150-mm-) wide, unpaved gap between the pole or pole foundation and the edge of the adjacent concrete slab. Fill unpaved ring with pea gravel. Insert material to a level 1 inch (25 mm) below top of concrete slab.

F. Raise and set pole using web fabric slings (not chain or cable) at locations indicated by manufacturer.

3.4 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum using insulating fittings or treatment.

B. Steel Conduits: Comply with requirements in Division 26 Section "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50-percent overlap.

3.5 GROUNDING

A. Ground Metal Poles and Support Structures: Comply with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

1. Install grounding electrode for each pole unless otherwise indicated.
2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.6 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

END OF SECTION 265613

SECTION 265619 – LED EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior solid-state luminaires that are designed for and exclusively use LED lamp technology.
2. Luminaire supports.

B. Related Requirements:

1. Division 26 Section "NETWORK LIGHTING CONTROLS" for manual or programmable control systems with low-voltage control wiring or data communication circuits.
2. Division 26 Section "LIGHTING POLES AND STANDARDS" for poles and standards used to support exterior lighting equipment.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color rendering index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. Lumen: Measured output of lamp and luminaire, or both.

F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of luminaire.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaire.
4. Lamps, include life, output (lumens, CCT, and CRI), and energy-efficiency data.
5. Photometric data and adjustment factors based on laboratory tests, complying with IES Lighting Measurements Testing and Calculation Guides, of each luminaire type. The

adjustment factors shall be for lamps and accessories identical to those indicated for the luminaire as applied in this Project IES LM-80.

a. Manufacturer's Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the NVLAP for Energy Efficient Lighting Products.

6. Wiring diagrams for power, control, and signal wiring.
7. Photoelectric relays.
8. Means of attaching luminaires to supports and indication that the attachment is suitable for components involved.

B. Shop Drawings: For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads,required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

C. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Luminaires.
2. Structural members to which equipment and luminaires will be attached.
3. Underground utilities and structures.
4. Existing underground utilities and structures.
5. Above-grade utilities and structures.
6. Existing above-grade utilities and structures.
7. Building features.
8. Vertical and horizontal information.

B. Qualification Data: For testing laboratory providing photometric data for luminaires.

C. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Product Certificates: For each type of the following:

1. Luminaire.

E. Source quality-control reports.

F. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires to include in operation and maintenance manuals.

1. Provide a list of all photoelectric relay types used on Project; use manufacturers' codes.

1.7 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturers' laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Provide luminaires from a single manufacturer for each luminaire type.

C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering prior to shipping.

1.9 FIELD CONDITIONS

A. Verify existing and proposed utility structures prior to the start of work associated with luminaire installation.

B. Mark locations of exterior luminaires for approval by Architect prior to the start of luminaire installation.

1.10 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including luminaire support components.
b. Faulty operation of luminaires and accessories.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 5 year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.

1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified."

2.2 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NRTL Compliance: Luminaires shall be listed and labeled for indicated class and division of hazard by an NRTL.

C. UL Compliance: Comply with UL 1598 and listed for wet location.

D. Design Lighting Consortium (DLC) Certified.

E. CRI of minimum 80.

F. CCT of 4000 K.

G. L70 lamp life of 50,000 minimum hours.

H. Light Engines shall be dimmable from 100 percent to 0 percent of maximum light output.

I. Source Limitations: Obtain luminaires from single source from a single manufacturer.

2.3 LED DRIVERS

A. Internal to Luminaire unless otherwise noted.

B. Input Voltage: As scheduled in luminaire schedule. Multi-Tap types shall be utilized unless strict manufacturer requirements indicate specific voltage connections.

C. Dimming: 0 - 10V unless otherwise specified, with minimum range of dimming from 100% to 0%.

2.4 MATERIALS

A. Metal Parts: Free of burrs and sharp corners and edges.

B. Sheet Metal Components: Corrosion-resistant aluminum. Form and support to prevent warping and sagging.

C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.

D. Diffusers and Globes:

1. Acrylic Diffusers: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
2. Glass: Annealed crystal glass unless otherwise indicated.
3. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.

E. Lens and Refractor Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

F. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

G. Housings:

1. Rigidly formed, weather- and light-tight enclosure that will not warp, sag, or deform in use.
2. Provide filter/breather for enclosed luminaires.

H. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

a. "USE ONLY" and include specific mounting allowances.
b. CCT and CRI for all luminaires.

2.5 FINISHES

A. Variations in Finishes: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

B. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

C. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20 requirements; and seal aluminum surfaces with clear, hard-coat wax.
3. Class I, Clear-Anodic Finish: AA-M32C22A41 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
4. Class I, Color-Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker), complying with AAMA 611.

    a. Color: As scheduled.

2.6 LUMINAIRE SUPPORT COMPONENTS

A. Comply with requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" for channel and angle iron supports and nonmetallic channel and angle supports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire electrical conduit to verify actual locations of conduit connections before luminaire installation.

C. Examine walls, roofs, and canopy ceilings for suitable conditions where luminaires will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is substantially complete, clean luminaires used for temporary lighting and install new lamps.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Comply with NECA 1.

B. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Install lamps in each luminaire.

D. Fasten luminaire to structural support.

E. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Support luminaires without causing deflection of finished surface.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

F. Wall-Mounted Luminaire Support:

1. Attached to structural members in walls.

G. Wiring Method: Install cables in raceways. Conceal raceways and cables.

H. Install luminaires level, plumb, and square with finished grade unless otherwise indicated.

I. Coordinate layout and installation of luminaires with other construction.

J. Comply with requirements in Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" and Division 26 Section "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS" for wiring connections and wiring methods.

3.4 INSTALLATION OF INDIVIDUAL GROUND-MOUNTED LUMINAIRES

A. Aim as indicated on Drawings.

B. Install on concrete base with top 4 inches (100 mm) above finished grade or surface at luminaire location. Cast conduit into base, and finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Division 03 Section "CAST-IN PLACE CONCRETE."

3.5 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.6 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.7 FIELD QUALITY CONTROL

A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.

B. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

C. Luminaire will be considered defective if it does not pass tests and inspections.

D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265619

SECTION 268000 – ELECTRICAL DEMOLITION AND REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Removal of obsolete wiring and electrical apparatus.
2. Relocation, reconnection, or replacement of existing wiring affected by demolition or new construction.
3. Capping off concealed wiring abandoned due to demolition or new construction.

1.3 DRAWINGS AND EXISTING CONDITIONS

A. All relocations, reconnections and removals are not necessarily indicated on the drawings. As such, the Contractor shall make adequate allowance in his proposal for this work as no “extra” charges will be allowed for these items.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Refer to Division 26 Section “RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS” for raceways and boxes required by this scope of work.

B. Refer to Division 26 Section “LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES” for conductor and cable installation required by this scope of work.

PART 3 - EXECUTION

3.1 TEMPORARY CONNECTIONS

A. Where existing wiring must remain in service to supply occupied areas during construction, provide temporary wiring, connections and apparatus to maintain service to such areas. All shall be performed in a neat and safe manner to prevent injury to the building or its’ occupants.

3.2 EXISTING WIRING TO BE ABANDONED

A. Concealed wiring: cap flush with existing or new building surfaces. Indicate routing, size and former function of such raceways on as-built prints.

B. Surface Run Raceways: remove; cap where emerging from building surfaces and record as above.

3.3 EXISTING WIRING TO REMAIN IN USE

A. Where affected by demolition or new construction; relocate, replace, extend or repair raceways, conductors, outlets and apparatus to allow continued use of same. Use methods and materials as specified for new construction.

3.4 EXISTING INFRASTRUCTURE TO REMAIN

A. Existing electrical wiring, apparatus, fixtures, equipment, etc. in close proximity to altered or new work shall be upgraded, modified, and brought to current adopted code standards in accordance with NEC and local ordinances. Close proximity shall be determined by the Authority Having Jurisdiction.

3.5 MATERIALS AND APPARATUS REMOVED

A. All obsolete raceways, conductors, apparatus, and luminaires shall become the property of the Contractor and removed from site promptly unless otherwise noted.

B. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "PENETRATION FIRESTOPPING."

3.5 POWER OUTAGES

A. Power outages shall be held to a minimum and coordinated with the Owner. Contractor shall schedule same during normal off-duty hours, such as nights, weekends or holidays.

END OF SECTION 268000

SECTION 270100 – BASIC COMMUNICATIONS REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this and the other sections of Division 27.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for communications installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:

1. Scope of Work.
2. Definitions.
3. Code compliance.
4. Approved Contractor.
5. Drawings and specifications.
6. Submittals.
7. Coordination drawings.
8. Guarantee of installation.
9. Record documents.
10. Maintenance manuals.
11. Delivery, storage and handling.
12. Temporary Communications services.
13. Instruction of Owners personnel.
14. Product Source Limitations.

B. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in all Sections of Division 27 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation. All specified products shall be installed in accordance with all manufacturers' instructions and requirements.

C. All network electronics, telephone and voice mail equipment, and the installation thereof shall be furnished by the Owner.

D. All products furnished for this project shall be new and all components shall be manufactured for use within the same system. All specific components, such as jacks, cabling and patch cords, shall be of the same manufacturer and product line throughout the entire project. This insures interoperability, functionality and full performance from the installed system.

1.3 SCOPE OF WORK

A. This division describes the products and execution requirements relating to furnishing and installing Telecommunications Systems at the new or remodeled buildings for Idaho Central Credit Union. Horizontal cabling comprised of copper cabling, and support systems are covered under this division.

B. The Horizontal (workstation) Cabling System shall consist of a minimum of two (2) 4-pair Unshielded Twisted Pair (UTP) Copper Cables to each work area outlet unless otherwise noted for specific locations. The cables shall be installed from the Work Area Outlet to the Telecommunications Room (TR) located on the same floor, and routed to the appropriate rack serving that area and terminated as specified in this document.

C. All cables and related terminations, support and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the Telecommunications contractor as detailed in this document.

D. Product specifications, general design considerations, and installation guidelines are provided in this document. Quantities of telecommunications outlets, typical installation details, cable routing and outlet types will be provided as an attachment to this document. If the bid documents are in conflict, this specification shall take precedence. The successful vendor shall meet or exceed all requirements for the cable system described in this document.

E. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this structured cabling system in compliance with the specifications and drawings. The telecommunications contractor will provide and install all of the required material to form a complete system whether specifically addressed in the technical specifications or not. The telecommunications contractor will test 100% of the channels. Failures and marginal passes will be corrected and retested.

F. The work shall include, but not be limited to the following:

1. Furnish and install a complete telecommunications wiring infrastructure.
2. Furnish, install, and terminate all UTP cable
3. Furnish and install all wall plates, jacks, patch panels, and patch cords.
4. Furnish and install all required cabinets and/or racks as required and as indicated.
5. Furnish any other material required to form a complete system.
6. Perform permanent link or channel testing (100% of horizontal and/or backbone links/channels) and certification of all components.
7. Furnish documentation and test results of all cabling to the owner on CD and paper format, listed by each closet, then by workstation ID. (Testing documentation and As-built drawings)
8. Adhere and comply with all requirements of the Ortronics Certification program.
9. Register the project for warranty.
10. Submit all final test results in original tester software to Ortronics.

1.4 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical, electrical, and communications equipment rooms, furred spaces, chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and electrical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient

temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.5 CODE COMPLIANCE

A. All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the local Electrical Code and present manufacturing standards.

B. All materials shall be UL Listed and shall be marked as such. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.

C. All modular jacks, patch cords, consolidation point, and patch cords shall be ETL Verified (not just tested) to be augmented category 6 channel compliant.

D. The cabling system described in this is derived from the recommendations made in recognized telecommunications industry standards. The following documents are incorporated by reference:

1. Occupational Safety and Health Act Standards (OSHA).
2. ANSI/IEEE C-2 - National Electrical Safety Code.
3. ADAAG (ADA) Standards - Americans With Disabilities Act.
4. CABO-ANSI A117.1.
5. IEEE Standards.
6. Underwriter's Laboratory – U.L. All products shall be U.L. Listed.
7. NFPA – National Fire Protection Association Codes and Standards of Installation.
   a. NFPA 70 – National Electric Code
   b. NFPA 72 – National Fire Alarm Code
   c. NFPA 101 – Life Safety Code
8. NECA - Standard of Installation.
9. NEMA – Standard of Installation
10. International Building Code
11. International Fire Code
12. International Energy Conservation Code.
13. BICSI TDMM (Telecommunications Distribution Methods Manual), Current Edition.
14. ANSI/TIA-568-C.0 -Generic Communications Cabling for Customer Premises.
15. ANSI/TIA-568-C.1 –Commercial Building Telecommunications Cabling Standard
16. ANSI/TIA- 568-C.2 –Balanced Twisted-Pair Telecommunications Cabling and Components Standard.
17. ANSI/TIA- 568-C.3 -Optical Fiber Cabling Components Standards.
18. ANSI/TIA–569-C -Commercial Building Standard for Telecommunications Pathways and Spaces.
19. ANSI/TIA–606-B -Administration Standard for Commercial Telecommunications Infrastructure.
20. ANSI/TIA–607-B -Generic Telecommunications Bounding and Grounding (Earthing) for Customer Premises.

21. TIA–758-B -Customer-Owned Outside Plant Telecommunications Infrastructure Standard.

E. If this document and any of the documents listed above are in conflict, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The Contractor has the responsibility to determine and adhere to the most recent release when developing the proposal for installation.

F. This document does not replace any code, either partially or wholly. The contractor must be aware of local codes that may impact this project.

G. Work to be executed and inspected in accordance with local codes and ordinances. Permits, fees or charges for inspection or other services shall be paid for by this Contractor. Local codes and ordinances are to be considered as minimum requirements and must be properly executed without expense to the Owner; but do not relieve the Contractor from work shown that exceeds minimum requirements.

1.6 APPROVED CONTRACTOR

1. The Telecommunications contractor must be an approved Ortronics Certified Contractor at a CIP-ESP or CIP level. At least 30 percent of the installation and termination crew must be certified Ortronics on proper installation and testing of copper and fiber structured cabling systems. A letter from Ortronics stating that the Installer Company's certification is in good standing must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with the Ortronics CIP-ESP/CIP Program. The Telecommunications contractor must also register the project and submit test data for approval, per the requirements of the Ortronics certification program guidelines. Once approved, Ortronics will extend a nCompass Limited Lifetime Warranty to the end user.

2. The Contractor installing voice and data cabling shall be able to provide a list of similar projects with references that they have completed within the last five years.

3. The Contractor shall be thoroughly knowledgeable in TIA-568C.2 standards of Category 6A installations. The requirements of these standards shall be met whether a particular item is specified or not. The specifications assume that the contractor shall provide all miscellaneous components, hardware, etc. in a manner compliance with these standards.

4. The installation shall be made by a licensed and bonded contractor holding a valid Idaho State Contractor's License. All work covered by this specification is to be performed by a holder of a current State of Idaho specialty Electrician's license for limited energy systems.

1.7 ALTERNATE APPROVED CONTRACTOR

A. Alternate approved contractor that is acceptable shall meet the following requirements:

1. The Telecommunications contractor must be an approved Leviton Network Integrator in good standing. At least 30 percent of the installation and termination crew must be certified with Leviton on proper installation and testing of copper and fiber structured

cabling systems. A valid and current certificate showing that the Installer Company's certification is in good standing must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with the Leviton Network Integrator Program. The Telecommunications contractor must also register the project and submit test data for approval, per the requirements of the Leviton Network Integrator Program guidelines. Once approved, Leviton will extend a BLT Limited Lifetime Warranty to the end user.

2. The Contractor installing voice and data cabling shall be able to provide a list of similar projects with references that they have completed within the last five years.

3. The Contractor shall be thoroughly knowledgeable in TIA-568C.2 standards of Category 6A installations. The requirements of these standards shall be met whether a particular item is specified or not. The specifications assume that the contractor shall provide all miscellaneous components, hardware, etc. in a manner compliance with these standards.

4. The installation shall be made by a licensed and bonded contractor holding a valid Idaho State Contractor's License. All work covered by this specification is to be performed by a holder of a current State of Idaho specialty Electrician's license for limited energy systems.

B. Equivalent products from approved contractor shall meet or exceed the requirements of these specifications and be compatible with warranty requirements listed.

1.8 DRAWINGS AND SPECIFICATIONS

A. All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.

B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, or any work necessary to comply with the intent of Plans and Specifications necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.

C. Contractor shall verify all dimensions at the site and be responsible for their accuracy.

1.9 SUBMITTALS

A. General: Follow the procedures specified in Division 01 Section "SUBMITTALS".

B. Substitutions and Material Submittals: By specific designation and description, standards are established for specialties and equipment.

C. Other makes of specialties and equipment of equal quality will be considered, provided such proposed substitutions are submitted to the Architect for approval at least seven (7) calendar days prior to bid opening. A schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed as a substitution shall be submitted together with a single copy

of the manufacturer's complete specifications. A list of approved substitutions will be published as an Addendum. No substituted materials shall be installed except by written approval.

D. Within thirty (30) days after award of contract, the Contractor shall submit in six (6) copies a schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed for use and implementation. This schedule shall be accompanied by the manufacturer's complete specification, in six (6) copies, for each equipment item or materials used, give complete information as to capacities, ratings, kind of material used, finish guarantee, etc., and such dimensions as are necessary to check space requirements. When approved, such schedule and drawing shall be in addition to these specifications and shall be in equal force in that no variation shall be permitted. The Architect is to be the sole judge as to the quality of any material offered as an equal. See General Conditions and Supplementary Conditions to the Contract.

E. Design is based on equipment as listed in schedules on drawings and included in these specifications. All changes in foundations, bases, supports, connections, controls, space, openings, walls and ceilings and sound and vibration isolation, seismic support, and electrical and mechanical characteristics required by alternate equipment specified, submitted and approved shall be made at no additional cost to the Owner.

F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

G. Increase, by the quantity listed below, the number of communications related shop drawings, product data and samples submitted to allow for required distribution plus two (2) copies of each submittal required, which will be retained by the Electrical Consulting Engineer.

1. Shop Drawings – Initial Submittal: one (1) additional print(s).
2. Shop Drawings – Final Submittal: one (1) additional print(s).
3. Product Data: one (1) additional copy of each item(s).

H. Additional copies may be required by individual sections of these Specifications.

I. Coordination Drawings: Comply with requirements specified in Division 01 Section "PROJECT MANAGEMENT AND COORDINATION."

J. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects names and addresses, contact information of architects and owners, and other information specified.

K. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

L. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

M. Manufacturer Certificates: Submit written statements on manufacture's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

P. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indication and interpreting test results of material for compliance with requirements in the Contract Documents

Q. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency

R. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "QUALITY REQUIREMENTS."

S. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

T. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

U. Field Test Reports: Submit reports indicating and interpreting results of field test performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

V. Maintenance Data: Comply with requirements specified in Division 01 Section "OPERATION AND MAINTENANCE DATA."

W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page number.

1.10 ELECTRONIC SUBMITTAL PROCEDURE

A. Summary:

1. Shop drawings and product data submittals shall be transmitted to Architect in electronic (PDF) format using a website service designed specifically for transmitting submittals between construction team members.

2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. The electronic submittal process is not intended for color samples, color charts, or physical material samples.

B. Procedures:

1. Create submittal log in software by inserting required submittals listed in individual specification section.
2. Submittal Preparation – Contractor may use any or all of the following options:

    a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via the website.
    b. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via email.
    c. Subcontractors and Suppliers provide paper submittals to Scanning Service which electronically scans and converts to PDF format.

3. Printed Submittals: Provide two printed sets of submittals for shop drawings for structural framing in addition to electronic submittals.
4. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
5. Contractor shall transmit each submittal to Architect using the software website.
6. Architect / Engineer review comments will receive email notice of completed review.
7. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
8. Submit paper copies of any reviewed submittals not submitted electronically at project closeout for record purposes in accordance with Section 017700 – CLOSEOUT PROCEDURES.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not a as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable. Include the following information, as applicable.
    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specification.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

3. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printing performance curves.
    c. Operational range diagrams.

d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

4. Submit Product Data before or concurrent with Samples.

D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the contract Documents or standard data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the Following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets a least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm)

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number title of application Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Sample not incorporated with Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

1.11 COORDINATION DRAWINGS

A. Prepare coordination drawings in accordance with Division 01 Section "PROJECT COORDINATION" and other Sections included herein to a scale of 1/8"=1'-0" or larger detailing

communications room and floor plans showing major elements, components and systems of communications equipment and materials in relationship with other systems, installations and building components. Indicated locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the work including (but not limited to) the following:

1. Indicate the proposed locations of cable tray, conduit racks, equipment and materials. Include the following:
    a. Clearances for installation of communications junction boxes.
    b. Clearances for servicing and maintaining equipment including racks, wiring devices, patch panels, control equipment, etc.
    c. Equipment connections and support details.
    d. Exterior wall and foundation penetrations.
    e. Fire rated wall and ceiling and floor assembly penetrations.
    f. Size and locations of required concrete pads and bases.
2. Indicate scheduling, sequencing, movement and positioning of large equipment into the building during construction.
3. Prepare floor plans, elevations and details to indicate penetrations in floors, walls and ceilings and their relationship to other penetrations and installations.
4. Prepare reflected ceiling plans to coordinate and integrate installations, mechanical access to equipment, air outlets and inlets, luminaires, speakers, fire sprinklers and other ceiling mounted items.

1.12 GUARANTEE OF INSTALLATION

A. All work under this section shall be guaranteed in writing to be free of defective work, materials, or parts for a period of one (1) year from the date of Substantial Completion.

B. Manufacturer's specific warranties and those specified in this Section shall be included in the Contractor's Guarantee of Installation.

C. Repair, revision or replacement of any and all defects, failure or inoperativeness shall be done by this section at no cost to the Owner.

D. System Performance Warranty

1. The nCompass Warranty combines a Limited Lifetime extended product and applications assurance warranty. Ortronics (Manufacturer) provides the warranty directly to the end-user.

2. The nCompass warranty guarantees functionality of all components used in the system for a Limited Lifetime from the date of project completion. The warranty shall warrant the installed horizontal copper and the backbone optical fiber portions of the cabling system.

3. The nCompass Warranty shall cover the failure of the structured cabling system to support 10Gb/s over UTP and fiber.

4. The nCompass warranty requires using Ortronics patch cords to complete the channel.

5. The contractor shall furnish an hourly rate with the proposal submittal, which shall be valid for a period of one year from the date of acceptance. This rate will be used when cabling support is required to affect moves, adds, and changes to the system (MACs). MACs shall be performed by an Ortronics CIP-ESP or CIP Contractor and shall be added to the

nCompass warranty when registered with Ortronics. Hourly rates for warranty claims will be negotiated separately with the manufacturers at the time of the claim.

6. Upon successful completion of the installation, warranty registration with submission of test data, and final approval of Ortronics, the end user shall be provided with a numbered certificate, from Ortronics, registering the installation.
7. Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, receipt of the warranty certificate and successful performance of the cabling system for a two week period will constitute acceptance of the system.

1.13 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, indicate the following installed conditions:

1. Conduit racks, size, location, and routing, for interior locations. Show all wiring device locations and connections, control locations, and final equipment locations including actual dimensions.
2. Cable tray size, location, and routing.
3. Underground ductbank locations, routings, and quantity of conduits utilized.
4. Final Record Drawings: Provide As-Built network drawings and/or diagrams indicating the cabling distribution system from outlet faceplate to distribution frame (patch panel) for each and every drop. These drawings and/or diagrams are to be included in the As-Built drawings, or the O & M manuals and hub binders. They shall be draft quality. Markup, hand drawings, etc, will be rejected.
5. Materials and components listing for each item. Manufacture, part number and distributor. Include in O & M manuals.
6. Patching Map: Provide a drafted illustration of each patch panel which shows device and cable identification connected to each port position.
7. Hub Reference Binders: For each hub, provide a three-ring binder which includes the test reports, patching map, network diagrams and/or reduced size drawings for the backbone and portion of the networking system served by that hub.
8. All approved substitutions, Contract Modifications and actual equipment and materials installed.
9. Contract Modifications, actual equipment and materials installed.
10. The drawings are to include cable routes and outlet locations. Outlet locations shall be identified by their sequential number as defined elsewhere in this document. Numbering, icons, and drawing conventions used shall be consistent throughout all documentation provided. The Owner will provide floor plans in paper and electronic (DWG, AutoCAD rel. 14) formats on which as-built construction information can be added. These documents will be modified accordingly by the telecommunications contractor to denote as-built information as defined above and returned to the Owner.
11. The Contractors shall annotate the base drawings and return a hard copy (same plot size as originals) and electronic (AutoCAD rel. 14) form.

1.14 MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, include the following information for equipment and systems:

1. Description of function, normal operating characteristics and limitations, performance and engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
2. Manufacturer's printed operating procedures to include start-up, break-in and routine and normal operating instructions, regulation, control, stopping shutdown and emergency instructions.
3. Maintenance procedures for routine preventative maintenance and troubleshooting, disassembly, repair and reassembly, aligning and adjusting instructions.
4. Servicing instructions and schedules.

1.15 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle materials in a manner to prevent damage or interference with traffic conditions.

B. Protect equipment from weather and dampness.

C. All material stored on site shall be protected to Owner's standards. Owner may reject any or all material documented to have been improperly stored. Replacement of improperly stored material shall be solely at the contractor's expense.

D. Cable shall be stored according to manufacturer's recommendations as a minimum. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees F., the cable shall be moved to a heated (50 degrees F. minimum) location. If necessary, cable shall be stored off site at the contractor's expense.

E. If the telecommunications contractor wishes to have a trailer on site for storage of materials, arrangements shall be made with the Construction Manager.

1.16 TEMPORARY COMMUNICATIONS SERVICES

A. Temporary wiring for construction communications for the general contractor or other subcontractors shall not be included as a part of this section of the work. Refer to Division 01 regarding payment for the communications services used for construction and testing of the new installation.

1.17 INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall conduct an on-site instructional tour of the entire project. The personnel designated by the Owner shall be instructed in: operation of all communications systems, elementary trouble-shooting procedures, preventive maintenance procedures, uses of Operation and Maintenance Manuals, and operation of all communication systems.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 FEES AND PERMITS

A. Arrange and pay for any fees, permits, connections charges, hook-up fees, etc. required with local governing bodies, utilities, etc.

3.2 UTILITY SERVICES

A. Install communications service entrances in accordance with Utility Company's rules and regulations.

B. Make arrangements with Utility Company to obtain permanent communications services to the project.

3.3 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in all other Divisions of work for rough-in requirements.

3.4 COMMUNICATIONS INSTALLATIONS

A. General: Sequence, coordinate and integrate the various elements of communications systems, materials and equipment. Comply with the following requirements:

1. Coordinate communications systems, equipment and materials installation with other building components. Inform Contractors of other trades of the required access to and clearances around communications equipment to maintain serviceability and code compliance.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots and openings in other building components during progress of construction to allow for communications installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components as they are constructed.
5. Sequence, coordinate and integrate installations of communications materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the Building.
6. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
7. Coordinate connection of communications systems with exterior underground and overhead service companies and controlling agencies. Provide required connection for each service.
8. Install systems, materials and equipment to conform with approved submittal data, including coordination drawings, to the greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirement, refer conflict to the Architect.
9. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components where installed exposed in finished spaces.
10. Install communications equipment to facilitate servicing, maintenance and repair or replacement of equipment components and as required by Code. As much as practical, connect equipment for ease of disconnecting with minimum of interference with other installations.

a. All communications items, equipment, etc. requiring access and maintenance to be provided with access panels by communications contractor when located behind hard inaccessible finished surfaces. See Architectural ceiling plans for ceiling and wall finish types.

11. Install access panel or doors where equipment is concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section “ACCESS DOORS”.
12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
13. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
14. Provide foreman in charge of this work at all times.
15. Where the specifications call for an installation to be made in accordance with Manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the Owner's representative.
16. Where air plenums are encountered, all cabling and conductors not in raceways shall be rated, listed, and suitable for use in plenum spaces.

3.5 QUALITY ASSURANCE

A. Provide a meaningful Quality Assurance program. To assist the Contractor in this program, the specifications contained herein are set forth as the minimum acceptable requirements. This does not relieve the Contractor from executing other Quality Assurance measures to obtain a complete operating facility within the scope of this project.

B. The Contractor shall insure that all workmanship, all materials employed, all required equipment and the manner and method of installation conforms to accepted construction and engineering practices, and that each piece of equipment is in satisfactory working condition to satisfactorily perform its functional operation.

C. Provide quality assurance tests and operational check on all components of the communications distribution system.

3.6 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 01 Section “CUTTING AND PATCHING.” In addition to the requirements specified in Division 01, the following requirements apply:
   1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
   2. No joists, beams, girders or structural columns shall be cut by any contractor without obtaining written permission from the Architect.

B. Perform cutting, fitting and patching of communications equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
   1. Patch finished surfaces and building components using new materials specified for the original

installation and experienced Installers. Installer's qualifications refer to the materials and methods required for the surface and building components being patched.

a. Refer to Division 01 Section "DEFINITIONS AND STANDARDS" for definition of "Experienced Installer."

3.7 EXCAVATION AND BACKFILL

A. General: Perform excavation and backfilling in accordance with Division 31 Section "EARTH MOVING." In addition to the requirements specified in Division 31, the following requirements apply:
   1. Protection of Installed Work: During excavating and backfilling operations, protect adjacent installations.

B. Perform excavating and backfilling for communications equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

END OF SECTION 270100

SECTION 271100 - COMMUNICATIONS EQUIPMENT ROOM FITTINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Telecommunications mounting elements.
2. Backboards.
3. Telecommunications equipment racks and cabinets.
4. Telecommunications service entrance pathways.
5. Grounding.

B. Related Sections:

1. Division 27 Section "COMMUNICATIONS HORIZONTAL CABLING" for voice and data cabling associated with system panels and devices.

2. Division 26 Section “GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS” for main grounding bus bars in equipment rooms.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. LAN: Local area network.

C. RCDD: Registered Communications Distribution Designer.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Floor-mounted cabinets and cable pathways shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for equipment racks and cabinets.

Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For communications equipment room fittings. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Equipment Racks and Cabinets: Include workspace requirements and access for cable connections.
3. Grounding: Indicate location of grounding bus bar and its mounting detail showing standoff insulators and wall mounting brackets.
4. Cable tray layout, showing cable tray route to scale, with relationship between the tray and adjacent structural, electrical, and mechanical elements. Include the following:

   a. Vertical and horizontal offsets and transitions.
   b. Clearances for access above and to side of cable trays.
   c. Vertical elevation of cable trays above the floor or bottom of ceiling structure.
   d. Load calculations to show dead and live loads as not exceeding manufacturer's rating for tray and its support elements.

C. Qualification Data: For qualified layout technician, installation supervisor, and field inspector.

D. Seismic Qualification Certificates: For floor-mounted cabinets, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions. Base certification on the maximum number of components capable of being mounted in each rack type. Identify components on which certification is based.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings shall be under the direct supervision of RCDD.
2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.
3. Field Inspector: Currently registered by BICSI as RCDD to perform the on-site inspection.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Telecommunications Pathways and Spaces: Comply with ANSI/TIA-569-C.

D. Grounding: Comply with ANSI/TIA-607-B.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install equipment frames and cable trays until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and work above ceilings is complete.

1.8 COORDINATION

A. Coordinate layout and installation of communications equipment with Owner's telecommunications and LAN equipment and service suppliers. Coordinate service entrance arrangement with local exchange carrier.

1. Meet jointly with telecommunications and LAN equipment suppliers, local exchange carrier representatives, and Owner to exchange information and agree on details of equipment arrangements and installation interfaces.
2. Record agreements reached in meetings and distribute them to other participants.
3. Adjust arrangements and locations of distribution frames, cross-connects, and patch panels in equipment rooms to accommodate and optimize arrangement and space requirements of telephone switch and LAN equipment.
4. Adjust arrangements and locations of equipment with distribution frames, cross-connects, and patch panels of cabling systems of other communications, electronic safety and security, and related systems that share space in the equipment room.

B. Coordinate location of power raceways and receptacles with locations of communications equipment requiring electrical power to operate.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. General Requirements: Comply with ANSI/TIA-569-B.

B. Cable Support: NRTL labeled. Cable support brackets shall be designed to prevent degradation of cable performance and pinch points that could damage cable. Cable tie slots fasten cable ties to brackets.

1. Comply with NFPA 70 and UL 2043 for fire-resistant and low-smoke-producing characteristics.
2. Support brackets with cable tie slots for fastening cable ties to brackets.
3. Lacing bars, spools, J-hooks, and D-rings.
4. Straps and other devices.

C. Conduit and Boxes: Comply with requirements in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS." Flexible metal conduit shall not be used.

2.2 BACKBOARDS

A. Backboards: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches (19 by 1220 by 2440 mm). Comply with requirements for plywood backing panels specified in Division 06 Section "ROUGH CARPENTRY."

2.3 FREE STANDING RACKS

A. Free standing rack shall be Chatsworth CPI series or equal in Middle Atlantic described and configured as follows:
   1. Provide the necessary strain relief, bend radius and cable routing for proper installation of high performance cross connect products, meeting all specifications of ANSI/TIA-C.
   2. Have top cable trough with waterfall and built in patch/horizontal cable distribution separator.
   3. Have EIA hole pattern on front and rear.
   4. Be available with a 3 inch channel depth.
   5. Provide Horizontal Cable Organizer next to patch panel with Snap-On, hinged cover like CPI30530-719.
   6. Provide (2) single Vertical Cable Organizer on each vertical rail with Snap-on, hinged cover like CPI 12831-703. Arrange the Vertical Cable managers stacked.
   7. Assemble as 19” (483 mm) or 23” (584 mm) with no additional hardware.
   8. Provide floor and ceiling access for cable management and distribution.
   9. Provide pre-drilled base for floor attachment of rack.
   10. Be available in standard color of black.
   11. Be manufactured by an ISO 9001 registered company.
   12. Quantity of Vertical Cable Organizers: 4.
   13. Quantity of Horizontal Cable Organizers: per details.
   14. Horizontal Power Strips: IRU, (6) 5-15R receptacles, integral thermal circuit breaker, integral SPD, with detachable input cord, 15’ Long, Chatsworth 12816-703 with mounting hardware.
   15. Be equipped with internal grounding studs. Rack shall be designed as a bonded assembly.
   16. Be provided with manufacturers Rack Grounding jumper Kit.
   17. Field install grounding bus bar at top of equipment rack.

2.4 COPPER CABLE PROTECTION UNITS

A. All copper circuits shall be provided with protection between each building with an entrance cable protector panel. All building-to-building circuits shall be routed through this protector. The protector shall be connected with a #6 AWG copper bonding conductor between the protector ground lug and the TC ground point. Approved manufacturer of protection units is Porta Systems.

2.5 GROUNDING

A. Comply with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS." for grounding conductors and connectors.

B. Telecommunications Bus Bars:

   1. Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
   2. Rack Mounted Ground Bus Bar: Copper, minimum 1/4 inch thick by 4 inches wide (6 mm thick by 100 mm wide) with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart.
   3. Stand-Off Insulators: Comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.

C. Comply with ANSI/TIA-607-B.

2.6 LABELING

A. Comply with ANSI/TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 ENTRANCE FACILITIES

A. Contact telecommunications service provider and arrange for installation of demarcation point, protected entrance terminals, and a housing when so directed by service provider.

B. Install underground pathways complying with recommendations in ANSI/TIA-569-C, "Entrance Facilities" Article.

3.2 INSTALLATION

A. Comply with NECA 1

B. Comply with BICSI TDMM for layout and installation of communications equipment rooms.

C. Install underground entrance pathway complying with Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS.

D. Bundle, lace, and train conductors and cables to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

E. Furnish and install telecommunications backboards where indicated on drawings. The bottom of the backboards shall be placed approximately six inch AFF, and must extend to a minimum height AFF of eight feet. Walls with less than two feet of free horizontal or vertical equipment mounting space need not be covered with backboards. Mount backboards with the smooth side facing away from the wall, and paint the backboard with two coats of fire resistant white paint prior to mounting. A minimum of six appropriate fasteners shall be used for every sixteen square feet of backboard.

F. Racks shall be securely attached to the concrete floor using a minimum 3/8” hardware or as required by local codes.

G. Racks shall be placed with a minimum of 36 inch clearance from the walls on all sides of the rack. When mounted in a row, maintain a minimum of 36 inches from the wall behind and in front of the row of racks and from the wall at each end of the row.

H. All racks shall be grounded to the rack-mounted telecommunications ground bus bar. Utilize grounding kit components to connect rack to bus bar.

I. Rack mount screws not used for installing patch panels and other hardware shall be bagged and left with the rack upon completion of the installation.

J. Wall mounted termination block fields shall be mounted on Backboards.

K. Wall mounted termination block fields shall be installed with the lowest edge of the mounting frame 18” from the finished floor.

3.3 FIRESTOPPING

A. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."Comply with ANSI/TIA-569-C, Annex A, "Firestopping."

B. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.4 GROUNDING

A. Install grounding according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

B. Comply with ANSI/TIA-607-B.

C. Locate equipment room grounding bus bar to minimize the length of bonding conductors. Fasten to wall allowing at least 2-inch (50-mm) clearance behind the grounding bus bar. Connect grounding bus bar with a minimum No. 4 AWG grounding electrode conductor from grounding bus bar to suitable electrical building ground, or as shown on plans.

D. Locate rack grounding bus bar to bottom of ladder tray at the top of the equipment rack. Fasten to cable tray allowing at least 2-inch (50mm) clearance between tray and bar. Connect rack grounding kit components between bar and integral grounding studs within rack assembly. Connect rack grounding bus bar to equipment room grounding bus bar with grounding electrode conductor as scheduled on drawings.

E. The facility shall be equipped with a Telecommunications Bonding Backbone (TBB). This backbone shall be used to ground all telecommunications cable shields, equipment, racks, cabinets, raceways, and other associated hardware that has the potential to act as a current carrying conductor. The TBB shall be installed independent of the building’s electrical and building ground and shall be designed in accordance with the recommendations contained in the ANSI/TIA-607-B Telecommunications Bonding and Grounding Standard.

F. The main entrance facility/equipment room shall be equipped with a telecommunications main grounding bus bar (TMGB). Telecommunications room shall be provided with a telecommunications ground bus bar (TGB). The TMGB shall be connected to the building electrical entrance grounding facility. The intent of this system is to provide a grounding system that is equal in potential to the building electrical ground system. Therefore, ground loop current potential is minimized between telecommunications equipment and the electrical system to which it is attached.

G. All racks, metallic backboards, cable sheaths, metallic strength members, splice cases, cable trays, etc. entering or residing in the TR or ER shall be grounded to the respective TGB or TMGB using a minimum #6 AWG stranded copper bonding conductor and compression connectors.

H. All wires used for telecommunications grounding purposes shall be identified with a green insulation. Non-insulated wires shall be identified at each termination point with a wrap of green tape. All cables and bus bars shall be identified and labeled in accordance with the System Documentation Section of this specification.

3.5 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."Comply with requirements in Division 09 Section "INTERIOR PAINTING" for painting backboards. For fire-resistant plywood, do not paint over manufacturer's label.

B. See Division 27 Section "COMMUNICATIONS HORIZONTAL CABLING" for additional identification requirements.

END OF SECTION 271100

SECTION 271300 - COMMUNICATIONS BACKBONE CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pathways.
2. Horizontal Distribution Cable.
3. Copper backbone cabling.
4. Optical fiber backbone cabling.
5. Cable connecting hardware, patch panels, and cross-connects.
6. Cabling identification products.

B. Related Sections:

1. Division 27 Section "COMMUNICATIONS HORIZONTAL CABLING" for voice and data cabling associated with system panels and devices.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

C. EMI: Electromagnetic interference.

D. IDC: Insulation displacement connector.

E. LAN: Local area network.

F. RCDD: Registered Communications Distribution Designer.

G. UTP: Unshielded twisted pair.

1.4 BACKBONE CABLING DESCRIPTION

A. Backbone cabling system shall provide interconnections between communications equipment rooms, main terminal space, and entrance facilities in the telecommunications cabling system structure. Cabling system consists of backbone cables, intermediate and main cross-connects, mechanical terminations, and patch cords or jumpers used for backbone-to-backbone cross-connection.

B. Backbone cabling cross-connects may be located in communications equipment rooms or at entrance facilities. Bridged taps and splitters shall not be used as part of backbone cabling.

1.5 PERFORMANCE REQUIREMENTS

A. General Performance: Backbone cabling system shall comply with transmission standards in ANSI/TIA-C.3, when tested according to test procedures of this standard.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
2. Wiring diagrams to show typical wiring schematics including the following:

a. Cross-connects.
b. Patch panels.
c. Patch cords.

3. Cross-connects and patch panels. Detail mounting assemblies, and show elevations and physical relationship between the installed components.

C. Qualification Data: For Installer, qualified layout technician, installation supervisor, and field inspector.

D. Source quality-control reports.

E. Field quality-control reports.

F. Maintenance Data: For splices and connectors to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings by an RCDD.
2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.
3. Testing Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Telecommunications Pathways and Spaces: Comply with ANSI/TIA-569-C.

D. Grounding: Comply with ANSI/TIA-607-B.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery and receipt of products shall be at the site described in Division 27 Section “BASIC COMMUNICATIONS REQUIREMENTS.”

B. Cable shall be stored according to manufacturer's recommendations as a minimum. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees F., the cable shall be moved to a heated (50 degrees F. minimum) location. If necessary, cable shall be stored off site at the contractor's expense.

C. Test cables upon receipt at Project site.

1. Test optical fiber cable to determine the continuity of the strand end to end. Use optical fiber flashlight.
2. Test optical fiber cable while on reels. Use an optical time domain reflectometer to verify the cable length and locate cable defects, splices, and connector, including the loss value of each. Retain test data and include the record in maintenance data.
3. Test each pair of UTP cable for open and short circuits.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.10 COORDINATION

A. Coordinate layout and installation of telecommunications pathways and cabling with Owner's telecommunications and LAN equipment and service suppliers.

1.11 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Extra materials noted are in addition to ‘spare’ products shown on plans.

1. Patch-Panel Units: One of each type, for each communications room.
2. Connecting Blocks: One of each type, for each communications room.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. General Requirements: Comply with ANSI/TIA-569-C, for installation of cables within existing pathways.

2.2 COPPER BACKBONE CABLE

A. All horizontal data station cable and voice cable shall terminate on modular patch panels in their respective Telecommunications Room or Equipment Room as specified on the drawings.

B. 100 OHM CATEGORY 6 UNSHIELDED TWISTED PAIR (UTP) CABLE

1. Physical Characteristics:
   a) Shall consist of (4) 23 AWG twisted pairs.
   b) Shall be suitable for the environment in which they are to be installed.
   c) The overall diameter of the cable shall be no larger than 0.22 inches.
   d) Shall be tested to 550 MHz by the manufacturer with guaranteed performance to 250 MHz.

2. Design Make:

   a) Superior Essex DataGain, Cat 6+ UTP (CMR Riser)

Color	Part #
Gray	66-240-3A

   b) Superior Essex DataGain, Cat 6+ UTP (CMP Plenum)

Color	Part #
Gray	66-240-3B

2.3 MODULAR PATCH PANELS FOR BACKBONE DISTRIBUTION CABLES

A. Modular Patch Panels shall
   1. meets ANSI/TIA -568-C.2, component compliance
   2. use low emission IDC contacts
   3. use dual reactance technology to enhance the signal-to-noise ratio
   4. require standard termination practices using a 110 impact tool
   5. use a single piece IDC housing
   6. support both T568B and T568A wiring
   7. include easy to follow wiring labels
   8. include label fields
   9. allow for the use of icons
   10. include full length metal rear cable management
   11. be available in standard or high density
   12. be backward compatible to category 5e
   13. be center tuned to category 6 test specifications

14. The modular patch panel shall be one of the following for a nCompass Solution:
15. Furnished and installed to accommodate all required terminations for each respective system within the basis or design plus 25% spare capacity for future growth.

B. Products

Part Number	*Description*
1. Ortronics # OR-PHD66U24	***24 port Category 6 modular to 110 patch panel, T568A/B, High Density Clarity***
2. Ortronics # OR-PHD66U48	***48 port Category 6 modular to 110 patch panel, T568A/B, High Density Clarity***

2.4 TWISTED PAIR CABLE HARDWARE

A. Description: Hardware designed to connect, splice, and terminate twisted pair copper communications cable.

B. General Requirements for Cable Connecting Hardware:
1. Cables shall be terminated with connecting hardware of same category or higher.
2. Source Limitations: Obtain twisted pair cable hardware from same manufacturer as twisted pair cable, from single source.

C. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.

1. Number of Terminals per Field: One for each conductor in assigned cables.

2.5 OPTICAL FIBER BACKBONE CABLE

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Superior-Essex.

B. Outside Plant Backbone Cabling
a. Single-mode, type OS2, loose tube single jacket all dielectric, fiber counts as scheduled per drawings
b. Comply with Telcordia GR-20-CORE
c. ICEA S-87-640-2011
d. Jacket:
i. Jacket Color: Black
ii. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).
e. Part Number 12 Fiber- 110123D01
f. Part Number 144 Fiber- 111443D01

C. Interior Backbone Cabling
a. Single-mode, 900-micrometer, type OS1, tight buffered, optical fiber cable, with fiber counts as scheduled per drawing

b. Comply with TIA-492CAAA for detailed specifications.
c. Comply with TIA-568-C.3 for performance specifications.
d. Comply with ICEA S-83-596 for mechanical properties.
e. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
    i. Plenum Rated, Nonconductive: Type OFNP.
f. Jacket:
    i. Jacket Color: Yellow
    ii. Cable cordage jacket, fiber, unit and group color shall be according to TIA-598-D.
    iii. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).
g. Part Number 12 Fiber- 440123101

2.6 OPTICAL FIBER CABLE HARDWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Superior-Essex.

B. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.

1. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.

C. Patch Cords: Factory-made, dual-fiber cables in 36-inch (900-mm) lengths; match cable types.

D. Cable Connecting Hardware and Accessories:

1. Manufacturer: Ortronics
2. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-10. Comply with ANSI/TIA-568-C.3.
3. Quick-connect, Type LC connectors to be used in termination racks, panels, and equipment packages.
4. Insertion loss not more than 0.75 dB.
5. Splices: Fusion type.
6. Terminate all fibers on each end of every run utilizing Type LC single-mode 36-inch pigtails.
7. Fiber Enclosures- (1RU) EQ01U-CHC, (2RU) EQ02U-CHC, (4RU) EQ04U-CVC
8. Fiber Adapter Panel- Single-mode LC 6 duplex: OFP-LCD12AC

2.7 GROUNDING

A. Comply with requirements in Division 27 Section "GROUNDING AND BONDING FOR TELECOMMUNICATIONS SYSTEMS." for grounding conductors and connectors.

B. Comply with ANSI/TIA-607-B.

2.8 IDENTIFICATION PRODUCTS

A. Comply with ANSI/TIA-606-B and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 ENTRANCE FACILITIES

A. Coordinate backbone cabling with the protectors and demarcation point provided by communications service provider.

3.2 WIRING METHODS

A. Wiring Method: Install all backbone cables in existing raceways dedicated for such use. Conceal raceways except in unfinished spaces.

B. Wiring within Enclosures: Bundle, lace, and train cables within enclosures. Connect to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.3 INSTALLATION OF CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with ANSI/TIA-568-C.1 and ANSI/TIA–568-C.2.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
4. Interior cables may not be spliced. Secure and support exposed cables at intervals not exceeding 10 feet and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.
6. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
8. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
9. In the communications equipment rooms, install a 20-foot- (6-m-) long service loop on each end of cable.
10. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, “Pulling Cable." Monitor cable pull tensions. Do not install Category 6 cable with more than 110N (25 lbs) pull force, as specified in ANSI/TIA and BICSI TDDM practices. Utilize appropriate cable lubricant in sufficient quantity to reduce pulling friction to acceptable levels on long pulls inside conduit, pulls of multiple cables into a single small bore conduit, on conduit runs greater

than 100 lineal feet with bends of opposing directions, and in conduit runs that exceed a total of 180 degrees of accumulated bends. Use of tensile rated cords (i.e. fishing line) should be used for difficult or questionable pulls - to judge to go/no-go condition of the conduit and pulling setup.

11. Bend radius of the horizontal cable shall not be less than 4 times the outside diameter of the cable.
12. The cable jacket shall be maintained to within 25mm (one inch) of the termination point.
13. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.
14. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.

C. UTP Cable Installation:

1. Comply with ANSI/TIA-568-C.2.
2. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

D. Optical Fiber Cable Installation:

1. Comply with ANSI/TIA-568-C.3.
2. Cable may be terminated on connecting hardware that is rack or cabinet mounted.

E. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.

F. Group connecting hardware for cables into separate logical fields.

G. Separation from EMI Sources:

1. Comply with BICSI TDMM and ANSI/TIA-569-C recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (610 mm).

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (76 mm).
c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.4 FIRESTOPPING

A. Comply with ANSI/TIA-569-C, Annex A, "Firestopping."

B. Comply with BICSI TDMM, "Firestopping Systems" Article.

C. All firestop systems shall be installed in accordance with the manufacturer's recommendations and shall be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

3.5 GROUNDING

A. Install grounding according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

B. Comply with ANSI/TIA-607-B

3.6 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with ANSI/TIA-606-B.

B. The contractor shall develop and submit for approval a labeling system for the cable installation. The Owner or Engineer will negotiate an appropriate labeling scheme with the successful contractor. At a minimum, the labeling system shall clearly identify all components of the system: racks, cables, panels and outlets. The labeling system shall designate the cables origin and destination and a unique identifier for the cable within the system. Racks and patch panels shall be labeled to identify the location within the cable system infrastructure. All labeling information shall be recorded on the as-built drawings and all test documents shall reflect the appropriate labeling scheme. Labeling shall follow the guidelines of ANSI/TIA-606-B.

C. All label printing will be machine generated. Self-laminating labels will be used on cable jackets, appropriately sized to the OD of the cable, and placed within view at the termination point on each end. Outlet, patch panel and wiring block labels shall be installed on, or in, the space provided on the device.

D. Cable Schedule: Post in prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.

E. Cable and Wire Identification:

1. Label each cable within 4 inches (100 mm) of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.

2. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

   a. Individually number wiring conductors connected to terminal strips, and identify each cable or wiring group being extended from a panel or cabinet to a building-mounted device shall be identified with name and number of particular device as shown.
   b. Label each unit and field within distribution racks and frames.

3. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use a different color for jacks and plugs of each service.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Visually inspect UTP cable jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with ANSITIA-568-C.0.
2. Visually confirm Category 6, marking of outlets, cover plates, outlet/connectors, and patch panels.
3. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
4. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA-568-C. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed.
5. All cables shall be tested in accordance with this document, the ANSI/TIA standards, the Ortronics nCompass Certification Program Information Manual and best industry practice. If any of these are in conflict, the Contractor shall bring any discrepancies to the attention of the project team for clarification and resolution.
6. All twisted-pair copper cable links shall be tested for continuity, pair reversals, shorts, opens and performance as indicated below. Additional testing is required to verify Category performance.
7. Final Verification Tests: Perform verification tests for UTP systems after the complete communications cabling and workstation outlet/connectors are installed.

   a. Voice Tests: These tests assume that dial tone service has been installed. Connect to the network interface device at the demarcation point. Go off-hook and listen and receive a dial tone. If a test number is available, make and receive a local, long distance, and digital subscription line telephone call.
   b. Data Tests: These tests assume the Information Technology Staff has a network installed and is available to assist with testing. Connect to the network interface

device at the demarcation point. Log onto the network to ensure proper connection to the network.

8. Optical Fiber Cable Tests:

a. Test instruments shall meet or exceed applicable requirements in ANSITIA-568-C.0. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

b. Link End-to-End Attenuation Tests:

1) Horizontal and multimode backbone link measurements: Test at 850 or 1300 nm in 1 direction according to ANSI/TIA-526-14-A, Method B, One Reference Jumper.

2) Attenuation test results for backbone links shall be less than 2.0 dB. Attenuation test results shall be less than that calculated according to equation in ANSI/TIA-568-C.0.

C. End-to-end cabling will be considered defective if it does not pass tests and inspections, and shall be replaced by the Contractor.

3.8 SYSTEM DOCUMENTATION

A. Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets to the Engineer for approval. Documentation shall include the items detailed in the sub-sections below.

B. Documentation shall be submitted within ten (10) working days of the completion of each testing phase (e.g. subsystem, cable type, area, floor, etc.). This is inclusive of all test result and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Engineer, the telecommunications contractor shall provide copies of the original test results.

C. The Engineer may request that a 10% random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the telecommunications contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% re-test. This re-test shall be at no additional cost to the Owner.

3.9 TEST RESULTS

A. Test documentation shall be provided on DVD within three weeks after the completion of the project. The DVD shall be clearly marked on the outside front cover with the words “Project Test Documentation”, the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.

B. Test results generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package. The telecommunications contractor must furnish this information in electronic form (DVD).

C. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented

3.10 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel in cable-plant management operations, including changing signal pathways for different workstations, rerouting signals in failed cables, and keeping records of cabling assignments and revisions when extending wiring to establish new workstation outlets.

END OF SECTION 271300

SECTION 271500 - COMMUNICATIONS HORIZONTAL CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pathways.
2. UTP cabling.
3. Cable connecting hardware, patch panels, and cross-connects.
4. Telecommunications outlet/connectors.
5. Cabling system identification products.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

C. EMI: Electromagnetic interference.

D. IDC: Insulation displacement connector.

E. LAN: Local area network.

F. Outlet/Connectors: A connecting device in the work area on which horizontal cable or outlet cable terminates.

G. RCDD: Registered Communications Distribution Designer.

H. UTP: Unshielded twisted pair.

1.4 HORIZONTAL CABLING DESCRIPTION

A. Horizontal cable and its connecting hardware provide the means of transporting signals between the telecommunications outlet/connector and the horizontal cross-connect located in the communications equipment room. This cabling and its connecting hardware are called "permanent link," a term that is used in the testing protocols.

1. Horizontal cabling shall contain no more that one transition point or consolidation point between the horizontal cross-connect and the telecommunications outlet/connector.
2. Bridged taps and splices shall not be installed in the horizontal cabling.

B. The maximum allowable horizontal cable length is 295 feet (90 m). This maximum allowable length does not include an allowance for the length of 16 feet (4.9 m) to the workstation equipment. The maximum allowable length does not include an allowance for the length of 16 feet (4.9 m) in the horizontal cross-connect.

1.5 PERFORMANCE REQUIREMENTS

A. General Performance: Horizontal cabling system shall comply with transmission standards in ANSI/TIA-568-C.0, when tested according to test procedures of this standard.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
2. Wiring diagrams to show typical wiring schematics, including the following:

   a. Cross-connects.
   b. Patch panels.
   c. Patch cords.

3. Cross-connects and patch panels. Detail mounting assemblies, and show elevations and physical relationship between the installed components.

C. Qualification Data: For Installer, qualified layout technician, installation supervisor, and field inspector.

D. Source quality-control reports.

E. Field quality-control reports.

F. Maintenance Data: For splices and connectors to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings by an RCDD.
2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.
3. Testing Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Telecommunications Pathways and Spaces: Comply with ANSI/TIA569-C.

D. Grounding: Comply with ANSI/TIA-607-B.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery and receipt of products shall be at the site described in Division 27 Section “BASIC COMMUNICATIONS REQUIREMENTS.”

B. Cable shall be stored according to manufacturer's recommendations as a minimum. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage location will be below 40 degrees F., the cable shall be moved to a heated (50 degrees F. minimum) location. If necessary, cable shall be stored off site at the contractor's expense.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.10 COORDINATION

A. Coordinate layout and installation of telecommunications pathways and cabling with Owner's telecommunications and LAN equipment and service suppliers.

1.11 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Extra materials noted are in addition to ‘spare’ products shown on plans.

1. Patch-Panel Units: One of each type, for each communications room.
2. Connecting Blocks: One of each type, for each communications room.
3. Device Plates: 10 percent of installed quantity, but not less than 10 of each type.
4. Patch cords: 25 percent of total count required for system as additional. Provide equally across all specified lengths.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. General Requirements: Comply with ANSI/TIA-569-C.

B. Cable Support: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.

1. Support brackets with cable tie slots for fastening cable ties to brackets.
2. Lacing bars, spools, J-hooks, and D-rings.
3. Straps and other devices.

2.2 HORIZONTAL DISTRIBUTION CABLE

A. All horizontal data station cable and voice cable shall terminate on modular patch panels in their respective Telecommunications Room or Equipment Room as specified on the drawings.

B. 100 OHM CATEGORY 6 UNSHIELDED TWISTED PAIR (UTP) CABLE

1. Physical Characteristics:
   a) Shall consist of (4) 23 AWG twisted pairs.
   b) Shall be suitable for the environment in which they are to be installed.
   c) The overall diameter of the cable shall be no larger than 0.22 inches.
   d) Shall be tested to 550 MHz by the manufacturer with guaranteed performance to 250 MHz.

2. Design Make:

   a) Superior Essex DataGain, Cat 6+ UTP (CMR Riser)

System	Color	Part #
Communications	Blue	66-240-2A

   b) Superior Essex DataGain, Cat 6+ UTP (CMP Plenum)

System	Color	Part #
Communications	Blue	66-240-2B

2.3 MODULAR PATCH PANELS

A. Modular Patch Panels shall
   1. meets ANSI/TIA -568-C.2, component compliance
   2. use low emission IDC contacts
   3. use dual reactance technology to enhance the signal-to-noise ratio
   4. require standard termination practices using a 110 impact tool
   5. use a single piece IDC housing
   6. support both T568B and T568A wiring
   7. include easy to follow wiring labels
   8. include label fields
   9. allow for the use of icons
   10. include full length metal rear cable management
   11. be available in standard or high density
   12. be backward compatible to category 5e
   13. be center tuned to category 6 test specifications
   14. Furnished and installed to accommodate all required terminations for each respective system within the basis of design plus minimum of one (1) patch panel in each rack for future growth.
   15. The modular patch panel shall be the following for a nCompass Solution:

B. Products

Part Number	*Description*

1. Ortronics # OR-PHD66U24	***24 port Category 6 modular to 110 patch panel, T568A/B, High Density Clarity***
2. Ortronics # OR-PHD66U48	***48 port Category 6 modular to 110 patch panel, T568A/B, High Density Clarity***

2.4 PATCH CORDS

A. The contractor shall provide factory terminated and tested UTP patch cords and equipment cords for the complete cabling system. The UTP patch cables shall meet the requirements of ANSI/TIA-568-C, for patch cord testing.

B. Copper (UTP) patch cords shall:

1. be an Ortronics Reduced Diameter Cat6 channel cord
2. use 8 position connector with impedance matched contacts
3. be 100% factory tested for performance
4. be constructed of 100 ohm, 4 pair, 28 AWG, stranded conductor, unshielded twisted pair copper
5. have a performance marking indelibly labeled on the jacket (by the manufacturer).
6. have “snagless” protection for the locking tab to prevent snagging and to protect locking tab in tight locations and provide bend relief
7. be available in 3 foot, 5 foot, 9 foot, 15 foot, and 25 foot standard lengths
8. be backwards compatible to Category 5e
9. be manufactured by an ISO 9001 registered company.

C. Furnish in quantities and types as follows:
1. Data Systems
   a) 36” Length, Blue finish: 1/3 of total count (OR-RDC603-06)
   b) 60” Length, Blue finish: 1/3 of total count (OR-RDC605-06)
   c) 108” Length, Blue finish: 1/3 of total count (OR-RDC609-06)

2.5 WORK AREA OUTLETS

A. Horizontal cables shall each be terminated at their designated work area location in the connector types described in the subsections below. Included are modular telecommunication jacks. These connector assemblies shall snap into a faceplate.

B. The Telecommunications Outlet Assembly shall accommodate:
1. A minimum of two (2) modular jacks
2. Additional accommodations for specific locations as noted in the plans for additional copper cables as necessary
3. A blank filler will be installed when extra ports are not used.
4. A dust cap (stuffer cap) shall be provided on all modular jacks with the circuit number on the identifier strip.
5. Multiple jacks that are identified in close proximity on the drawings (but not separated by a physical barrier) may be combined in a single assembly. The telecommunications contractor shall be responsible for determining the optimum compliant configuration based on the products proposed.
6. The same orientation and positioning of jacks and connectors shall be utilized throughout the installation. Prior to installation, the telecommunications contractor shall submit the proposed configuration for each outlet assembly for review by the Owner or Engineer.
7. The modular jack shall incorporate printed label strip on the dust cap module for identifying the outlet. Printed labels shall be permanent and compliant with ANSI/TIA -606-B standard specifications. Labels shall be printed. Hand printed labels shall not be accepted.

C. Faceplates: The faceplates shall:
1. be Ortronics TracJack style as appropriate to fit the modular jack used
2. be UL listed and CSA certified.
3. be constructed of 0.035 inch (1mm) thick, satin-finished stainless steel.
4. shall match the faceplate color used for other utilities in the building or match the color of the raceway if installed in surface raceway.
5. be compliant with the above requirements along with the following when incorporating optical fiber:
   a)be a low profile assembly,
   b)incorporate a mechanism for storage of cable and fiber slack needed for termination,
   c)position the fiber optic couplings to face downward or at a downward angle to prevent contamination and,
   d)incorporate a shroud that protects the optical couplings from impact damage.
6. be available as single-gang or dual-gang,
7. shall provide easy access for adds, moves, and changes by front removal of jack modules,
8. possess recessed designation windows to facilitate labeling and identification.
9. shall include a clear plastic cover to protect labels in the designation window.
10. have mounting screws located under recessed designation windows.
11. comply with ANSI/TIA-606-B work area labeling standard.
12. allow for the UTP modules to be inverted in place for termination purposes.
13. The TracJack modular face plates shall be of the following for an nCompass Solution:

Part Number	*Description*
a. Ortronics #OR-403STJ11	***1-Port TracJack face plate (Single Gang)***
b. Ortronics #OR-403STJ12	***2-Port TracJack face plate (Single Gang)***
c. Ortronics #OR-403STJ13	***3-Port TracJack face plate (Single Gang)***
d. Ortronics #OR-403STJ14	***4-Port TracJack face plate (Single Gang)***
e. Ortronics #OR-403STJ16	***6-Port TracJack face plate (Single Gang)***
f. Ortronics #OR-403STJ28	***8-Port TracJack face plate (Double gang)***

D. Voice / Data Jacks

1. Voice/Data jacks shall be 8-position modular jacks and shall meet ANSI/TIA -568-C requirements. All pair combinations must be considered, with the worst-case measurement being the basis for compliance.
2. The modular jack shall use Tactical Isolation Zones to minimize the effect of alien crosstalk.
3. The modular jack shall have low emission IDC contacts.
4. The modular jack shall have IDC towers designed to accept larger 10 Gig cable conductors.
5. The modular jack shall utilize synchronized reactance to minimize internal alien crosstalk.
6. The modular jack shall use standard termination practice using 110 impact tool
7. The modular jack shall be backwards compatible to Category 5e
8. The modular jack shall be center tuned to category 6 ANSI/TIA-568-C.2 test specifications.
9. The modular jack shall be one of the following for an nCompass Solution:

Part Number	*Description*
a. Ortronics #OR-TJ600	***Category 6 T568A/B TracJack, Clarity 180° exit, Fog-white***
b. Ortronics #OR-42100002	***TracJack Blank fog white (pack of 10)***

10. Dust cover (Stuffer Cap) shall be used on each termination.

2.6 GROUNDING

A. Comply with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS" for grounding conductors and connectors.

B. Comply with ANSI/TIA-607-B.

2.7 IDENTIFICATION PRODUCTS

A. Comply with ANSI/TIA-606-B and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 ENTRANCE FACILITIES

A. Coordinate backbone cabling with the protectors and demarcation point provided by communications service provider.

3.2 WIRING METHODS

A. Wiring Method: Install cables in existing raceways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces, in attics. Conceal raceway and cables except in unfinished spaces.

1. Install plenum cable in environmental air spaces, including plenum ceilings.

B. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

C. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.3 INSTALLATION OF PATHWAYS

A. Comply with ANSI/TIA-569-C.

3.4 INSTALLATION OF CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with ANSI/TIA-568-C.1 and ANSI/TIA–568-C.2.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 10 feet and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.
6. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
8. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
9. In the communications equipment room, install a 20-foot- (6-m-) long service loop on each end of cable.
10. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions. Do not install Category 6 cable with more than 110N (25 lbs) pull force, as specified in ANSI/TIA and BICSI TDDM practices. Utilize appropriate cable lubricant in sufficient quantity to reduce pulling friction to acceptable levels on long pulls inside conduit, pulls of multiple cables into a single small bore conduit, on conduit runs greater than 100 lineal feet with bends of opposing directions, and in conduit runs that exceed a total of 180 degrees of accumulated bends. Use of tensile rated cords (i.e. fishing line) should be used for difficult or questionable pulls - to judge to go/no-go condition of the conduit and pulling setup.
11. Cables shall be coiled in the ceiling above each outlet to house the cable coil without exceeding the manufacturer’s bend radius. No more than 12” of UTP shall be stored in an in-wall box, modular furniture raceway, or insulated walls. Excess slack shall be loosely coiled and stored in the ceiling above each drop location when there is not enough space present in the outlet box to store slack cable.
12. Bend radius of the horizontal cable shall not be less than 4 times the outside diameter of the cable.
13. The cable jacket shall be maintained to within 25mm (one inch) of the termination point.
14. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.
15. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
16. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

C. Horizontal Cross Connect and Copper Termination Hardware Installation:

1. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA-568-C standard, manufacturer's recommendations and best industry practices.
2. Pair untwist at the termination shall not exceed 13 mm (0.5 inch).
3. Bend radius of the cable in the termination area shall not exceed 4 times the outside diameter of the cable.
4. Cables shall be neatly bundled and dressed to their respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the rack or frame.

5. The cable jacket shall be maintained as close as possible to the termination point.
6. Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support ties. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

D. Work Area Outlet Installation:

1. Data jacks, unless otherwise noted in drawings, shall be located in the bottom position(s) of each faceplate. Data jacks in horizontally oriented faceplates shall occupy the right-most position(s).
2. Voice jacks shall occupy the top position(s) on the faceplate. Voice jacks in horizontally oriented faceplates shall occupy the left-most position(s).
3. Coordinate plate terminations with Modular Furniture Vendor for outlets in Furniture Assemblies.

E. Group connecting hardware for cables into separate logical fields.

F. Separation from EMI Sources:

1. Comply with BICSI TDMM and ANSI/TIA-569-C for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (610 mm).

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6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.5 FIRESTOPPING

A. Comply with ANSI/TIA-569-C, Annex A, "Firestopping."

B. Comply with BICSI TDMM, "Firestopping Systems" Article.

C. All firestop systems shall be installed in accordance with the manufacturer's recommendations and shall be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

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A. Install grounding according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

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A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A.

B. The contractor shall develop and submit for approval a labeling system for the cable installation. The Owner or Engineer will negotiate an appropriate labeling scheme with the successful contractor. At a minimum, the labeling system shall clearly identify all components of the system: racks, cables, panels and outlets. The labeling system shall designate the cables origin and destination and a unique identifier for the cable within the system. Racks and patch panels shall be labeled to identify the location within the cable system infrastructure. All labeling information shall be recorded on the as-built drawings and all test documents shall reflect the appropriate labeling scheme. Labeling shall follow the guidelines of ANSI/TIA -606-B.

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D. Cable Schedule: Post in prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.

E. Cable and Wire Identification:

1. Label each cable within 4 inches (100 mm) of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
2. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

    a. Individually number wiring conductors connected to terminal strips, and identify each cable or wiring group being extended from a panel or cabinet to a building-mounted device shall be identified with name and number of particular device as shown.
    b. Label each unit and field within distribution racks and frames.

3. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use a different color for jacks and plugs of each service.

3.8 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Visually inspect UTP cable jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA/EIA-568-B.1.
2. Visually confirm Category 6, marking of outlets, cover plates, outlet/connectors, and patch panels.
3. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
4. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA-568-C. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed.
5. All cables shall be tested in accordance with this document, the ANSI/TIA standards, the Ortronics Certification Program and best industry practice. If any of these are in conflict, the Contractor shall bring any discrepancies to the attention of the project team for clarification and resolution.
6. All twisted-pair copper cable links shall be tested for continuity, pair reversals, shorts, opens and performance as indicated below. Additional testing is required to verify Category performance.
7. Horizontal cabling shall be tested using an Ortronics approved test unit for category 6 performance compliance. The following tests shall be tested to 250MHZ with the approved tester:

   The basic tests required are:
   - Wire Map
   - Length
   - Attenuation
   - NEXT (Near end crosstalk)
   - Return Loss
   - ELFEXT Loss
   - Propagation Delay
   - Delay skew
   - PSNEXT (Power sum near-end crosstalk loss)
   - PSELFEXT (Power sum equal level far-end crosstalk loss)

   (Note: Ortronics doesn’t require alien crosstalk testing in the field for warranty certification.)
8. Final Verification Tests: Perform verification tests for UTP systems after the complete communications cabling and workstation outlet/connectors are installed.

   a. Voice Tests: These tests assume that dial tone service has been installed. Connect to the network interface device at the demarcation point. Go off-hook and listen and receive a dial tone. If a test number is available, make and receive a local, long distance, and digital subscription line telephone call.
   b. Data Tests: These tests assume the Information Technology Staff has a network installed and is available to assist with testing. Connect to the network interface device at the demarcation point. Log onto the network to ensure proper connection to the network.

C. End-to-end cabling will be considered defective if it does not pass tests and inspections, and shall be replaced by the Contractor.

3.9 SYSTEM DOCUMENTATION

A. Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets to the Engineer for approval. Documentation shall include the items detailed in the sub-sections below.

B. Documentation shall be submitted within ten (10) working days of the completion of each testing phase (e.g. subsystem, cable type, area, floor, etc.). This is inclusive of all test result and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Engineer, the telecommunications contractor shall provide copies of the original test results.

C. The Engineer may request that a 10% random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the telecommunications contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% re-test. This re-test shall be at no additional cost to the Owner.

3.10 TEST RESULTS

A. Test documentation shall be provided within three weeks after the completion of the project. The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.

B. Test results generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package. The telecommunications contractor must furnish this information in electronic form (PDF).

C. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel in cable-plant management operations, including changing signal pathways for different workstations, rerouting signals in failed cables, and keeping records of cabling assignments and revisions when extending wiring to establish new workstation outlets.

END OF SECTION 271500

SECTION 275133 – EMERGENCY RESPONDER RADIO COVERAGE SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes the following work:

1. Design and install an approved emergency responder radio coverage system throughout new building(s) in accordance with IFC Section 510.

1.3 DEFINITIONS

A. Radio Signal Strength: The building shall be considered to have acceptable emergency responder radio coverage when signal strength measurements in 95% of all areas of the building and 99% in elevators (measured at the primary recall floor), and stair shafts, meet the signal strength requirements in IFC Sections 510.4.1.1 and 510.4.1.2.
B. Minimum Signal Strength into the Building: A minimum signal strength of -95dBm shall be receivable within the building.
C. Minimum Signal Strength Out of the Building: A minimum signal strength of -95dBm shall be received by the agency's radio system when transmitted from within the building.

1.4 PERFORMANCE REQUIREMENTS

A. System Design: The emergency responder radio coverage system shall be designed in accordance with IFC Sections 510.4.2.1 through 510.4.2.5.
B. Frequency Range: The frequency range which must be supported shall be any frequencies or ranges as determined by the Regional Radio System operator in all areas of the building.
C. Technical Requirements: Systems, components, and equipment required to provide emergency responder radio coverage system(s) shall comply with IFC Sections 510.4.1 through 510.4.2.5.

1.5 SUBMITTALS

A. General Submittal Requirements:

1. System design documents shall be submitted to the Authority Having Jurisdiction prior to submitting to the Architect.
2. Product Data: For each type of product to be implemented.
3. Shop Drawings: Show complete system riser diagram and connection requirements including all system components, power supplies, secondary power systems, etc. Include plans, elevations, sections, details, and attachments to other work.
4. Qualification Data: For qualified testing personnel, system designer, and installation personnel.
5. Field quality-control reports.
6. Operation and Maintenance Data: For systems and components to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Designer and Testing Personnel Qualifications:

1. Personnel shall be currently certified and in possession of a current FCC General Radio Telephone Operator License and a certificate or certification issued by at least one of the following:

a. Associated Public Safety Communications Officials International (APCO).
b. National Association of Business and Education Radio (NABER).
c. Personal Communications Industry Association (PCIA).
d. Manufacturer of the equipment being installed.

B. Installer Qualifications:

1. Personnel shall be trained and certified by manufacturer of components implemented for installation of units required for this Project.

C. Source Limitations for Systems and Components: Obtain emergency responder radio coverage system components from single source from single manufacturer.

D. FCC Compliance: The emergency responder radio coverage system design, installation, and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 DFR Part 90.219.

E. Approval Prior to Installation: No amplification system capable of operating on frequencies used shall be installed without prior coordination and approval of the radio system licensee.

PART 2 – PRODUCTS

2.1 AMPLIFICATION SYSTEMS ALLOWED

A. Buildings or structures which cannot support the required level of radio coverage shall be equipped with one of the following amplification system types:

1. Radiating Cable System.

2. Internal multiple antenna system with FCC certificated bi-directional amplifiers.

3. Other systems that may meet the technical requirements and be approved by the radio system manager and Authority Having Jurisdiction in order to achieve the required adequate radio coverage.

2.2 POWER SUPPLIES

A. Conform with NFPA 72, Section 10.5 Requirements.

2.3 SECONDARY POWER

A. All systems utilizing electrically powered component(s) shall be provided with an independent battery system and an emergency generator source derived from the emergency distribution system within the building capable of operating for a period of at least twenty-four (24) hours without external power input. Battery systems shall automatically charge in the presence of external power inputs. Secondary power systems shall include all interconnection

components to the emergency electrical system for a fully operational, code compliant installation.

2.4 SIGNAL BOOSTERS

A. Signal Boosters: Shall meet the following minimum requirements:

1. All signal booster components shall be contained in a NEMA 4 rated cabinet.

2. Battery systems shall be contained in a NEMA 4 rated cabinet.

3. The system shall include automate alarming of malfunctions of the signal booster and battery system. Any resulting trouble alarm shall be automatically transmitted to an approved central station or proprietary supervising station as defined in NFPA 72 or, when approved by the Authority Having Jurisdiction, shall sound an audible signal at a constantly attended location.

4. Equipment shall have FCC certification prior to installation.

5. Signal boosters must be equipped with filters that reject adjacent frequencies in addition to multi-band pass filters.

PART 3 – EXECUTION

3.1 CONSTRUCTION PERMIT REQUIRED

A. For the installation of approved emergency responder radio coverage systems, a construction permit for the installation and related equipment is required as specified in IFC Section 105.7.5.

3.2 INSTALLATION REQUIREMENTS

A. The installation of the emergency responder radio coverage system shall be in accordance with IFC Sections 510.5.1 through 510.5.5.

3.3 ACCEPTANCE TESTING

A. Upon completion of installation and prior to Occupancy, complete acceptance testing.

B. Test Procedures:

1. All areas of the building shall be divided into a grid of approximately forty (40) equal areas in size.

2. Utilize a two (2) watt, portable transceiver with speaker/microphone and flexible antenna (or any calibrated device which will produce signal levels useable by the prescribed portable radio). Field strength testing instruments must have been calibrated within one (1) year of the data of the acceptance test. Field strength testing instruments must be of the frequency selective type incorporating a flexible antenna similar to the ones used on the hand-held transceivers. Authorities Having Jurisdiction may designate alternate methods of measuring the signal level, which satisfy appropriate levels of public safety coverage.

3. Test signal strength in each building area identified by grid created. Select a location within the center of each gridded area, key test radio to verify communication to and from the outside of the building through the Regional Radio System. Once a location within each gridded area is selected, prospecting for other spots within the gridded areas is not permitted.

4. Measure and record all gain values of all amplifiers implemented. Deliver recorded values to Owner for filing upon completion.

5. Utilize a calibrated spectrum analyzer or other suitable test equipment to ensure spurious oscillations are not present or being generated by signal boosters.

6. A maximum of two (2) nonadjacent areas will be allowed to fail the test.

7. If more than three (3) subdivided areas fail testing, the system shall be deemed to have failed and must be redesigned and reinstalled to comply with the performance requirements. Redesign and reinstallation costs shall be borne by the Contractor.

3.4 APPROVAL PRIOR TO OCCUPANCY

A. A Certificate of Occupancy will not be issued to any structure if employed systems fail to meet the minimum signal strength requirements.

3.5 ADDITIONAL FREQUENCIES AND CHANGE OF FREQUENCES

A. The system shall be capable of modification or expansion to frequencies and/or frequency ranges in the event frequency changes are required by the FCC.

3.6 IDENTIFICATION

A. Provide permanent placard at or near the building's fire alarm control panel stating "THIS BUILDING IS EQUIPPED WITH AN EMERGENCY RESPONDER RADIO COVERAGE SYSTEM."

END OF SECTION

SECTION 280100 – BASIC ELECTRONIC SAFETY AND SECURITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this and the other sections of Division 28.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:
   1. Definitions.
   2. Code compliance.
   3. Drawings and specifications.
   4. Submittals.
   5. Coordination drawings.
   6. Guarantee of installation.
   7. Record documents.
   8. Maintenance manuals.
   9. Delivery, storage and handling.
   10. Temporary Electrical services.
   11. Instruction of Owners personnel.
   12. Rough-ins.
   13. Fees and permits.
   14. Electronic Safety and Security installations.
   15. Cutting and patching.
   16. Excavation and Backfilling.

B. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in all Sections of Division 28 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation. All specified products shall be installed in accordance with all manufacturers' instructions and requirements.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and electrical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient

temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.4 CODE COMPLIANCE

A. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to the following:
   1. Occupational Safety and Health Act Standards (OSHA).
   2. ANSI/IEEE C-2 - National Electrical Safety Code.
   3. ADAAG (ADA) Standards - Americans With Disabilities Act.
   4. CABO-ANSI A117.1.
   5. IEEE Standards.
   6. Underwriter's Laboratory – U.L. All products shall be U.L. Listed.
   7. NFPA – National Fire Protection Association Codes and Standards of Installation.
      a. NFPA 70 – National Electric Code
      b. NFPA 72 – National Fire Alarm Code
      c. NFPA 101 – Life Safety Code
   8. NECA - Standard of Installation.
   9. NEMA – Standard of Installation
   10. International Building Code
   11. International Fire Code
   12. International Energy Conservation Code.

B. Work to be executed and inspected in accordance with local codes and ordinances. Permits, fees or charges for inspection or other services shall be paid for by this Contractor. Local codes and ordinances are to be considered as minimum requirements and must be properly executed without expense to the Owner; but do not relieve the Contractor from work shown that exceeds minimum requirements.

1.5 DRAWINGS AND SPECIFICATIONS

A. All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.

B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.

1.6 SUBMITTALS

A. General: Follow the procedures specified in Division 01 Section "SUBMITTALS".

B. Substitutions and Material Submittals: By specific designation and description, standards are established for specialties and equipment.

C. Other makes of specialties and equipment of equal quality will be considered, provided such proposed substitutions are submitted to the Architect for approval at least ten (10) calendar days prior to bid opening. A schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed as a substitution shall be submitted together with a single copy of the manufacturer's complete specifications. A list of approved substitutions will be published as an Addendum.

D. Within thirty (30) days after award of contract, the Contractor shall submit in six (6) copies a schedule showing make, type, manufacturer's name and trade designation of all materials and equipment proposed for use and implementation. This schedule shall be accompanied by the manufacturer's complete specification, in six (6) copies, for each equipment item or materials used, give complete information as to capacities, ratings, kind of material used, finish guarantee, etc., and such dimensions as are necessary to check space requirements. When approved, such schedule and drawing shall be in addition to these specifications and shall be in equal force in that no variation shall be permitted. The Architect is to be the sole judge as to the quality of any material offered as an equal. See General Conditions and Supplementary Conditions to the Contract.

E. Design is based on equipment as listed in schedules on drawings and included in these specifications. All changes in foundations, bases, supports, connections, controls, space, openings, walls and ceilings and sound and vibration isolation, seismic support, and electrical and mechanical characteristics required by alternate equipment specified, submitted and approved shall be made at no additional cost to the Owner.

F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

G. Increase, by the quantity listed below, the number of electrical related shop drawings, product data and samples submitted to allow for required distribution plus two (2) copies of each submittal required, which will be retained by the Electrical Consulting Engineer.

1. Shop Drawings – Initial Submittal: one (1) additional print(s).
2. Shop Drawings – Final Submittal: one (1) additional print(s).
3. Product Data: one (1) additional copy of each item(s).

H. Additional copies may be required by individual sections of these Specifications.

1.7 ELECTRONIC SUBMITTAL PROCEDURES

A. Summary:

1. Shop drawings and product data submittals shall be transmitted to Architect in electronic (PDF) format using a website service designed specifically for transmitting submittals between construction team members.
2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. The electronic submittal process is not intended for color samples, color charts, or physical material samples.

B. Procedures:
1. Create submittal log by inserting required submittals listed in individual specification section.
2. Submittal Preparation – Contractor may use any or all of the following options:

   a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via the website.
   b. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via email.
   c. Subcontractors and Suppliers provide paper submittals to Scanning Service which electronically scans and converts to PDF format.

3. Printed Submittals: Provide two printed sets of submittals for shop drawings for structural framing in addition to electronic submittals.
4. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
5. Contractor shall transmit each submittal to Architect using the website.
6. Architect / Engineer review comments will receive email notice of completed review.
7. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
8. Submit paper copies of any reviewed submittals not submitted electronically at project closeout for record purposes in accordance with Section 017700 – CLOSEOUT PROCEDURES.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not a as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable. Include the following information, as applicable.
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specification.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.

3. For equipment, include the following in addition to the above, as applicable:

   a. Wiring diagrams showing factory-installed wiring.
   b. Printing performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
4. Submit Product Data before or concurrent with Samples.
5. Submit Product Data in the following format.
   a. Electronic (PDF) format.

D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not bas Shop Drawings on reproductions of the contract Documents or standard data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the Following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates , patterns, and similar full-size drawings, submit Shop Drawings on sheets a least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm)
3. Submit Shop Drawings in the following format:
   a. Electronic (PDF) format.

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered a and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number title of application Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Sample not incorporated with Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

F. Coordination Drawings: Comply with requirements specified in Division 01 Section "PROJECT MANAGEMENT AND COORDINATION."

G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects names and addresses, contact information of architects and owners, and other information specified.

H. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

J. Manufacturer Certificates: Submit written statements on manufacture's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

M. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indication and interpreting test results of material for compliance with requirements in the Contract Documents

N. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency

O. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "QUALITY REQUIREMENTS."

P. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

Q. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

R. Field Test Reports: Submit reports indicating and interpreting results of field test performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

S. Maintenance Data: Comply with requirements specified in Division 01 Section "OPERATION AND MAINTENANCE DATA."

T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page number.

1.9 GUARANTEE OF INSTALLATION

A. All work under this section shall be guaranteed in writing to be free of defective work, materials, or parts for a period of one (1) year from the date of Substantial Completion.

A. Manufacturer's specific warranties and those specified in this Section shall be included in the Contractor's Guarantee of Installation.

B. Repair, revision or replacement of any and all defects, failure or inoperativeness shall be done by this section at no cost to the Owner.

1.10 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, indicate the following installed conditions:
   1. Conduit racks, size, location, and routing, for interior locations. Show all wiring device locations and connections (including raceway routing), control locations, disconnect switch locations, and final equipment locations including actual dimensions.
   2. Update System device schedules to reflect actual manufacturer's components used complete with updated part numbers and lists.
   3. Underground ductbank locations, routings, and quantity of conduits utilized.
   4. All approved substitutions, Contract Modifications and actual equipment and materials installed.
   5. Contract Modifications, actual equipment and materials installed.

1.11 MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, include the following information for equipment and systems:
   1. Description of function, normal operating characteristics and limitations, performance and engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
   2. Manufacturer's printed operating procedures to include start-up, break-in and routine and normal operating instructions, regulation, control, stopping shutdown and emergency instructions.
   3. Maintenance procedures for routine preventative maintenance and troubleshooting, disassembly, repair and reassembly, aligning and adjusting instructions.
   4. Servicing instructions and schedules.

1.12 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle materials in a manner to prevent damage or interference with traffic conditions.

B. Protect equipment from weather and dampness.

C. All material stored on site shall be protected to Owner's standards. Owner may reject any or all material documented to have been improperly stored. Replacement of improperly stored material shall be solely at the contractor's expense.

1.13 TEMPORARY ELECTRICAL SERVICES

A. Temporary wiring for construction light and power for the general contractor or other subcontractors shall not be included as a part of this section of the work. Refer to Division 01 regarding payment for the electrical energy used for construction light and power and testing of the new installation.

1.14 INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall conduct an on-site instructional tour of the entire project. The personnel designated by the Owner shall be instructed in: operation of all electrical systems, elementary trouble-shooting procedures, preventive maintenance procedures, uses of Operation and Maintenance Manuals, relamping and cleaning of lighting fixtures and operation of all communication systems. Refer to Division 01 for specific requirements.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in all other Divisions of work for rough-in requirements.

3.2ELECTRONIC SAFETY AND SECURITY INSTALLATIONS

A. General: Sequence, coordinate and integrate the various elements of electrical systems, materials and equipment. Comply with the following requirements:
   1. Coordinate systems, equipment and materials installation with other building components. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain serviceability and code compliance.
   2. Verify all dimensions by field measurements.
   3. Arrange for chases, slots and openings in other building components during progress of construction to allow for electrical installations.
   4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components as they are constructed.
   5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the Building.
   6. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
   7. Coordinate connection of electrical systems with exterior underground and overhead service companies and controlling agencies. Provide required connection for each service.
   8. Install systems, materials and equipment to conform with approved submittal data, including coordination drawings, to the greatest extent possible. Conform to arrangements indicated by

the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirement, refer conflict to the Architect.

9. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components where installed exposed in finished spaces.
10. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components and as required by Code. As much as practical, connect equipment for ease of disconnecting with minimum of interference with other installations.
    a. All electrical items, equipment, etc. requiring access and maintenance to be provided with access panels by electrical contractor when located behind hard inaccessible finished surfaces. See Architectural ceiling plans for ceiling and wall finish types.
11. Install access panel or doors where equipment is concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section “ACCESS DOORS”.
12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
13. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
14. Provide foreman in charge of this work at all times.
15. Where the specifications call for an installation to be made in accordance with Manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the Owner's representative.

3.3SECURITY HARDWARE

A. All visible hardware in detention areas shall be detention-grade, torx-type heads with center-pin reject configuration.

B. Detention areas shall include all inmate housing areas, inmate movement areas, and all other areas inmates may have normal access to including laundry and kitchen service areas.

3.4QUALITY ASSURANCE

A. Provide a meaningful Quality Assurance program. To assist the Contractor in this program, the specifications contained herein are set forth as the minimum acceptable requirements. This does not relieve the Contractor from executing other Quality Assurance measures to obtain a complete operating facility within the scope of this project.

B. The Contractor shall insure that all workmanship, all materials employed, all required equipment and the manner and method of installation conforms to accepted construction and engineering practices, and that each piece of equipment is in satisfactory working condition to satisfactorily perform its functional operation.

C. Provide quality assurance tests and operational check on all components of the electrical distribution system, all lighting fixtures, and communication systems.

3.5CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 01 Section “CUTTING AND PATCHING.” In addition to the requirements specified in Division 01, the following requirements apply:
   1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
   2. No joists, beams, girders or structural columns shall be cut by any contractor without obtaining

written permission from the Architect.

B. Perform cutting, fitting and patching of electrical equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
   1. Patch finished surfaces and building components using new materials specified for the original installation and experienced Installers. Installer's qualifications refer to the materials and methods required for the surface and building components being patched.
      a. Refer to Division 01 Section "DEFINITIONS AND STANDARDS" for definition of "Experienced Installer."

3.6 EXCAVATION AND BACKFILL

A. General: Perform excavation and backfilling in accordance with Civil Documents. In addition to the requirements specified, the following requirements apply:
   1. Protection of Installed Work: During excavating and backfilling operations, protect adjacent installations.

B. Perform excavating and backfilling for electrical equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

END OF SECTION 280100

SECTION 280513 - CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. UTP cabling.
2. RS-232 cabling.
3. RS-485 cabling.
4. Low-voltage control cabling.
5. Control-circuit conductors.
6. Fire alarm wire and cable.
7. Identification products.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. EMI: Electromagnetic interference.

C. IDC: Insulation displacement connector.

D. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.

E. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).

F. RCDD: Registered Communications Distribution Designer.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Pathways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Submit conductors and cables in their respective applicable system sections.

B. Qualification Data: For qualified layout technician, installation supervisor, and field inspector.

C. Seismic Qualification Certificates: For pathways, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Source quality-control reports.

E. Field quality-control reports.

F. Operation and Maintenance Data: For wire and cable to include in operation and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

1. Allowable pulling tension of cable.
2. Cable connectors and terminations recommended by the manufacturer.

1.6 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 50 or less.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Test cables upon receipt at Project site.
1. Test each pair of UTP cable for open and short circuits.

1.8 PROJECT CONDITIONS

A. Do not install conductors and cables that are wet, moisture damaged, or mold damaged.

1. Indications that wire and cables are wet or moisture damaged include, but are not limited to, discoloration and sagging of factory packing materials.

B. Environmental Limitations: Do not deliver or install UTP, and coaxial cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PATHWAYS

A. Support of Open Cabling: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.

1. Support brackets with cable tie slots for fastening cable ties to brackets.
2. Lacing bars, spools, J-hooks, and D-rings.
3. Straps and other devices.

B. Conduit and Boxes: Comply with requirements in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS." Flexible metal conduit shall not be used.

2.2 UTP CABLE

A. Comply with Division 27 Section “COMMUNICATIONS HORIZONTAL CABLING.”

2.3 UTP CABLE HARDWARE

A. Comply with Division 27 Section “COMMUNICATIONS HORIZONTAL CABLING.”

2.4 RS-232 CABLE

A. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
2. Plastic insulation.
3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
4. Plastic jacket.
5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned copper drain wire.
6. Flame Resistance: Comply with NFPA 262.

B. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, 2 pairs, No. 22 AWG, stranded (7x30) tinned copper conductors.
2. Fluorinated ethylene propylene insulation.
3. Unshielded.
4. Fluorinated ethylene propylene jacket.
5. Flame Resistance: NFPA 262, Flame Test.

2.5 LOW-VOLTAGE CONTROL CABLE

A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. 1 pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

2.6 CONTROL-CIRCUIT CONDUCTORS

A. Class 1 Control Circuits: Stranded copper, Type THHN-THWN, complying with UL 83, in raceway.

B. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, complying with UL 83, in raceway.

2.7 FIRE ALARM WIRE AND CABLE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Comtran Corporation.
2. Draka Cableteq USA.
3. Genesis Cable Products; Honeywell International, Inc.
4. Rockbestos-Suprenant Cable Corp.
5. West Penn Wire; a brand of Belden Inc.

B. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.

C. Signaling Line Circuits: Twisted, shielded pair, not less than No. 18 AWG.

D. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 16 AWG, minimum.
2. Line-Voltage Circuits: No. 12 AWG, minimum.

2.8 IDENTIFICATION PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Brady Corporation.
2. HellermannTyton.
3. Kroy LLC.
4. PANDUIT CORP.

B. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

C. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate cables.

B. Factory test UTP cables on reels according to TIA/EIA-568-B.1.

C. Factory test UTP cables according to TIA/EIA-568-B.2.

D. Cable will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 INSTALLATION OF PATHWAYS

A. Comply with TIA-569-B for pull-box sizing and length of conduit and number of bends between pull points.

B. Comply with requirements in Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS." for installation of conduits and wireways.

C. Install manufactured conduit sweeps and long-radius elbows whenever possible.

D. Pathway Installation in Equipment Rooms:

1. Position conduit ends adjacent to a corner on backboard where a single piece of plywood is installed or in the corner of room where multiple sheets of plywood are installed around perimeter walls of room.
2. Install cable trays to route cables if conduits cannot be located in these positions.
3. Secure conduits to backboard when entering room from overhead.
4. Extend conduits 3 inches (75 mm) above finished floor.
5. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.

3.2 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS." for installation of supports for pathways, conductors and cables.

3.3 WIRING METHOD

A. Install wiring in metal raceways and wireways. Conceal raceway except in unfinished spaces and as indicated. Minimum conduit size shall be 3/4 inch (21 mm). Control and data transmission wiring shall not share conduit with other building wiring systems.

B. Install cable, concealed in accessible ceilings, walls, and floors when possible.

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Use lacing bars and distribution spools. Separate power-limited and non-power-limited conductors as recommended in writing by manufacturer. Install conductors parallel with or at right angles to sides and back of enclosure. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with intrusion system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

3.4 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. Conductors: Size according to system manufacturer's written instructions unless otherwise indicated.

C. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
8. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.

D. UTP Cable Installation: Install using techniques, practices, and methods that are consistent with Category 6 rating of components and that ensure Category 6 performance of completed and linked signal paths, end to end.

1. Comply with TIA/EIA-568-B.2.
2. Install 110-style IDC termination hardware unless otherwise indicated.
3. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

E. Optical Fiber Cable Installation:

1. Comply with TIA/EIA-568-B.3.
2. Cable shall be terminated on connecting hardware that is rack or cabinet mounted.

F. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.

G. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA-569-B recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

   a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
   b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
   c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.5 FIRE ALARM WIRING INSTALLATION

A. Comply with NECA 1 and NFPA 72.

B. Wiring Method: Install wiring in metal raceway according to Division 26 Section "RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS."
   1. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.

C. Wiring Method:

   1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
   2. Signaling Line Circuits: Power-limited fire alarm cables shall not be installed in the same cable or raceway as signaling line circuits.

D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and

back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.

F. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.

3.6 POWER AND CONTROL-CIRCUIT CONDUCTORS

A. 120-V Power Wiring: Install according to Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" unless otherwise indicated.

B. Minimum Conductor Sizes:

1. Class 1 remote-control and signal circuits, No. 14 AWG.
2. Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.
3. Class 3 low-energy, remote-control, alarm and signal circuits, No. 12 AWG.

3.7 CONNECTIONS

A. Comply with requirements in Division 28 Section “DIGITAL ADDRESSABLE FIRE-ALARM SYSTEM” for connecting, terminating, and identifying wires and cables.

3.8 FIRESTOPPING

A. Comply with requirements in Division 07 Section "PENETRATION FIRESTOPPING."

B. Comply with TIA-569-B, "Firestopping" Annex A.

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.9 GROUNDING

A. For communications wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "GROUNDING, BONDING, AND ELECTRICAL PROTECTION" Chapter.

B. For low-voltage wiring and cabling, comply with requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

3.10 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Visually inspect UTP cable jacket materials for NRTL certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross connection.

    a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

D. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.

E. End-to-end cabling will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

END OF SECTION 280513

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Heat detectors.
5. Notification appliances.
6. Remote annunciator.
7. Addressable interface device.
8. Digital alarm communicator transmitter.

1.3 DEFINITIONS

A. LED: Light-emitting diode.

B. NICET: National Institute for Certification in Engineering Technologies.

1.4 SYSTEM DESCRIPTION

A. Noncoded addressable system, with automatic sensitivity control of certain smoke detectors and multiplexed signal transmission, dedicated to fire-alarm service only.

1.5 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.6 SUBMITTALS

A. General Submittal Requirements:

1. Submittals shall be approved by Architect prior to submitting them to authorities having jurisdiction.
2. Shop Drawings shall be prepared by persons with the following qualifications:

    a. Trained and certified by manufacturer in fire-alarm system design.
    b. NICET-certified fire-alarm technician, Level IV minimum.
    c. Licensed or certified by authorities having jurisdiction.
3. Do not begin installation until submittal documents have been approved by the Building Official.
4. Submission of reproducing contract drawings shall not qualify as a system layout drawing.
5. Use of Consultants electronic (CAD) files for aid in preparation of submittals by project suppliers may be obtained on a per sheet basis upon approval by the project's Engineer. CAD files will include project base and approximate device locations on electronic media. Connections of devices are the contractor's responsibility and will not be included. Contact Engineer for per sheet costs.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.

1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
2. Include voltage drop calculations for notification appliance circuits.
3. Include battery-size calculations.
4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
6. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.

D. Qualification Data: For qualified Installer.

E. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

F. Field quality-control reports.

G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA" include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
3. Record copy of site-specific software.
4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:

    a. Frequency of testing of installed components.
    b. Frequency of inspection of installed components.
    c. Requirements and recommendations related to results of maintenance.
    d. Manufacturer's user training manuals.

5. Manufacturer's required maintenance related to system warranty requirements.
6. Abbreviated operating instructions for mounting at fire-alarm control unit.
7. Copy of NFPA 25.

H. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On magnetic media or compact disk, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.

C. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL.

1.8 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning with Substantial Completion, provide software support for two years.

C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.

1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

1.9 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Smoke Detectors, Fire Detectors, Heat Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
   2. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but no fewer than 1 unit of each type.
   3. Keys and Tools: One extra set for access to locked and tamperproofed components.
   4. Audible and Visual Notification Appliances: One of each type installed.
   5. Fuses: Two of each type installed in the system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Gamewell; a Honeywell company.
   2. GE Infrastructure; a unit of General Electric Company.
   3. NOTIFIER; a Honeywell company.
   4. Siemens Building Technologies, Inc.; Fire Safety Division.
   5. SimplexGrinnell LP; a Tyco International company.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:

   1. Manual stations.
   2. Heat detectors.
   3. Smoke detectors.
   4. Duct smoke detectors.
   5. Automatic sprinkler system water flow.
   6. Heat detectors in elevator shaft and pit.
   7. Fire standpipe system.

B. Fire-alarm signal shall initiate the following actions:

   1. Continuously operate alarm notification appliances.
   2. Identify alarm at fire-alarm control unit and remote annunciators.
   3. Transmit an alarm signal to the remote alarm receiving station.
   4. Unlock electric door locks in designated egress paths.
   5. Release fire and smoke doors held open by magnetic door holders.
   6. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
   7. Close smoke dampers in air ducts of designated air-conditioning duct systems.
   8. Recall elevators to primary or alternate recall floors.
   9. Record events in the system memory.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Low-air-pressure switch of a dry-pipe sprinkler system.
3. Elevator shunt-trip supervision.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.
9. Low-air-pressure switch operation on a dry-pipe or preaction sprinkler system.

E. System Trouble and Supervisory Signal Actions:
1. Initiate notification appliances.
2. Annunciate at fire-alarm control unit and remote annunciators.
3. Switch heating, ventilating and air-conditioning systems equipment controls to fire-alarm mode.

2.3 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.

   a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
   b. Include a real-time clock for time annotation of events on the event recorder and printer.

2. Addressable initiation devices that communicate device identity and status.

   a. Smoke sensors shall additionally communicate sensitivity setting and allow for adjustment of sensitivity at fire-alarm control unit.
   b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.

3. Addressable control circuits for operation of mechanical equipment.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 3 line(s) of 40 characters, minimum.

2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.

C. Circuits:

1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.

a. Initiating Device Circuits: Style B.
b. Notification Appliance Circuits: Style Y.
c. Signaling Line Circuits: Style 3.5.
d. Install no more than 50 addressable devices on each signaling line circuit.

2. Serial Interfaces: Two RS-232 ports for printers.

D. Notification Appliance Circuit: Operation shall sound in a temporal pattern.

E. Elevator Recall:

1. Smoke detectors at the following locations shall initiate automatic elevator recall. Alarm-initiating devices, except those listed, shall not start elevator recall.

a. Elevator lobby detectors except the lobby detector on the designated floor.
b. Smoke detector in elevator machine room.
c. Smoke detectors in elevator hoistway.

2. Elevator lobby detectors located on the designated recall floors shall be programmed to move the cars to the alternate recall floor.
3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.

a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

F. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.

G. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

H. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

I. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

J. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

K. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Single-action mechanism, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.
3. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
4. Weatherproof Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.5 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be two-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.

   a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F (8 or 11 deg C) per minute.
   b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F (57 or 68 deg C).
   c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X sun-light resistant; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

2.6 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (57 deg C) or a rate of rise that exceeds 15 deg F (8 deg C) per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.7 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.

B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet (3 m) from the horn, using the coded signal prescribed in UL 464 test protocol.

C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- (25-mm-) high letters on the lens.

1. Rated Light Output:
   a. 15/30/75/110 cd, selectable in the field.
   b. Specific candela rating as shown on drawings.

2. Mounting: Wall mounted unless otherwise indicated.
3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, red.

2.8 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: Flush cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.9 ADDRESSABLE INTERFACE DEVICE

A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

2.10 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.

C. Local functions and display at the digital alarm communicator transmitter shall include the following:

1. Verification that both telephone lines are available.
2. Programming device.
3. LED display.
4. Manual test report function and manual transmission clear indication.
5. Communications failure with the central station or fire-alarm control unit.

D. Digital data transmission shall include the following:

1. Address of the alarm-initiating device.
2. Address of the supervisory signal.
3. Address of the trouble-initiating device.
4. Loss of ac supply or loss of power.
5. Low battery.
6. Abnormal test signal.
7. Communication bus failure.

E. Secondary Power: Integral rechargeable battery and automatic charger.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Comply with NFPA 72 for installation of fire-alarm equipment.

B. Equipment Mounting: Install fire-alarm control unit on finished floor with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.

1. Comply with requirements for seismic-restraint devices specified in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

C. Smoke- or Heat-Detector Spacing:

1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
3. Smooth ceiling spacing shall not exceed 30 feet (9 m).
4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A in NFPA 72.
5. HVAC: Locate detectors not closer than 3 feet (1 m) from air-supply diffuser or return-air opening.
6. Lighting Fixtures: Locate detectors not closer than 12 inches (300 mm) from any part of a lighting fixture.

D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.

E. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

G. Audible Alarm-Indicating Devices: Install not less than 6 inches (150 mm) below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.

H. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches (150 mm) below the ceiling.

I. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.2 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "DOOR HARDWARE." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet (1 m) from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
1. Smoke dampers in air ducts of designated air-conditioning duct systems.
2. Alarm-initiating connection to elevator recall system and components.
3. Supervisory connections at valve supervisory switches.
4. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
5. Supervisory connections at elevator shunt trip breaker.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Install framed instructions in a location visible from fire-alarm control unit.

C. Install laminated map of entire fire alarm system at location visible from fire-alarm control panel. Laminate each floor map separately. Locate and additional floor map at each respective floor equipment.

3.4 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.

a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

3.7 WARRANTY

A. The contractor shall warrant the fire alarm system wiring and equipment to be free from mechanical and electrical defects for a period of one year from the date of the completed and certified test.

B. The equipment manufacturer shall make available to the owner a maintenance contract proposal to provide a minimum of two inspections and tests per year in compliance with NFPA-72.

END OF SECTION 283111

SECTION 310516 – AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Aggregate materials.

1.2 RELATED SECTIONS
- A. Section 03 30 00 – Cast In Place Concrete.

1.3 REFERENCES
- A. ANSI/ASTM D 1556 – Test Methods for Density of Soil in Place by the Sand-Cone Method.
- B. ANSI/ASTM D 1557 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- C. ANSI/ASTM D 2049 – Test Methods for Moisture-Density Relations of Cohesionless Soils Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ASTM D 2167 – Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- E. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

PART 2 - PRODUCTS

2.1 AGGREGATE MATERIALS
- A. Aggregate Type A – ¾ inch minus base course: Clean angular crushed rock ¾ inch minus gravel for aggregate base course conforming to Idaho Transportation Department standard 703.04.
- B. Aggregate Type B – Coarse gravel: Crushed or natural 2” minus gravel conforming to Idaho Transportation Department standard 703.04.
- C. Aggregate Type C – Drain Rock: Crushed or natural 1 ½” minus gravel washed free of clay, shale, and organic matter and conforming to Idaho Transportation Department standard 703.03-4.
- D. Aggregate Type D – 3 to 6 inch: Clean angular crushed or blasted rock.
- E. Aggregate Type E – Cover coat material: Clean angular crushed rock 5/8 inch minus conforming to Idaho Transportation Department standard 703.06 Class 1.

PART 3 - EXECUTION

3.1 STOCKPILING
- A. Stockpile materials on site at locations indicated on the plans or designated by Architect/Engineer.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.

3.2 STOCKPILE CLEANUP
- A. Remove stockpile and leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION 310516

SECTION 311000 – SITE CLEARING

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Demolition
- B. Disposal of waste materials.

1.2 RELATED SECTIONS
- A. Section 31 23 16 – Excavation
- B. Section 31 23 23 – Fill

1.3 REGULATORY REQUIREMENTS
- A. Conform to applicable code for disposal of debris.

PART 2 - PRODUCTS

2.1 MATERIALS
- A. Not Applicable

PART 3 - EXECUTION

3.1 PROTECTION
- A. Locate, identify, retain, and protect existing utilities.
- B. Protect existing trees, shrubs, walks, curbs, walls, and other structures from damage or displacement.

3.2 CLEARING
- A. Clear areas required for execution of Work.

3.3 REMOVAL
- A. Remove existing above-grade and below-grade improvements necessary to permit construction and other work as indicated.
- B. Saw cut existing concrete and asphalt surfaces at locations shown on the drawings.
- C. Retain and protect adjacent surfaces and structures to remain.
- D. Remove unsuitable waste materials from Owner's property and dispose of off-site in a legal manner.
- E. Contractor is solely responsible for disposal of all concrete waste, debris, and unsuitable waste materials. This responsibility includes locating suitable site, obtaining required permission and permits, hauling, disposal fees, and all incidental costs.

END OF SECTION 311000

SECTION 312213 – ROUGH GRADING

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Removal of topsoil and subsoil.
- B. Cutting, grading filling and rough contouring the site for paving, walks, and landscaping.

1.2 RELATED SECTIONS
- A. Section 01 45 00 – Quality Control
- B. Section 31 05 16 – Aggregates For Earthwork
- C. Section 31 23 23.13 – Backfill
- D. Section 31 23 16.13 - Trenching

1.3 PROJECT RECORD DOCUMENTS
- A. Submit under provisions of Section 01 77 00.
- B. Accurately record actual locations of utilities installed or located during construction, by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 - PRODUCTS

2.1 MATERIALS
- A. Fill Materials: As specified in sections of work for which rough grading serves as base.
- B. Topsoil: As specified by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Verify site conditions are as indicated.
- B. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.2 PREPARATION
- A. Identify required lines, levels, contours, and datum.
- B. Locate, identify, and protect utilities that remain from damage.
- C. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION
- A. Excavate subsoil as necessary to meet indicated elevations or grades.
- B. Stockpile subsoil to be reused in area designated on site. Remove subsoil not being reused from site.
- C. When excavating through roots of vegetation scheduled to remain, perform work by hand and cut roots with sharp ax.

3.4 FILLING
- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place fill materials on continuous layers and compact in accordance with requirements of the applicable section.
- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Remove surplus fill materials from site.

3.5 TOLERANCES
- A. Top Surface of Subgrade: Plus or minus 1/10 inch.

3.6 FIELD QUALITY CONTROL
- A. Field testing will be performed under provisions of Section 01 40 00.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

END OF SECTION 312213

SECTION 312316 - EXCAVATION

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Excavating

1.2 RELATED SECTIONS
- A. Section 31 23 16.13 – Trenching
- B. Section 31 23 23 - Fill

1.3 FIELD MEASUREMENTS
- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 PREPARATION
- A. Identify required lines, levels, contours, and datum.
- B. Locate, identify, and protect utilities that remain from damage. Notify utility company to locate utilities as necessary.
- C. Protect plants, trees, lawns, and other landscaping features.
- D. Protect bench marks, existing structures, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.
- E. Cut and patch adjacent improvements as necessary to integrate with new construction.
- F. Restore existing improvements damaged during construction to original condition.

3.2 EXCAVATION
- A. Underpin or shore adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil required to accommodate paving and for utility trenches.
- C. Notify Engineer of unexpected subsurface conditions such as bedrock or unsuitable foundation soil and discontinue affected Work in area until notified to resume work.
- D. Correct areas over excavated as directed by Engineer.
- E. Remove excavated material that is not be re re-used from site.

3.3 FIELD QUALITY CONTROL
- A. Field inspection will be performed under provisions of Section 01 45 00.
- B. Provide for visual inspection of bearing surfaces.

END OF SECTION 312316

SECTION 312316.13 - TRENCHING

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Excavating trenches for utilities.
- B. Compacted fill from top of utility bedding to aggregate base course.
- C. Backfilling and compaction

1.2 RELATED SECTIONS
- A. Section 01 45 00 – Quality Control
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 31 05 16 – Aggregates For Earthwork
- D. Section 31 23 16 – Excavation
- E. Section 31 23 23 – Fill

1.3 DEFINITIONS
- A. Utility: Any buried pipe, conduit, or cable.

1.4 FIELD MEASUREMENTS
- A. Verify that survey bench mark and intended elevations for the Work are as shown on drawings.

PART 2 - PRODUCTS

2.1 FILL MATERIALS
- A. All fill materials under paved sections shall be Type A as specified in Section 31 05 16.

PART 3 - EXECUTION

3.1 EXCAVATION
- A. Excavate subsoil required for utilities.
- B. Cut trenches sufficiently wide to enable installation and allow inspection
- C. Remove excavated material from site.

3.2 BACKFILLING
- A. Backfill trenches to contours and elevations shown.
- B. Granular Fill Type A: Place and compact materials in continuous layers not exceeding 6 inches compacted depth.
- C. Employ a placement method that does not disturb or damage piping in trench.

3.3 COMPACTION
- A. Compact backfill to 95% of optimum density as determined by ASTM 2049.

3.4 TOLERANCES
- A. Top Surface of Backfilling Under Paved Areas: Plus or minus ½ inch from required elevations.

3.5 FIELD QUALITY CONTROL
- A. Field testing will be performed under provisions of Section 01 45 00.
- B. Compaction testing will be performed in accordance with ANSI/ASTM D 1556, ASTM D2167, or ASTM D2922 as directed by the Engineer.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.6 PROTECTION OF FINISHED WORK
- A. Protect finished Work under provisions of Section 01 45 00 – Quality Control.

END OF SECTION 312316.13

SECTION 312323 - FILL

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Site filling and backfilling.
- B. Consolidation and compaction as scheduled.
- C. Fill for over-excavation.

1.2 RELATED SECTIONS
- A. Section 31 05 16 – Aggregates for Earthwork
- B. Section 31 23 16 – Excavating
- C. Section 31 23 16.13 – Trenching

1.3 REFERENCES
- A. ANSI/ASTM D1556 – Test Method for Density of Soil in Place by the Sand-Cone Method.
- B. ANSI/ASTM D 1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. ANSI/ASTM D 2049 – Test Methods for Moisture-Density Relations of Cohesionless Soils Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ASTM D2167 – Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- E. ASTM D2922 – Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 - PRODUCTS

2.1 FILL MATERIALS
- A. Backfill under asphalt paving: Fill Type A as specified in Section 31 05 16.
- B. Backfill for utility trenches: Fill Type A as specified in Section 31 05 16 under all paved areas, random fill with 12 inches of topsoil in all other areas.
- C. Pipe Bedding: Fill Type A, as specified in section 31 05 16.
- D. Structural Fill: Conforming the following gradation requirements:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
2½ in	100
2 in	90-100
1in	55-83
No. 4	30-60
No. 30	10-25
No. 200	0.0-8.0

PART 3 - EXECUTION

3.1 PREPARATION
- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with same type of material specified for layer covering subgrade and compact to density equal to or greater than requirements for subsequent fill material.

C. Proof roll subgrade surface to identify soft spots. Fill and compact to density equal to or greater than requirements for subsequent fill material.

3.2 BACKFILLING

A. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

B. Structural Fill: Place fill material by means of heavy equipment compactors in continuous layers not exceeding a thickness of 6” per lift and compact. In areas where hand operated mechanical compactors are used, place material in continuous layers not exceeding 4” per lift and compact. Layers shall be compacted to a dense state equaling at least 95 percent of the maximum dry density, using the modified proctor, per ASTM D1557.

C. Granular Fill Type A: Place and compact materials in continuous layers not exceeding 10 inches compacted depth.

D. Employ a placement method that does not disturb or damage other work.

E. Maintain optimum moisture content of backfill materials to attain required compaction density.

F. Remove surplus backfill materials from site.

G. Compact backfill to density called for in section of the specifications covering work of which backfilling is part, or if not specified, to a density greater than or equal to that required for subsequent fill materials.

3.3 TOLERANCES

A. Top Surface of Backfilling: as specified in section the specifications covering work which backfilling is a part.

3.4 FIELD QUALITY CONTROL

A. Field testing will be performed by Owner.

B. Compaction testing will be performed in accordance with ASTM D1557 and ASTM D2922, or as directed by the Engineer.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no additional cost to the Owner.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished Work from damage.

B. Reshape and re-compact fills subjected to vehicular traffic.

C. Restore existing improvements damage during construction to original condition.

END OF SECTION 312323

SECTION 321100 –BASE COURSES

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Aggregate base course.

1.2 RELATED SECTIONS
- A. Section 31 23 16.13 – Trenching
- B. Section 31 23 23 – Fill
- C. Section 32 12 16 - Asphalt Paving
- D. Section 31 05 16 – Aggregates for Earthwork

1.3 REFERENCES
- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D1556 - Test Methods for Density of Soil in Place by the Sand-Cone Method.
- C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ANSI/ASTM D2049 - Test Methods for Moisture-Density Relations of Cohesionless Soils Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- E. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- F. ASTM D2922 - Test Methods for Density of Soil and Soil- Aggregate in Place by Nuclear Methods (Shallow Depth).

PART 2 - PRODUCTS

2.1 FILL MATERIALS
- A. Aggregate Fill Type A: As specified in Section 31 05 16.

PART 3 - PART 3 EXECUTION

3.1 EXAMINATION
- A. Verify substrate has been inspected, gradients and elevations are correct, and substrate is dry.

3.2 AGGREGATE PLACEMENT
- A. Spread aggregate over prepared substrate to the total compacted thickness shown on the plans.
- B. Place aggregate in maximum 10 inch layers and roller compact.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.3 TOLERANCES
- A. Flatness: Maximum variation of 1 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within ½ inch.
- C. Variation from True Elevation: Within ½ inch.

3.4 COMPACTION
- A. Compact to 95% of optimum density as determined by ASTM D1557.

3.5 FIELD QUALITY CONTROL
- A. Compaction testing will be performed in accordance with ANSI/ASTM D1556, ASTM D2167, or ASTM D2922 as directed by the Engineer.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.6 PROTECTION OF FINISHED WORK
- A. Protect finished Work from damage.
- B. Cut and patch adjacent improvements as necessary to integrate with new construction.
- C. Restore existing improvements damaged during construction to original condition.

END OF SECTION 321100

SECTION 321216 – ASPHALT PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Asphaltic concrete paving

1.2 RELATED SECTION
- A. Section 31 05 16 – Aggregates for Earthwork
- B. Section 32 11 16 – Base Courses

1.3 QUALITY ASSURANCE
- A. Obtain materials from same source throughout. Use only materials and gradations which exhibit a satisfactory record of previous installation in the area.

1.4 ENVIRONMENTAL REQUIREMENTS
- A. Do not apply asphalt materials if subgrade is wet, excessively damp, or frozen, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met.
- B. Tack Coat: Minimum surface or air temperature in the shade of 60 degrees F.
- C. Asphalt Single Course: Minimum surface or air temperature in the shade of 40 degrees F and rising at time of placement.

PART 2 - PRODUCTS

2.1 MATERIALS
- A. Asphalt: Type AC-10 in accordance with AASHTO M226.
- B. Aggregate: Sound 5/8 inch minus angular crushed gravel and sharp edged natural sand.
- C. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.

2.2 ACCESSORIES
- A. Tack Coat: Homogeneous, medium curing, liquid asphalt.

2.3 ASPHALT PAVING MIX
- A. Use a commercial asphalt paving mix supplied by a local source. The mix design used must have demonstrated satisfactory performance in several similar applications in the area.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Verify that compacted aggregate base course is dry and ready to support paving and imposed loads and that gradients and elevations of base are correct.

3.2 SUBBASE
- A. Section 32 11 00 – Base Courses forms the base construction for work of this Section.

3.3 ADJUST EXISTING IMPROVEMENTS
- A. Raise all valve boxes, catch basins, manholes and other street improvements to final pavement grade to match new asphalt.

3.4 MATCHING EXISTING ASPHALT
- A. Neatly saw cut existing asphalt to be paved against.

3.5 HERBICIDE
- A. Not applicable

3.6 PREPARATION – TACK COAT
- A. Apply tack coat to contact surfaces of curbs, gutters, catch basins and building edges in accordance with manufacturer's instructions.
- B. Coat top surfaces of catch basin, manhole and valve box frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

C. Thoroughly clean surfaces to be overlaid until free of loose or deleterious material. Apply tack coat to existing pavement in accordance with manufacturer's instructions.

3.7 PLACING ASPHALT PAVEMENT – SINGLE COURSE

A. Place asphalt concrete mixture with paving machine at a minimum temperature of 225 degrees F. Place inaccessible and small areas by hand.
B. Place to compacted thickness shown on the plans.
C. Install catch basin grates and frames in correct position and elevation.
D. Compact pavement to 95% of maximum density by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
E. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.8 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
B. Scheduled compacted Thickness: Within 1/4 inch on each individual test with average of all samples within 1/16 inch.
C. Variation from True Elevation: Within 1/2 inch.

3.9 FIELD QUALITY CONTROL

A. Field testing will be performed by owner

3.10 PROTECTION

A. Immediately after placement, protect pavement from vehicular traffic until mixture has cooled and hardened sufficiently.
B. Cut and patch adjacent improvements as necessary to integrate with new construction.
C. Restore existing improvements damaged during construction to original condition.

END OF SECTION 321216

SECTION 321313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Concrete Paving.

1.2 REFERENCES
A. ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
B. ACI 305R - Hot Weather Concreting.
C. ACI 306R – Cold Weather Concreting.
D. ACI 308 – Standard Practice for Curing Concrete.
E. ASTM C33 – Concrete Aggregates.
F. ASTM C94 – Ready-Mixed Concrete.
G. ASTM C150 – Portland Cement.
H. ASTM C260 – Air Entraining Admixtures for Concrete.

1.3 PROJECT RECORD DOCUMENTS.
A. Submit under provisions of Section 01 70 00.

1.4 QUALITY ASSURANCE
A. Perform Work in accordance with ACI 304
B. Acquire cement and aggregate from same source for all work.
C. Conform to ACI 305R when concreting during hot weather.
D. Conform to ACI 306R when concreting during cold weather.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS
A. Cement: ASTM C150, Type I – Normal
B. Fine and Coarse Aggregates: ASTM C33
C. Water: Clean and not detrimental to concrete.

2.2 ADMIXTURES
A. Air Entrainment: ASTM C260

2.3 CONCRETE MIX
A. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.
B. Provide concrete to the following criteria:

	Unit	Measurement
1.	Compressive Strength (28 day)	4000 psi
2.	Slump: Plus or Minus 1 inch	4 inches

C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer.
D. Do not use calcium chloride.
E. Use set retarding admixtures in hot weather only when approved by Architect/Engineer.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Verify site conditions.
B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 PLACING CONCRETE
A. Notify Architect/Engineer minimum 24 hours prior to commencement of operations.
B. Ensure reinforcement, inserts, and embedded parts are not disturbed during concrete placement.
C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.3 JOINTS
A. Place preformed expansion joints at locations shown on drawings.

3.4 FIELD QUALITY CONTROL

A. Field testing will be performed in accordance with provisions of Section 01 40 00.
B. Provide free access to Work and cooperate with appointed firm.
C. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
D. Contractor shall keep a person at the job site for a minimum of four hours following the concrete surface brooming operation for the purpose of both preventing and repairing any damaged surfacing to the newly placed concrete. Concrete left unattended, if damaged or defaced shall be replaced at contractor expense.

3.5 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
C. Patch imperfections as directed.

3.6 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer of each individual area.

END OF SECTION 321313

SECTION 321723 – PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES
- A. Traffic lines and markings
- B. Legends
- C. Paint

1.2 RELATED SECTIONS
- A. Section 32 12 16 – Asphalt Paving

1.3 PROJECT RECORD DOCUMENTS
- A. Section 01 33 00 – Submittal Procedure: Requirements for submittals.
- B. Product Data: Submit paint formulation for each type of paint.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- D. Test and Evaluation Reports: Submit source and acceptance test results in accordance with AASHTO M247.
- E. Manufacturer's Instructions: Submit instructions for application temperatures, eradication requirements, application rate, line thickness, type of glass beads, bead embedment and bead application rate, and any other data on proper installation.

1.4 QUALITY ASSURANCE
- A. Perform Work in accordance with Idaho Standards for Public Works Construction.

1.5 QUALIFICATIONS
- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 – Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Invert containers several days prior to use when paint has been stored more than 2 months.
  1. Minimize exposure to air when transferring paint.
  2. Seal drums and tanks when not in use.

1.7 AMBIENT CONDITIONS
- A. Section 01 50 00 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.
- D. Do not apply paint when temperatures are expected to fall below 50 degrees F for 24 hours after application.
- E. Volatile Organic Content (VOC): Do not exceed State or Environmental Protection Agency maximum VOC on traffic paint.

1.8 WARRANTY
- A. Furnish manufacturer's standard warranty for traffic paints.

PART 2 - PRODUCTS

2.1 PAINTED PAVEMENT MARKINGS
- A. Manufacturers:
  1. Columbia Paint & Coatings
  2. Coronado Paint
  3. Diamond Vogel Paints

4. EZ-Liner Industries
5. Pathmark Traffic Products of Texas Inc
6. Substitutions: Section 01 60 00 - Product Requirements

B. Performance / Design Criteria:
1. Paint Adhesion: Adhere to road surface forming smooth continuous film one minute after application
2. Paint Drying: Tack free by touch so as not to require coning or other traffic control devices to prevent transfer by vehicle tires within two minutes after application.

C. Paint: Ready mixed, conventional and fast dry waterborne traffic paints, lead-free, non-toxic, NASSHTO Test Deck, minimum retro-reflectance of 100 mcds, durability rating of 6 or more after in place for 9 months; within the following limits:
1. Pigment, percent by weight: 60 plus or minus 2.
2. Vehicle, percent by weight: 40 plus or minus 2.
3. Non-Volatile, percent by weight of paint: 76.0.
4. Weight per gallon, pounds minimum 13.0.
5. Viscosity: 80-95 Kreb Units at 77 degrees F.
6. Grind (Hegeman Gauge), minimum Field Tested no tracking time under ambient conditions: 20-90 seconds.
7. Dry Through Time, 15 mils wet at 90 percent relative humidity, 72 degrees F, ASTM D1640: 125 minutes maximum.
8. VOC (Volatile Organic Content): One lbs/gal maximum.

2.2 EQUIPMENT

A. Continuous Longitudinal Line Application Machine: Use application equipment with following capabilities.
1. Dual nozzle paint gun to simultaneously apply parallel lines of indicated width in solid or broken patterns or various combinations of those patterns.
2. Measuring device to automatically and continuously measure length of each line placed, to nearest foot.
3. Device to heat paint to manufacturer's recommend degrees F for fast dry applications.

B. Machine Calibration:
1. Paint Guns: Calibrate to simultaneously apply paint binder at uniform rates as specified with an allowable tolerance of plus or minus 1 mil.

C. Other Equipment:
1. For application of crosswalks, intersections, stop lines, legends and other miscellaneous items by walk behind stripers, hand spray or stencil trucks, apply with equipment meeting requirements of this section.
a. Do not use hand brushes or rollers

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not apply paint to concrete surfaces until concrete has cured for 28 days.

3.2 PREPARATION

A. Maintenance and Protection of Traffic:
1. Provide short term traffic control in accordance with Section 01 50 00 - Temporary Facilities and Controls.
2. Prevent interference with marking operations and to prevent traffic on newly applied markings before markings dry.

B. Surface Preparation:
1. Clean and dry paved surface prior to painting.
2. Blow or sweep surface free of dirt, debris, oil, grease or gasoline.

3.3 APPLICATION

A. Agitate paint for 1-15 minutes prior to application to ensure even distribution of paint pigment.

B. Dispense paint at manufacturer's recommended temperature to wet-film thickness of 15 mils, except dispense edge markings to wet-film thickness of 12 mils.

C. Apply markings to indicated dimensions at indicated locations.
D. Prevent splattering and over spray when applying markings.
E. Collect and legally dispose of residues from painting operations.

3.4 TOLERANCES
A. Maximum Variation from Wet Film Thickness: 1 mil.
B. Maximum Variation from Wet Paint Line Width: Plus or minus 1/8 inch.
C. Maintain cycle length for skip lines at tolerance of plus or minus 6 inches per 40 feet and line length of plus or minus 3 inches per 10 feet.
D. Maximum Variation from Specified Application Temperature: Plus or minus 5 degrees F.

3.5 FIELD QUALITY CONTROL
A. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.
B. Repair lines and markings, which after application and curing do not meet following criteria:
1. Incorrect Location: Remove and replace incorrectly placed patterns. Insufficient Thickness, Line Width, Paint Coverage, or Retention: Prepare defective material by acceptably grinding or blast cleaning to roughen marking surface. Remove loose particles and debris. Apply new markings on cleaned surface in accordance with this Section.
2. Uncured or Discolored Material, Insufficient Bonding: Remove defective markings in accordance with this Section and clean pavement surface one foot beyond affected area. Apply new markings on cleaned surface in accordance with this Section.

3.6 PROTECTION
A. Protect painted pavement markings from vehicular and pedestrian traffic until paint is dry and track free. Follow manufacturer's recommendations or use minimum of 30 minutes. Consider barrier cones as satisfactory protection for materials requiring more than 2 minutes dry time.

END OF SECTION 321723

SECTION 323100 - VERTICAL PIVOT LIFT GATE OPERATORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vertically pivoting low voltage electrically operated vehicle access gate.

   a. Gate operator of a vertical lift type, for opening and closing the gate.
   b. Receiving yoke.

2. Concrete and earthwork for operator and yoke pads.
3. Mechanical Photoelectric external secondary entrapment protection devices.
4. Loop detector control system.

1.2 RELATED SECTIONS

A. Section 055000 – Metal fabrication for custom built decorative fencing and gate.

B. Section 312000 - Earthwork for Foundations.

C. Section 033000 - Cast-In-Place Concrete.

D. Division 26 - Electrical power and distribution.

1.3 PERFORMANCE REQUIREMENTS

A. Gate Dimensions:

1. Width - As indicated.
2. Height - Operator Pad surface to top of gate. As indicated.

B. Structural Performance: Engineer, fabricate, and install gate systems to withstand gate dead loads and wind live loads of 75 mph.

1.4 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications. Mark data to indicate:

1. Details of material and construction.
2. Recommended installation requirements to properly accommodate the proposed Gate and accessories.

1.5 QUALITY ASSURANCE

A. Standards: Comply with requirements of building authorities having jurisdiction in Project location.

1. Operation Control Systems:

a. UL 325 - Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.
b. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction.

2. Electrical Components, Devices, and Accessories: NFPA 70, Article 100.

B. Manufacturer Qualifications: Minimum three (3) years documented experience producing systems specified in this section.

C. Installer Qualifications: An experienced installer who has completed fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store components to avoid damage from moisture, abrasion, and other construction activities. Carefully store materials off the ground to provide proper protection against oxidation caused by ground contact.

1.7 PROJECT CONDITIONS

A. Field Measurements: Take measurements and generate dimensions where Gate and Operator are to be located. Indicate specific location of gate with regard to existing roadways, proposed roadways, curb locations grade changes and elevations. Indicate specific location of Gate Operator and its respective concrete foundation, include surrounding landscaping and buildings.

1.8 COORDINATION AND SEQUENCING

A. Coordinate gate installation with line fencing and paving. Gate and Operator can be installed independent of paving providing the Operator concrete foundation is in place, including electrical control conduits. Upon completion of installation place the Gate in an open position and maintain vertically clear of traffic and surrounding fence line installation.

B. Operators are designed for 120 volt 15 amp primary service and 24 Volt DC battery back-up (batteries are field supplied and installed). Installer is to coordinate electrical service with electrical design and electrical trades. Service connection is supplied via underground conduit and preferably with a GFCI circuit breaker. Connection is made into a 4” x 4” handy box inside the Operator. Within the box wire GFCI Duplex Receptacle “HOT” off of the main breaker. Receptacle may be used for loads under 15 Amps such as hand tools and the like.

1.9 WARRANTY

A. Standard Warranty: Provide manufacturer's standard three (3) year warranty against defective materials and workmanship after Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or equal:

1. AutoGate, Inc. Berlin Heights, Ohio VPL Vertical Pivot Lift Gate Operator. Buckeye 500 Series

B. Requests for substitutions will be considered in accordance with provisions of Section 016000 of Division 01.

2.2 GATE OPERATORS

A. Provide gate operator system, including gate operator, field supplied manufacturer specified batteries, external contact sensing equipment and external non-contact sensing equipment.

1. Gate Speed: Fully open to fully closed and fully closed to open not less than 12 seconds.
2. Frequency of Use: Continuous duty.
3. Battery Powered Back Up DC Drive System: Operator to run on 24 Volt DC current stand-by battery system with built-in battery maintainer "over-charge" protection.

   a. Field supplied: Provide two (2) 12v batteries, complying with gate operator manufacturer's requirements.
   b. Power supply to batteries: 120VAC (15 amp) .

4. Gate Operator Enclosure: Fabricate operator enclosure from steel tubing and sheet metal. Continuous seal weld all frames seams with welds ground smooth. Screwed frames are not acceptable.

   a. Frame: 2" Sq., 11 Ga. (.120) Steel Tubing
   b. Skins: 18 Ga. Galvanneal Sheet
   c. Mounting Pads: 3" wide x 3/8" thick flat bar.
   d. Finish: Sherwin Williams Polane® color Gray.

5. Mechanical Gate Operator Drive: 24 VDC 1/3 HP high torque gear motor and DBL reduction DBL "V" belt design.
6. Control Circuitry: Solid state coated control board in NEMA 4x weatherproof electrical enclosure. Sealed proximity switches ensure weather and moisture-proof integrity. (Boards tested to –40º F).

   a. Control Wiring: 16 & 18 Ga. single conductor. Copper w/electrolytic copper compression terminals tin-plated for maximum corrosion prevention.

B. Gate Operator System shall conform to UL 325 Class II as determined in accordance with ASTM F2200.

1. Type A Entrapment Sensing Device - Operator shall have inherent motor current sensors as part of the gate operator system. Type A shall be constructed such that it may not be removed or bypassed.
2. Operator shall have provision for connection of Control System and for connection of Secondary Entrapment Sensing Device specified hereinafter.

C. Secondary Entrapment Sensing Device: Provide the following external secondary entrapment protection devices as appropriate for the specific site conditions to protect against all potential entrapment zones.

1. Photo Beams Type B1 - Non-contact sensor (photoelectric sensor or the equivalent); Acceptable Products:

   a. EMX Industries Model#: IRB-325 Transmitter / receiver type
   b. Allen Bradley Model#: 60-2728 Retro-reflective type
   c. Omron / MMTC Model#: E3K-R10K4-NR Retro-reflective type

2. Safety Edges (Contact Edges) Type B2 - Contact sensor (edge device or the equivalent) Acceptable Product:

   a. Miller Edge Model -MU-22, MG-020, ME-123, MC-22, ME-113, ME-120, ME-020
   b. Tape Switch Model IL, 107-RS, 107-LS, 121-BP, 101-B1, 102-A&B, 102-BHP, 101-BMT,101-B

3. Provide adjustable timer (adjustable from 0 – 60 seconds) for gate closure.
4. Provide maximum run timer.

D. Operator Options:

1. Provide surge and spike protection.

E. Loop Detector Control System:

1. Provide manufacturer's standard automatic exit loop on the parking lot side opposite to that of the entry pedestal location as indicated in the electrical drawings.
2. Provide manufacturer's standard reversing loop on the interior and exterior of the pivot gate except at automatic exit loop location.

2.3 CONTROL SYSTEMS

A. Operation control system: Remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.

1. Card Reader: Functions only when authorized card is presented.
2. Vehicle Loop Detector.

2.4 ACCESSORIES

A. Gearmotor Heater: Provide thermostatically controlled electric heat tape to maintain critical components operational.

B. Operator Cabinet Heater: Provide an insulated Operator Cabinet and include a thermostatically controlled electric space heater with integral circulating fan.

C. Ventilation: Provide adjustable humidistat and fan to provide supplemental ventilation of operator enclosure.

D. Heat Mat: Provide a thermostatically controlled heat mat for the "throat" area of the operator to melt any buildup of snow.

2.5 SETTING MATERIAL

A. Ready-mixed concrete complying with ASTM C94: Normal-weight concrete air entrained 3000-psi 28 days compressive strength, 3-inch slump, and aggregate.

1. Portland cement: ASTM C150, Type I.
2. Aggregates: ASTM C33, 1-inch maximum size.

B. Reinforcing Bars: ASTM A615.

C. Service and control conduit: Rigid Schedule 40 PVC embedded in concrete. All other conduit and wiring as specified in Division 26.

D. Expansion Bolts: Threaded or wedge type; galvanize ferrous castings, ASTM A47 malleable iron or ASTM A27 cast steel

PART 3 - EXECUTION

3.1 EXAMINATION

A. Installer's Examination: Examine conditions under which construction activities of this section are to be performed and insure all specified criteria is adhered to.

B. Submit written notification to Architect and system manufacturer if such conditions are unacceptable.

C. Beginning installation constitutes installer's acceptance of conditions.

3.2 ELECTRICAL SERVICE & CONTROLS

A. Provide all power and control wiring required for the work in accordance with the applicable provisions of Division 26 and NEC 70.

B. Perform all trenching and backfilling associated with this Section. Conduit shall be direct buried except under areas of vehicular traffic where it shall be reinforced concrete encased.

C. Grounding system: All equipment and branch circuits shall be grounded. Provide driven ground rod at service. Provide separate ground wire in all branch circuits.

3.3 PADS & RECEIVING YOKES

A. Foundations: Construct pads and yoke bases as indicated on the drawings with top of concrete flat and level. Operator and yoke pad shall be at the same elevation.

B. Excavation:

1. Locate concrete foundations for operator base on firm, undisturbed soil.
2. Yoke Excavation: Drill or hand-excavate holes.

C. Vibrate or tamp concrete for consolidation. Finish top of foundations, smooth and even. Cure concrete 72 hours before place operator.

D. Fasteners: Install operators and receiving yoke plates with expansion bolts provided by the Gate system manufacturer.

3.4 OPERATOR INSTALLATION

A. Install units in accordance with the manufacturer's instructions.

1. Operator Expansion Bolt Mounting: Anchor through base plates to concrete substrate.
2. Install all loose shipped operator lower panels and guarding per manufacturer instructions.

B. Secondary Entrapment Sensing Device: Installing contractor shall be responsible for providing external secondary entrapment protection devices as appropriate for the specific site conditions to protect against all potential entrapment zones. Proper operation of these safety devices shall be verified and training as to the operation and maintenance of these devices for the users and owners shall be documented.

3.5 GATE INSTALLATION

A. Connect frame and operator in accordance with gate manufacturer’s instruction.

B. Install gate so that it is plumb and level when fully closed within the following tolerances:

1. Maximum misalignment from true position: 1/4 inch (6.0 mm).
2. Maximum misalignment between adjacent separated members: 1/8 inch (3.0 mm).

3.6 ADJUSTING

A. Adjust and lubricate operating components for smooth, accurate operation free of binding and racking.

3.7 START-UP AND DEMONSTRATION

A. Manufacturer's Service Representative: Provide at least 2 hours of manufacturer's representatives time for start-up and initial operation. Make a final check of each gate operation, with Owner's personnel present, immediately before date of substantial completion.

B. Instruct Owner's personnel in proper use, operations, and daily maintenance of gate. Review emergency provisions, including procedures to be followed if gate does not close or open.

C. Train Owner's personnel in normal procedures to be followed in checking for sources of damage to wind bracing, operational failures or malfunctions.

D. Full Wind Rating and Derating: Full wind load rating is subject to the wind bracing remaining in excellent condition and not compromised. Periodic inspection is a must in order to maintain full wind load rating. Any dents, bends, nicks and loose bolts will affect the performance of the bracing must be corrected or repaired

E. Determine that control systems and operating devices are functioning properly.

F. Adjust time clock for periods required and as directed.

3.8 CLEANING AND PROTECTION

A. Remove dust or other foreign matter from component surfaces; clean finishes in accordance with manufacturer's instructions.

1. Clean units in accordance with the manufacturer's instructions.

B. Protection: After installation, protect installed work until project completion.

1. Ensure that finishes and structure of installed systems are not damaged by subsequent construction activities.
2. If minor damage to finishes occurs, repair damage in accordance with manufacturer's recommendations; provide replacement components if repaired finishes are unacceptable to Architect.

END OF SECTION 323100

SECTION 331116 – SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Work includes but is not limited to the following:
   1. Water mains pipe and fittings
   2. Service lines pipe and fittings
   3. Hydrants
   4. Water meters
   5. Valves, valve boxes and covers
   6. Concrete thrust blocks

1.2 RELATED SECTIONS

A. Coordinate related work specified in other parts of the Project Manual, including but not limited to the following:

B. Section 33 23 16.13 - Trenching

1.3 REFERENCES

A. ASTM A-126 - Flanged Coupling Adapters.

B. ASTM B-88 – Seamless Copper Water Tube.

C. ASTM D2241 – Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR).

D. ASTM D2855 - Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

E. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

F. ASTM D3139 - Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

G. ASTM D3035 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.

H. ASTM F-4777 - Restrained Rubber Gasket

I. AWWA C502 – Hydrants.

J. AWWA C504 - Rubber Seated Butterfly Valves.

K. AWWA C509 - Resilient Seated Gate Valves 3 in through 12 in NPS, for Water and Sewage Systems.

L. AWWA C605 – Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.

M. AWWA C700 – Cold Water Meters – Displacement Type, Bronze Main Case.

N. AWWA C800 – Underground Service Line Valves and Fittings.

O. AWWA C900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water.

P. AWWA C901 – Polyethylene (PE) Pressure Pipe and Tubing for Water Service – ½-inch through 3-inch.

Q. AWWA C902 – Polybutylene (PB) Pressure Pipe and Tubing for Water Service - ½-inch through 3-inch.

R. AWWA C905 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 14 inch through 36 inch, for Water.

1.4 SUBMITTALS FOR REVIEW

A. Section 01 33 00 - Submittals: Procedures for submittals.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Submit concrete mix for cast-in-place thrust blocks to Engineer for approval.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

A. Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations on a clean copy of the construction drawings. Submit these drawings to Engineer in accordance with Section 01 33 00.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE
- A. Perform Work in accordance with all applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.7 DELIVERY, STORAGE, AND HANDLING
- A. Protect pipe, hydrants, meters, valve gaskets, pipe gaskets, hydrant gaskets, and all seal materials from damage, sunlight, and contamination.
- B. Deliver and store meters and valves in shipping containers with labeling in place, and in a manner which prevents shock, damage, or excessive exposure to sunlight and weather.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS
- A. PVC Pressure Pipe (4” through 12”) AWWA C900 for Water Distribution:
  1. Pipe: Class 150; DR 18
  2. Outside Diameter Basis: Cast Iron (CI) pipe equivalent.
  3. Joints: Bell and spigot end with ASTM F477 elastomeric gaskets (ASTM D3139).
  4. Trace Tape: Magnetic detectable conductor, 2” wide, brightly colored plastic covering, imprinted with "Water Service" in large letters.
- B. PVC Pressure Pipe (14” through 36”) AWWA C905 for Water Distribution:
  1. Pipe: Class 150; DR 18
  2. Outside Diameter Basis: Cast Iron (CI) pipe equivalent.
  3. Joints: Bell and spigot end with ASTM F477 elastomeric gaskets (ASTM D3139).
  4. Trace Tape: Magnetic detectable conductor, 2” wide, brightly colored plastic covering, imprinted with "Water Service" in large letters.
- C. Ductile Iron Gray Iron Fittings, AWWA C110:
  1. Pressure Class: 4-inch to 24-inch = 350 psi; 30-inch to 36-inch = 250 psi.
  2. Petroleum Asphaltic Outside Coating: 1.0 mil minimum thickness
  3. Lining: Cement Mortar.
- D. Ductile Iron Compact Fittings, AWWA C153:
  1. Pressure Class: 350 psi.
  2. Petroleum Asphaltic Outside Coating: 1.0 mil minimum thickness
  3. Lining: Cement Mortar.
- E. PVC Fittings (4” through 8”), AWWA C907:
  1. Pressure Class: 150 psi
  2. Fittings: AWWA C110, ductile iron.
  3. Joints: ASTM D3139 compression gasket ring
  4. Trace Tape: Magnetic detectable conductor, 2” wide, brightly colored plastic covering, imprinted with "Water Service” in large letters.
- F. Cement Mortar Lining for Ductile Iron Pipe and Fittings: AWWA C104:
  1. Thickness: Standard, single thickness
  2. Seal Coat: Yes.
- G. Locating Wire:
  1. Type: No. 12 AWG copper with insulation
  2. Splicing: Epoxy splice kits.
- H. Rubber Gasket Joints Ductile Iron Pressure Pipe and Fittings: AWWA C111

2.2 BEDDING AND COVER MATERIALS
- A. Bedding: 3/4 inch minus crushed aggregate.
- B. Cover: 3/4 inch minus crushed aggregate.

2.3 COUPLINGS
- A. Couplings: Rockwell OMNI Coupling System 413, or approved substitution.
- B. Coupling Adapter: Rockwell Model 912 flanged coupling adapter, or approved substitution.

2.4 VALVES
- A. Butterfly Valves: Rubber Seated, AWWA C504:
  1. Body Type: Iron body, bronze trim, mechanical joint.

2. Class: 150B.
3. Disk and seal: Cast iron disk with seal in valve body.
4. Shaft: Stainless steel.
5. Metallic Mating Seats: Stainless steel or nickel-copper alloy.
6. Packing: Multiple V-type.
7. Actuator: 2-inch square wrench nut opening counter-clockwise with position indicator.
8. Interior and Exterior Coating: Required.
9. Type of Installation: Buried.

B. Gate Valves: Resilient Seated, AWWA C509:
1. Body Type: Iron body, bronze trim, mechanical joint ends.
2. Stem: Non-rising.
3. Actuator: 2-inch square wrench nut opening counter-clockwise.
4. Stem Seal: O-ring.
5. Interior and Exterior Coating: Required.
6. Type of Installation: Buried.

2.5 PROTECTIVE EPOXY COATING FOR VALVES

A. Protective Epoxy Interior Coatings for Valves and Hydrants, AWWA C550.

2.6 VALVE BOXES

A. Size: Minimum 5 ¼ inch inside diameter, locking style.
B. Material: Cast iron, conforming to ASTM A48.
C. Adjustment: Adjustable with sufficient length for bury and operation of valve.
D. Lid: Detachable cast iron, at least six inches in diameter stamped “Water”.
E. Cover: 3/4 inch minus crushed aggregate

2.7 SERVICE PIPE AND FITTINGS

A. Polyethylene (PE) Pressure Pipe for Water Service: AWWA C901:
1. Pressure Class: 200 psi.
2. Outside Dimension Ratio: DR 7.
3. Dimension Basis: Iron Pipe Size (IPS).
4. Standard PE Code Designation: PE 3406 per ASTM D3350.

B. Polybutylene (PB) Pressure Pipe for Water Service: AWWA C902:
1. Pressure Class: 200 psi.
2. Outside Dimension Ratio: DR 11.
3. Dimension Basis: Iron Pipe Size (IPS).
4. Class: C-2 per ASTM D2581.

C. Seamless Copper Water Tube: ASTM B 88:
1. Type: K.
2. Temper: Annealed.

D. Service Saddles:
1. Product: Ford style FS101 or Romac style 101S for taps one inch or less; Ford style FS202 or Romac style 202S for taps ½-inch through 2-inches with stainless steel band for C900 water pipe, or approved substitution.

E. Corporation Stops:
1. Type: Pack joint corporation stops for polyethylene pipe.
2. Threads: Iron pipe.
3. Product: Ford FB1101 Ballcorp style for IPS PE pipe, or approved substitution.

F. Couplings:
1. Type: Pack joint couplings for polyethylene pipe, or approved substitution.

G. Fittings:
1. All brass or copper with iron pipe threads.

H. Locating Wire:
1. Type: Insulated copper locating wire No. 12 gauge.

2.8 WATER METERS

A. Cold Water Meters – Displacement Type, AWWA C700:

1. Product: Sensus SR2, 5/8" X 3/4 cubic feet.

B. Meter Setters:
1. Type: Copper with integral pack joints on both ends.
2. Fittings: Iron pipe size for polyethylene pipe.
3. Bracing: Brace pipe eye on the cross brace.
4. Valving: Integral dual check valve on outlet.
5. Product: Ford VHH92 series, or approved substitution.

C. Fittings:
1. All brass or copper with iron pipe threads.

D. Meter Box
1. For ¾ inch to 1 inch service:
a. Product: Midstates Plastics, Inc., with thermal pack insulating pad and locating shelf, or approved substitution.
b. Size: 42 inch depth and 20 inch diameter.
2. For 1 ½ inch to 2 inch service:
a. Type: 30 inch by 44 inch CMP with grade rings.
3. Meter Box Cover:
a. Configuration: Flush mounted with a flush mounted lid and locking device on the lid with a standard pentagon bolt.
b. Material: Cast Iron.
c. Size: Lid and frame shall be traffic rated and sized to match meter box.
d. Product: D & L Supply B-5020 (traffic areas), Type Pipe model 6150-20, or Ford type X43 (non-traffic areas), or approved substitution.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify materials delivered to site meet the requirements of the Contract Documents.
B. Verify that trench cuts are ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
C. Verify that building service connection and municipal utility water main size, location, and invert are as indicated. Allow 48 hours for Engineer to modify design, if necessary.
D. Notify all affected businesses and residence of all water system shutdowns or interruptions at least 48 hours in advance.

3.2 PREPARATION

A. Install pipe, fittings, and appurtenances in accordance with the manufacturer's printed specifications and instructions, and to the References from this Section. Pipe handling shall conform to AWWA C600 Section 2 and prevent damage to the pipe, pipe lining or coating. Pipe found to be damaged shall be removed from project site, and the methods of handling shall be corrected to prevent additional damage.
B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs conforming to AWWA C600 Section 3.
C. Remove scale and dirt on inside and outside before assembly. Cleaning shall conform to AWWA Section 3.
D. Prepare pipe connections to equipment with flanges or unions. All MJ joints on restrained pipe and fittings shall be equipped with Megalug, or Megaflange, fittings as manufactured by EBBA Iron Sales, Inc. (800 633-9190), or approved equivalent.

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 33 23 16.13 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Where water is encountered in the trench, the water shall be removed during pipe-laying operations and the trench so maintained until the ends of the pipe are sealed and provisions are made to prevent floating of the pipe. Trench water shall not be allowed to enter the pipe at any time
C. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 10 inches compacted depth; compact to 95 percent.
D. Maintain ±2% optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE
A. The pipe shall be laid and maintained to the lines and grades established by plans and specifications, with fittings, valves, tapped and bossed outlets, and hydrants at the required locations, unless otherwise approved by the Engineer. Install pipe to indicated elevation to within tolerance of 5/8 inches.
B. Install ductile iron piping and fittings to AWWA C600.
C. Install pipe to allow for expansion and contraction without stressing pipe or joints. Permissible deflection at joints, in either the vertical or horizontal plane to avoid obstructions, or where long radius curves are permitted, is 18-inches for 18-feet length pipe.
D. Form and place concrete for pipe thrust restraints as indicated on Drawings. Place concrete to permit full access to pipe and pipe accessories. Provide square footage of thrust restraint bearing on subsoil as indicated on Drawings.
E. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent.
F. Establish elevations of buried piping to ensure not less than 4 feet of cover. Avoid existing utilities by routing pipe under existing utilities.
G. Install trace wire directly above pipe. Ensure that wire remains directly above pipe during and after backfill has been placed; coordinate with Section 33 23 16.13.
H. Backfill trench in accordance with Section 33 23 16.13.

3.5 INSTALLATION – POLYETHYLENE ENCASEMENT
A. Secure polyethylene encasement around pipe per AWWA C105 ,Method A.
B. Cut tube length to a length 24 inches longer than the pipe section, and wrap around pipe in accordion fashion.
C. After placement in trench and jointing, secure overlapping tubing. Provide 24 inches of overlap at each joint. Repair any cuts or tears with tape or patch secured in place.

3.6 INSTALLATION - VALVES
A. Install valves and appurtenances in accordance with the manufacturer's recommendations and the Contract Documents, see Detail 5/3. Provide a watertight seal at joints. Weight and torque forces shall be supported by the valve and thrust block, not adjacent piping.
B. Install valves plumb and vertical. Valve boxes shall be installed for all underground valves. Set valve boxes to position during backfilling operation so the box will be in a plumb alignment to the valve-operating shaft. The wrench nut shall be uncovered and cleaned of dirt and debris. The lower casting of the unit shall be installed first in such a manner as to be cushioned and to not bear directly upon the body of the valve or upon the pipe. A 4" layer of ¾(-) crushed rock or gravel shall be placed under the bottom of the valve box. The upper casting of the unit shall then be placed in proper alignment at such an elevation that its top will be flush with the final grade. The valve box shall be backfilled in 8" lifts with each lift compacted to 90% maximum density.

3.7 FIELD QUALITY CONTROL
A. Section 01 45 00 - Quality Control: Field inspection and testing.
B. Compaction testing will be performed in accordance with or ASTM D2922 by the Owner.
C. VALVE TESTING
    1. Demonstrate valves function with specified requirements.
    2. Demonstrate valve operation, adjustments, and maintenance.
D. HYDRANT TESTING

1. Pressure test hydrants with the main water system. See below.
2. Conduct a drainage test on each hydrant:
   a. Procedure: Close main hydrant valve, remove one nozzle cap, and place hand over opening. Drainage should create noticeable suction against hand. If no suction noticed, hydrant is not draining. Repair drain and re-test.

E. Pressure and leakage testing:
1. Assure that trench is properly backfilled and thrust blocking has cured to a degree that will allow pressure testing without damage, or pipe/fittings movement.
2. Gradually fill pipe with water. For pipe working pressures less than or equal to 100 psi, sustain a test pressure of 150 psi for two hours. For pipe working pressures greater than 100 psi, sustain a test pressure at least 1.5 times the working pressure, or as determined by the Engineer.
3. Expel all air.
4. Verify the pipe does not leak in excess of the allowable leakage as defined by

$$L = \frac{SD(P)^{1/2}}{22{,}600(133{,}200)}$$

Where
L= Allowable Leakage (gals/hr)
S = Length of Pipe (feet)
D = Nominal Pipe Diameter (inches)
P = Test Pressure (psi, guage)

5. Inform the Idaho DPW Field Representative and the Engineer at least 24 hours in advance of scheduled testing.

F. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
G. Frequency of Tests: As required by Engineer.

END OF SECTION 331116

SECTION 334000 –STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
- A. Site storm sewerage drainage piping, fittings, and accessories, bedding, and backfill.

1.2 REFERENCES
- A. ANSI/ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- B. ANSI/ASTM D 3034 – Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
- C. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.3 DEFINITIONS
- A. Bedding: Fill placed under, beside, and directly over pipe prior to subsequent backfill operations.

1.4 PROJECT RECORD DOCUMENTS
- A. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.

PART 2 - PRODUCTS

2.1 SEWER PIPE MATERIALS
- A. Plastic Pipe: ANSI/ASTM D3034, Type PSM, Polyvinyl Chloride (PVC) material; SDR 35; bell and spigot style rubber ring sealed gasket joint.

2.2 PIPE ACCESSORIES
- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- B. Trace Wire: Magnetic detectable conductor, clear brightly colored plastic covering, imprinted with “Storm Sewer Service” in large letters.

2.3 CATCH BASINS
- A. Catch Basins: Catch basins shall conform to WSDOT/APWA Standard Plan B-1b.

2.4 BEDDING MATERIALS
- A. Bedding: ¾ inch minus gravel.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Verify that trench is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

3.2 PREPARATION
- A. Hand trim excavations to required elevations. Correct over excavation with Bedding Material.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING
- A. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches compacted depth.
- B. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION – PIPE
- A. Install pipe, fittings, and accessories in accordance with manufacturer’s instructions. Seal joints watertight.
- B. Place pipe on minimum 2 inch bed of aggregate.

C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of ½ inch in 10 feet.
D. Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness of 6 inches.
E. Install trace wire continuous over top of pipe 6 inches above pipe line.
F. Backfill trench with ¾ inch minus gravel under paved areas and with suitable native material under all other areas.
G. Backfill trench in layers not exceeding 6 inches for aggregate material and 12 inches for native material. Compact backfill to 95% of maximum density under paved areas and 90% under other areas as determined by ASTM D698.

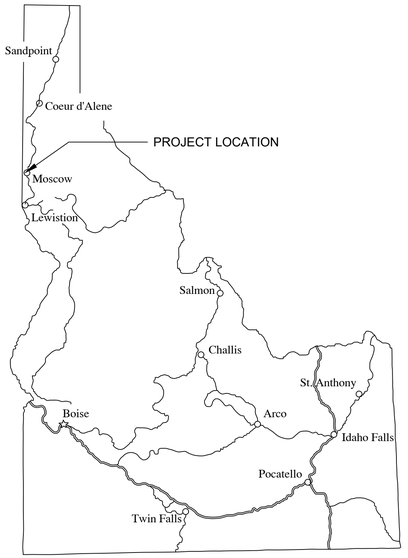
3.5 INSTALLATION – CATCH BASINS AND CLEANOUTS
A. Form bottom of excavation clean and smooth to correct elevation.
B. Place 4” minimum compacted ¾ inch minus gravel base pad.
C. Level top surface of base pad and place catch basin.
D. Verify elevations and pipe inverts are as indicated; remove catch basin and adjust base elevation if required.
E. Mount lid and frame level in grout, secured to top riser section to elevation indicated.

3.6 PROTECTION
A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 334000

SALT AND MATERIAL STORAGE SHED
for the
CITY OF MOSCOW

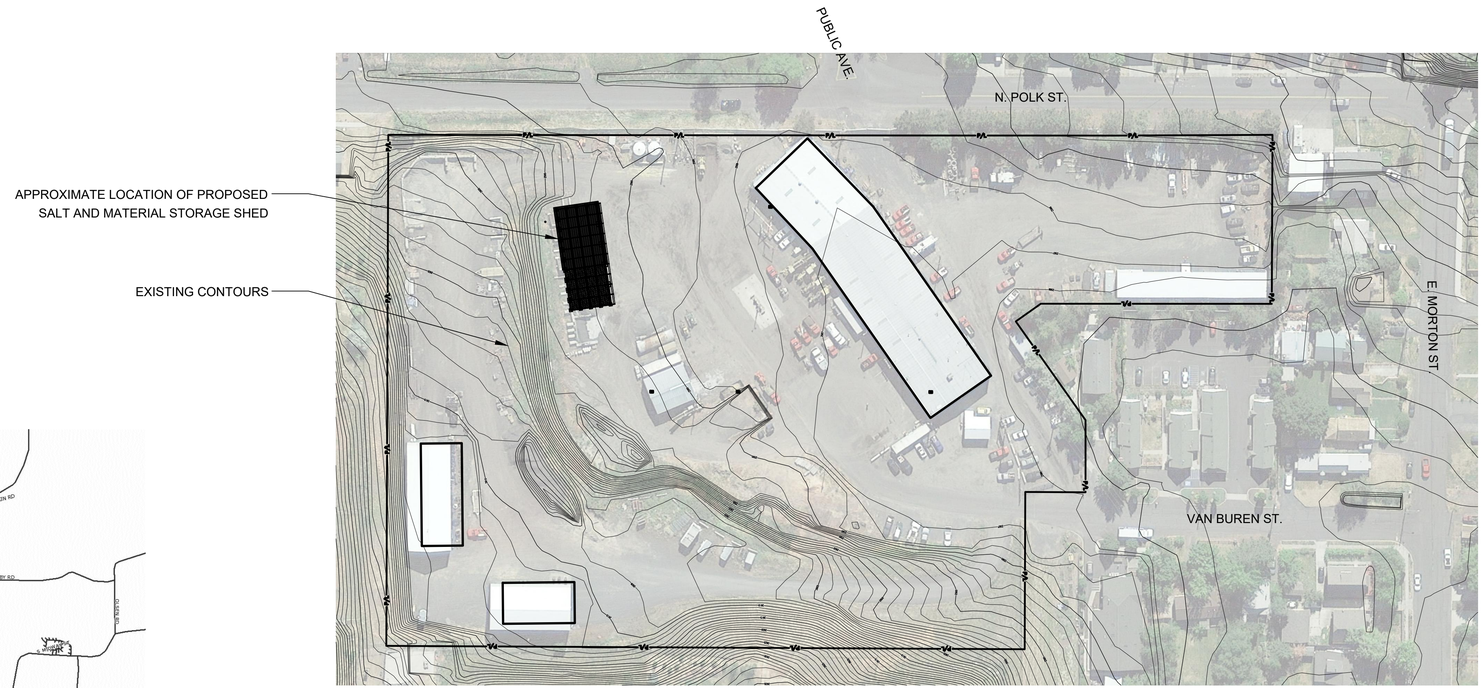
650 N VAN BUREN ST
MOSCOW, ID 83843



STATE of IDAHO
VICINITY MAP

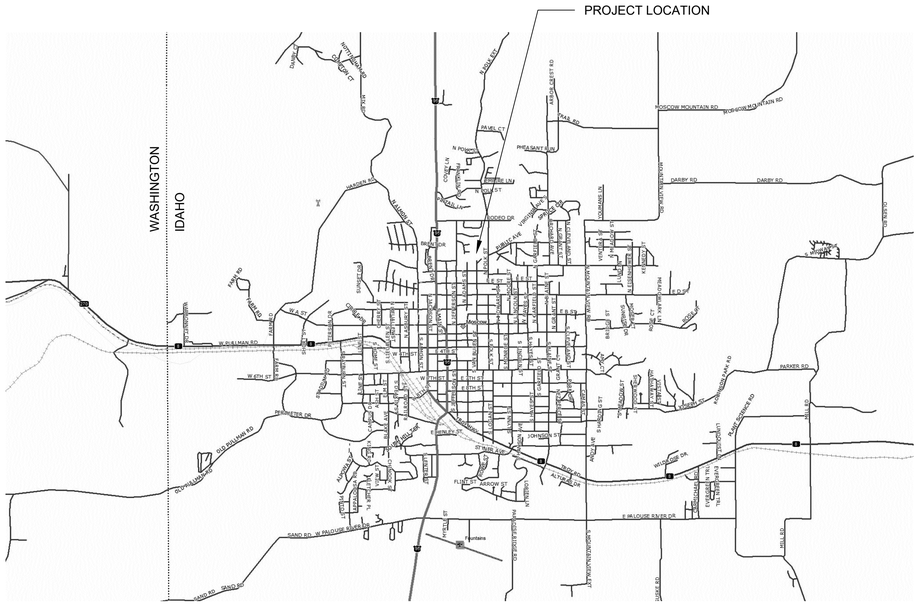
DRAWING INDEX

Sheet	Title
C1.0	SITE COVER SHEET
A1.0	ELEVATIONS
S0.1	NOTES & SPECIFICATIONS AND DETAILS
S1.0	FOUNDATION PLAN, SECTION AND DETAILS
S2.0	ROOF FRAMING PLAN AND DETAILS



OVERALL SITE PLAN

SCALE: 1" = 70'



REGIONAL
VICINITY MAP

SIGNATURE BLOCK:

AGENCY	PRINTED NAME	SIGNATURE	DATE
C. of M. ENGINEERING DEPT.			
C. of M. PLANNING DEPT.			
C. of M. BUILDING DEPT.			
C. of M. FIRE DEPT.			

PROFESSIONAL ENGINEER REGISTERED 7844 STATE OF IDAHO EVAN D. LAUBACH

BID SET

DATE	INIT.	REVISIONS

FOR: **CITY OF MOSCOW**
206 E THIRD ST
MOSCOW, IDAHO 83843

SHEET TITLE: **SITE COVER SHEET**

PROJECT: **SALT AND MATERIAL STORAGE BUILDING**
650 N VAN BUREN ST
MOSCOW, IDAHO 83843

RELIANT ENGINEERING, PLLC
PROVIDING CONSTRUCTIBLE SOLUTIONS
248 NW Sunrise Drive
Pullman, WA 99163
(509) 334-5745
engineer@reliantengr.com

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EL, JW, JR	05/27/20	C1.0
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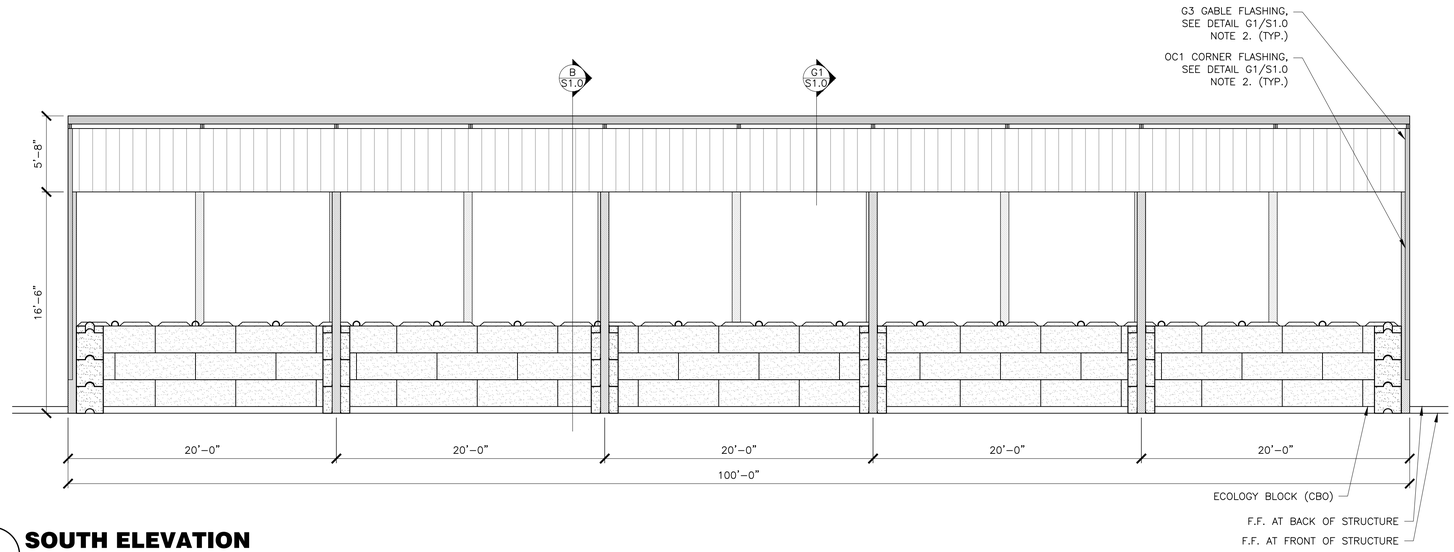
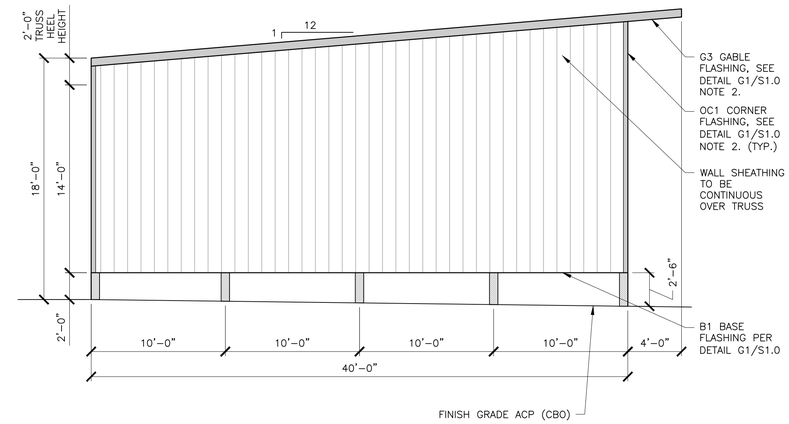


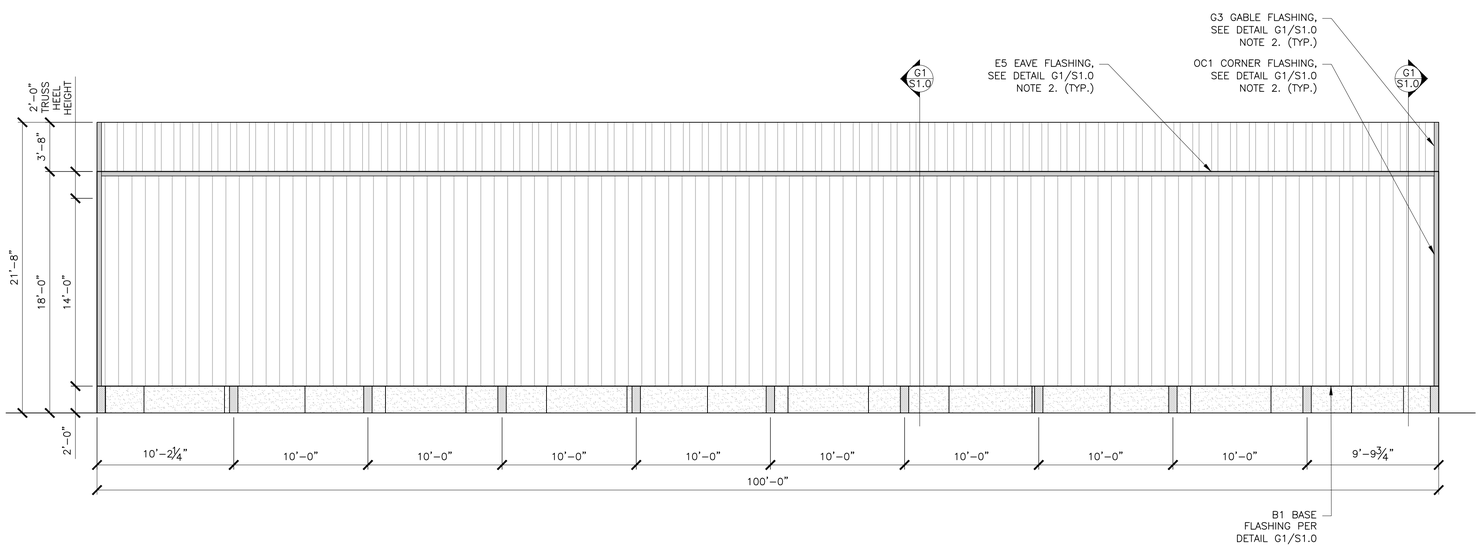
A SOUTH ELEVATION

SCALE: 3/16" = 1'



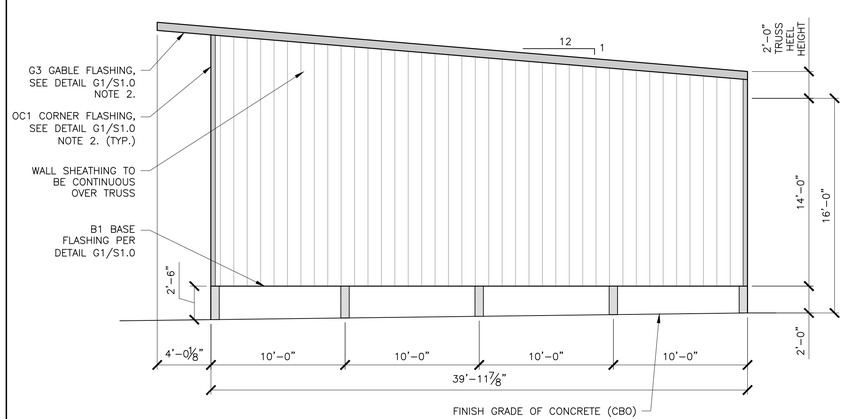
C WEST ELEVATION

SCALE: 3/16" = 1'



B NORTH ELEVATION

SCALE: 3/16" = 1'



D EAST ELEVATION

SCALE: 3/16" = 1'

BID SET

PROFESSIONAL ENGINEER REGISTERED 7844 STATE OF IDAHO EVAN D. LAUBACH

DATE	INIT.	REVISIONS

FOR: **CITY OF MOSCOW**
206 E THIRD ST
MOSCOW, IDAHO 83843

SHEET TITLE: **ELEVATIONS**

PROJECT: **SALT AND MATERIAL STORAGE BUILDING**
650 N VAN BUREN ST
MOSCOW, IDAHO 83843

RELIANT ENGINEERING, PLLC
PROVIDING CONSTRUCTIBLE SOLUTIONS
248 NW Sunrise Drive, Pullman, WA 99163
(509) 334-5745
engineer@reliantengr.com

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EL, JW, JR	05/27/20	A1.0
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EDL	19127	

ABBREVIATIONS

AB	Anchor Bolt
ADDL	Additional
ALT	Alternate
ARCH	Architectural
ACP	Asphalt
B/	Bottom Of
BTWN	Between
BLDG	Building
BLKG	Blocking
BM	Beam
BOT	Bottom
CIP	Cast in Place
CJ	Construction or Control Joint
CL	Centerline
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONN	Connection
CONST	Construction or Construct
CONT	Continuous
CTC	Center to Center
DBL	Double
DTL	Detail
DEV	Development
DF	Douglas Fir
DIA OR Ø	Diameter
DIAG	Diagonal
DL	Dead Load
DN	Down
DP	Depth
DR	Door
DS	Downspout
DWG	Drawing
DWL	Dowel
EA	Each
EF	Each Face
EL, ELEV	Elevation
ELECT	Electrical
ELEV	Elevation
ENCL	Enclosure
EQ	Equal
EQPT	Equipment
EW	Each Way
EXP	Expansion
EXP JT	Expansion Joint
EX	Existing
EXT	Exterior
FD	Floor Drain
FG	Finish Grade
FND	Foundation
FIN	Finish
FL	Flow Line
FLR	Floor
FLG	Flange
FT	Feet
FTG	Footing
GA	Gage
GALV	Galvanized
GLB	Glue Laminated Beam
GR	Grade
GWB	Gypsum Wall Board
GYP	Gypsum
HDR	Header
HF	Hem--Fir
HGR	Hanger
HD	Holddown
HNDRL	Handrail
HORIZ	Horizontal
HPT	High Point
ID	Inside Diameter
IE	Invert Elevation
IF	Inside Face
IN	Inch
INS	Inside
INT	Interior
IBC	International Building Code
J	Joist
JT	Joint
KSF	Kips Per Sq.Ft
LAT	Lateral
LBR	Lumber
LD	Load
LF	Lineal Foot
LL	Live Load
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LPT	Low Point
MAX	Maximum
MECH	Mechanical
MEZZ	Mezzanine
MFRD	Manufactured
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
MAS	Masonry
MU	Mechanical Units
NIC	Not In Contract
NO	Number
NOM	Nominal
NTS	Not To Scale
OC	On Center
OD	Outside Diameter
OF	Outside Face
OPNG	Opening
OPP	Opposite
PL	Plate
PARTL	Partial
PEN	Penetration
PERP	Perpendicular
PL	Property Line
PLWD	Plywood
PNL	Panel
PREFAB	Prefabricated
PRL	Parallel
PSF	Pounds per Square foot
PSI	Pounds Per Square Inch
PT	Pressure Treated
R	Radius
RD	Roof Drain
REF	Refer/Reference
REINF	Reinforcing
REQD	Required
RTN	Return
RTNG	Retaining
SCHD	Schedule
SECT	Section
SHT	Sheet
SHTHG	Sheathing
SIM	Similar
SLP	Slope
SP	Space
SPEC	Specification
SQ	Square
SF	Square Foot
SS	Stainless Steel
SST	Simpson Strong-Tie
STD	Standard
STIF	Stiffener
STIR	Stirrup
STL	Steel
STRL	Structural
SYM	Symmetrical
T	Top
T/	Top Of
T&B	Top & Bottom
T&G	Tongue & Groove
THK	Thick
TMBR	Timber
TOS	Top Of Steel
TR	Truss
TRANSV	Transverse
TRD	Tread
TRMR	Trimmer
TYP	Typical
UNO	Unless Noted Otherwise
URM	Unreinforced Masonry
VERT	Vertical
W/	With
W/O	Without
WD	Wood
WHSS	Welded Headed Shear Stud
WP	Waterproofing
WWF	Welded Wire Fabric
+/-	Plus or Minus

DESIGN CRITERIA & PARAMETERS

GOVERNING CODE	2018 IBC
STRUCTURAL DESIGN BASIS	ASCE/SEI 7-16
CONCRETE DESIGN BASIS	ACI 318-14
STEEL DESIGN BASIS	AISC 15TH EDITION
WOOD DESIGN BASIS	2018 NDS & 2018 IBC
STRUCTURE RISK CATEGORY	I
ASSUMED SOIL VALUES (NO SOILS REPORT AVAILABLE, IBC MIN. USED)	
BEARING PRESSURE	1,500 PSF
FRICTION ANGLE	26°
ALLOWABLE LATERAL PASSIVE PRESSURE	250 PSF/FT
WIND FORCES	
BASIC WIND SPEED	96.5 MPH
EXPOSURE CATEGORY	B
SEISMIC FORCES	
SEISMIC DESIGN CATEGORY	C
DEAD LOADS	
TRUSS TOP CHORD	5 PSF
TRUSS BOTTOM CHORD	1 PSF
SNOW LOAD (ROOF)	40 PSF, NO DRIFT ASSUMED DUE TO ROOF PITCH
DEFLECTIONS	
VERTICAL ROOF SNOW LOADS	L/240
HORIZONTAL LOADS	L/240
TOTAL LOADS	L/240

GENERAL STRUCTURAL NOTES

GOVERNING CODE: The "International Building Code", 2018 Edition, as adopted and amended by the State of ID and the City of Moscow shall govern design and construction. Currently, the State of ID has only adopted the 2015 IBC, Therefore the revisions of 2015 IBC shall apply to the referenced codes as applicable.

REFERENCE STANDARDS: Reference to all standards, including but not limited to IBC, ACI, AISC, ASTM, etc. shall refer to the latest edition in effect as of the City of Moscow plan approval date except as noted in these documents or designated by the governing code.

GEOTECHNICAL: Because this project does not incorporate a geotechnical report, IBC base design values are used. It is assumed that the bearing will be Palouse Loess, tan brown in color. All prepared soil bearing surfaces shall be inspected by the Authority Having Jurisdiction (AHJ) prior to placement of concrete and reinforcing steel.

PLAN NOTES: Specific notes on the individual structural drawings shall take priority over structural notes on this sheet where more restrictive.

DISCREPANCIES: In the case of discrepancies between the plans, specifications, reference standards and governing code, the more stringent requirements shall govern. All discrepancies shall be brought to the attention of the Engineer of Record prior to proceeding with any work involved.

CONTRACTOR RESPONSIBILITIES: The contractor is responsible for conforming to all OSHA safety standards. The contractor is responsible for safety in and around the site and for the strength and stability of all partially completed structures. The contractor shall at his discretion employ the aid of an Idaho registered engineer to design all temporary bracing and shoring necessary to complete the work described in these contract documents. It is the contractor's responsibility to be familiar with the work required in these construction drawings and the requirements for executing it correctly. The contractor shall at his discretion consult with appropriate knowledgeable sources for items outside his level of experience or competence. The contractor is to submit construction sequence to Engineer of Record before construction starts.

LOAD LIMITS: Construction and Completed Loads on the structure shall be kept within the limits of the design loads.

SUBMITTALS: Shop drawings and/or designs shall be submitted to the Engineer of Record prior to any fabrication or construction for the following structural items: steel fabrication, steel embedments, pre-manufactured trusses, glulam beams, anchors, grouts and concrete. If the shop drawings differ from or add to the design of the structural drawings, they shall bear the seal and signature of the Idaho State Registered Engineer who is responsible for the design.

Design drawings and calculations or shop drawings for the design and fabrication of items that are designed by others shall bear the seal and signature of the Idaho State Registered Structural Engineer who is responsible for the design and shall be submitted to the Engineer of Record for review prior to fabrication.

ALTERNATES: All items listed as alternates are to be chosen by the owner. The owner's choice may be based on the cost of the alternate. The contractor may be required to provide the owner with cost differences of the options listed for determination of option. Contractor shall also inform the owner of any affects on the schedule but the contractor shall also address these alternates in a timely matter so as not to create time delays that would have otherwise not been an issue had they been addressed during bidding or cost estimating.

SPECIAL CONDITIONS: The contractor shall verify all dimensions in the field. The contractor shall provide adequate shoring and bracing of all structural members during construction. The contractor shall notify the Structural Engineer of all field changes prior to installation or fabrication.

INSPECTIONS: The building official or AHJ, upon notification, shall make structural inspections as noted in IBC Section 104.4 and 110. The contractor is responsible to schedule such inspections.

SPECIAL INSPECTIONS: Based on IBC chapter 17, where special inspection is required by the AHJ or Engineer of Record, a Special Inspector shall be hired by the owner to perform the following special inspections per said chapter. The contractor responsibility shall be as listed in IBC Section 1704. The owner shall cover the costs of the inspections; however the contractor shall be responsible for scheduling the inspections at the appropriate times. For this project, special inspection shall be required for:

Prior to and during the placement of adhesive set concrete and masonry anchor bolts if this option is used.

- All prepared soil bearing surfaces shall be inspected by the AHJ prior to placement of reinforcing steel.
- All structural welds.

GENERAL CONSTRUCTION NOTES

1. All anchors and fasteners in contact with standard P.T. wood framing shall be corrosion resistant per IBC 2304.10.5, standard zinc coated nails do not meet this requirement. In general, to satisfy this code requirement, all fasteners must be hot dip galvanized or stainless steel. Refer to code for clarification.
2. The contractor is responsible for verifying that the found existing conditions are as shown on the plans. As with any existing site, the conditions are not fully determinable without destructive investigation which will not happen until the time of construction. If anything is found not to be as shown on the plans or other site anomalies are observed, the engineer of record shall be notified.

CAST IN PLACE CONCRETE

** CONTRACTOR SHALL SUBMIT MIX DESIGNS OF ALL CONCRETE MIXES TO BE USED ON THIS PROJECT FOR REVIEW BY THE ENGINEER OF RECORD PRIOR TO INSTALLATION.

REFERENCE STANDARDS: Concrete construction shall conform to ACI-301 "Specifications for Structural Concrete for Buildings".

Cement, aggregate and water shall conform to ACI-301.

Concrete Add Mixtures shall conform to ACI-301

EXTERIOR FLAT WORK:

2500 PSI @ 28 DAY, MINIMUM CEMENT 564#, 7% -0.5% to +1% AIR ENTRAINMENT

BELOW GRADE COLUMN FOOTINGS:

2500 psi @ 28 day, minimum cement 470#.

FLY ASH CONTENT: None Allowed.

WATER/CEMENT RATIO: W/C ratio shall be calculated on the basis of total cementitious material.

CONCRETE REINFORCEMENT

REFERENCE STANDARDS: Detail reinforcement in accordance with the "ACI Detailing Manual" by the ACI Committee 315, unless noted or shown otherwise.

MATERIALS:

REINFORCING BARS: Use deformed bars conforming to ASTM A615 "Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement", Grade 60, U.N.O. Reinforcing bars to be welded shall conform to ASTM A706 "Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement", Grade 60.

STEEL WELDED WIRE REINFORCEMENT: Smooth wire shall conform to ASTM A185, Deformed wire shall conform to ASTM A497. Deformed wire shall also conform to ASTM A-496. Use minimum WWF 6x6-W6.7 x W6.7 unless noted otherwise on plans.

TIE WIRE: Wire shall be 16 gage or heavier, black annealed.

BENDING: Bars shall be bent cold. Bars partially embedded in concrete shall not be field bent unless noted or shown otherwise or authorized by the Engineer of Record.

PLACING: Place bars in accordance with CRSI, "Placing Reinforcing Bars". Reinforcement shall be supported and tied to prevent displacement by construction loads or placing of concrete.

SURFACE CONDITIONS: Reinforcement shall be free of mud, oil, or other materials that may reduce bond. Rust or mill scale is allowed provided bar weight and dimensions conform to ASTM specifications.

CONCRETE COVER: Minimum concrete cover for reinforcement shall be as follows, unless noted or shown otherwise:

Concrete cast against and permanently exposed to earth: 3 inches.

Concrete exposed to weather or formed prior to exposure to earth and concrete slabs: 2 inches.

Ties in Columns: 1-1/2 inches.

BAR SPLICES: Refer to drawings for location and length of all splices. If not specified: #3 - 14", #4 - 19", #5 - 24", #6 - 29".

SOLID SAWN LUMBER AND ENGINEERED WOOD PRODUCTS

REFERENCE STANDARDS: Wood construction shall conform to Chapter 23 of the "International Building Code" and the "National Design Specification for Wood Construction" (NDS) by the National Forest Products Association.

FASTENER SCHEDULE: Per 2018 IBC Table 2304.10.1, or as called out on the plans.

WOOD FRAMING SCHEDULE:

GENERAL ROOF FRAMING	Premanufactured Engineered Wood Trusses, 10' O.C., and Purlins @ 24" O.C., Standard Bracing. In addition to the special bracing requirements called out on the premanufactured truss engineering all trusses shall be installed and braced per the TPI/BCSI-B Manual.
GENERAL ROOF SHEATHING	26 Gauge Min. Metal Roofing
GENERAL WALL FRAMING	EXTERIOR: 2x6 Girts @ 24" O.C.
GENERAL WALL SHEATHING	26 Gauge Min. Metal Wall Sheathing

SOLID SAWN LUMBER: Shall be graded in accordance with IBC Section 2303, based on Standard Grading Rules specified for the given wood product.

WOOD TYPE: DF #2 and better for structural members and/or engineered wood products, stud grade allowed for non-structural framing.

EXTERIOR WOOD TYPE: Pressure treated wood HEM-FIR #2 and better for structural members U.N.O. See GENERAL CONSTRUCTION NOTES 1. From a structural capacity stand point, all wood members called out to be P.T. HF#2 can be changed out for P.T. DF#2.

STANDARD WOOD CONSTRUCTION: The 2018 IBC Sections 2304 & 2308. for "Conventional Light-Frame Construction" shall be followed U.N.O.

ADDITIONAL FRAMING MATERIALS:

BOLTS FOR WOOD CONNECTIONS: Conform to ASTM A-307-12 and be HDG U.N.O., Snug Tightened

LAG SCREWS: Conform to ASTM A-307-12 U.N.O.

MATERIAL STAMPS: Each piece shall bear a stamp showing the following:

SAWN LUMBER: Grading association, mill number, grade, species, and moisture content at time of surfacing if applicable.

FRAMING NOTES:

1. Trusses are to be manufactured in a TPI certified plant and be provided with engineer stamped and signed drawings and bracing schedule. These plans are based on trusses that are 10 foot o.c. and having a 1:12 roof pitch, a 24 inch heel height and are provided with a maximum bearing length of 13 inches. Should the trusses vary in any way from these parameters, the Engineer of Record shall be notified for possible revisions to these plans.
2. In addition to the bracing shown in these details, the contractor/builder shall be responsible for insuring adequate bearing and installing all bracing and blocking as required by the truss manufacturer engineering and per the BCSI guide to good practices for handling, installing, restraining & bracing of metal plate connected wood trusses by SBCA and TPI.

STRUCTURAL STEEL NOTES

REFERENCE STANDARDS: Steel construction shall conform to IBC Chapter 22 and the AISC "Steel Construction Manual".

All structural steel shall be ASTM A-36 grade B except steel tubes shall be ASTM A-500. Mill or sawcut ends of all members.

WELDING: Shall be in accordance with AWS standards and conform to AWS D1.1 "Structural Welding - Steel". Welding shall be with E70XX rod of type required for materials to be welded and performed only by AWS/WABO certified welders, refer to Special Inspection below and under GENERAL STRUCTURAL NOTES.

TOLERANCES: The steel frame shall be erected true and plumb within the limits defined in AISC.

The contractor shall provide shoring plans, closure plates, flashing, and all miscellaneous light gage metal shapes necessary to complete the work. The minimum member end lap shall be 2 inches centered over supports. The minimum bearing required shall be 2 inches.

It is expected that all of the welding will be done in a fabrication shop.

FASTENER MATERIALS:

FINISH: HDG

See SOLID SAWN LUMBER AND ENGINEERED WOOD PRODUCTS for bolt requirements. Bolts need only be tightened to the snug tight condition. Holes for bolts at:

Steel to steel or wood connections shall be: 1/16" + bolt diameter.

SPECIAL INSPECTION: The steel fabrication is required to be special inspected for both shop and field welding. IBC Section 1705.2 steel construction along with table 1705.2.2 as amended by the State of Idaho shall determine timing and frequency of the required inspections. At the discretion of the authority having jurisdiction (AHJ), in lieu of certified welders, the AHJ may allow for competent non-certifed welders to perform the welding provided the welding certifying agency is providing intermediate welding inspections as they require, which may be at greater frequency than required by the IBC, or the AHJ, at his or her discretion, may waive the IBC welding inspection requirement.

STRUCTURAL STEEL FINISH SPECIFICATIONS

1. All steel members including columns and plates shall be powder coated, painted or Hot Dipped Galvanized (HDG). Contractor to submit coating method for approval prior to construction.
2. If painting option is chosen, all new steel members shall be shop primed per AISC and final painted prior to the installation.
3. Paint specification is based on sherwin-williams products unless approved otherwise:
   a. All new steel members shall be shop primed with sherwin williams pro-cryl primer or approved equal.
   b. All existing steel members shall be field primed with sherwin williams pro-cryl primer or approved equal.
   c. All exposed steel surfaces shall be painted with 2 coats of sherwin williams high performance exterior acrylic.
4. Paint color in general shall be black unless otherwise designated by the owner.

PROJECT SCOPE OUTLINE

BASE PROJECT:

1. The intent of the base project is to construct a pole type structure for use as a material storage facility as a complete project with all footings, framing and metal roof and wall panels. The footings shall be constructed to accommodate the future paving shown on these plans regardless of whether that work is completed by the owner under separate work. The existing site will need to be raised with the gravel section as noted on these plans and will be done prior to the construction of this structure site. The City will evaluate the construction of the gravel fil to be added at the time of its construction and may change the actual finished grade within the structure, however the finished grades given on these plans relative to each other shall not be changed. Coordinate with the City on the final finished grade for determining the pole and footing elevations etc.

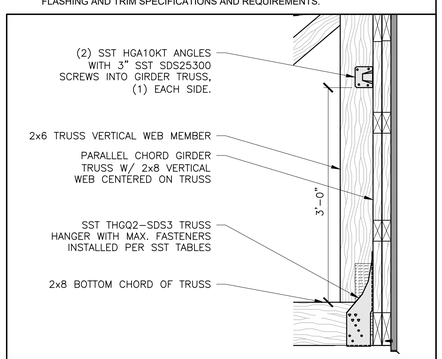
WORK CONSTRUCTED BY OTHERS (CBO):

The following work shown on this plan set is to be accomplished by others and is not part of this contract. This work is designated by the abbreviation CBO. Not all of the items may be called out on the plans and are only listed below.

1. The gravel subgrade fill for the proposed PC concrete and ACP pavements to create the structure pad for the contractor to construct from. As noted in the "Base Project" description the actual base elevation may change.
2. The Addition of a PC concrete slab in 1 of the structure's bays addressed in plan A1/S1.00 and referenced details.
   a. The Scope: Construct a 6 inch thick reinforced concrete slab on crushed rock base. Provide light broom finish. Slope to drain as shown on the plans.
3. The Addition of asphalt cement pavement (ACP) in 4 of the structure's bays addressed in plan A1/S1.00 and referenced details.
4. The Scope: Construct a 3 inch thick IDT highway mix ACP on crushed rock base. Slope to drain as shown on the plans.

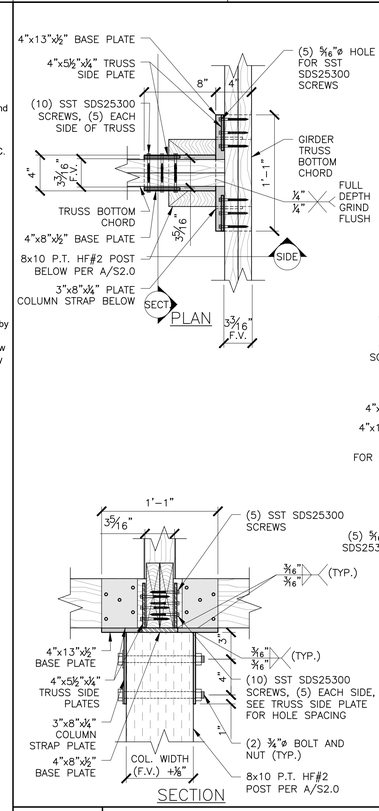
METAL ROOFING AND WALL PANEL SPECIFICATIONS

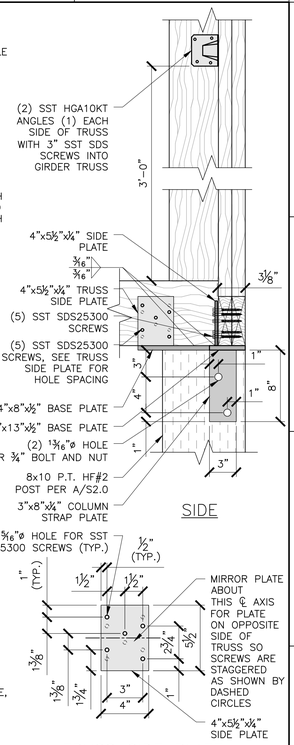
1. REFER TO ENGINEERING PACKET FOR METAL ROOFING AND WALL PANEL, FLASHING AND TRIM SPECIFICATIONS AND REQUIREMENTS.



G1 TRUSS TO GIRDER ATTCH.

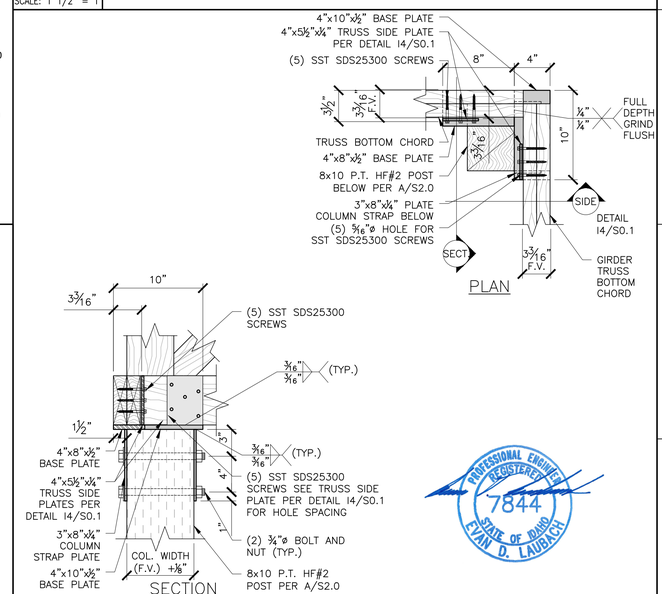
SCALE: 1" = 1'





I4 MIDDLE BEARING PLATE CONNECTION DETAIL

SCALE: 1 1/2" = 1'



I1 CORNER BEARING PLATE CONNECTION DETAIL

SCALE: 1 1/2" = 1'

PROFESSIONAL ENGINEER REGISTERED 7844 STATE OF IDAHO EVAN D. LAUBACH

BID SET

DATE	INIT.	REVISIONS

FOR: **CITY OF MOSCOW**, 206 E THIRD ST, MOSCOW, IDAHO 83843

SHEET TITLE: **NOTES & SPECIFICATIONS AND DETAILS**

PROJECT: **SALT AND MATERIAL STORAGE BUILDING**, 650 N VAN BUREN ST, MOSCOW, IDAHO 83843

RELIANT ENGINEERING, PLLC
PROVIDING CONSTRUCTIBLE SOLUTIONS
248 NW Sunrise Drive, Pullman, WA 99163
(509) 334-5745
engineer@reliantengr.com

DRAWN BY	DATE	SHEET
EL, JW, JR	05/27/20	S0.1
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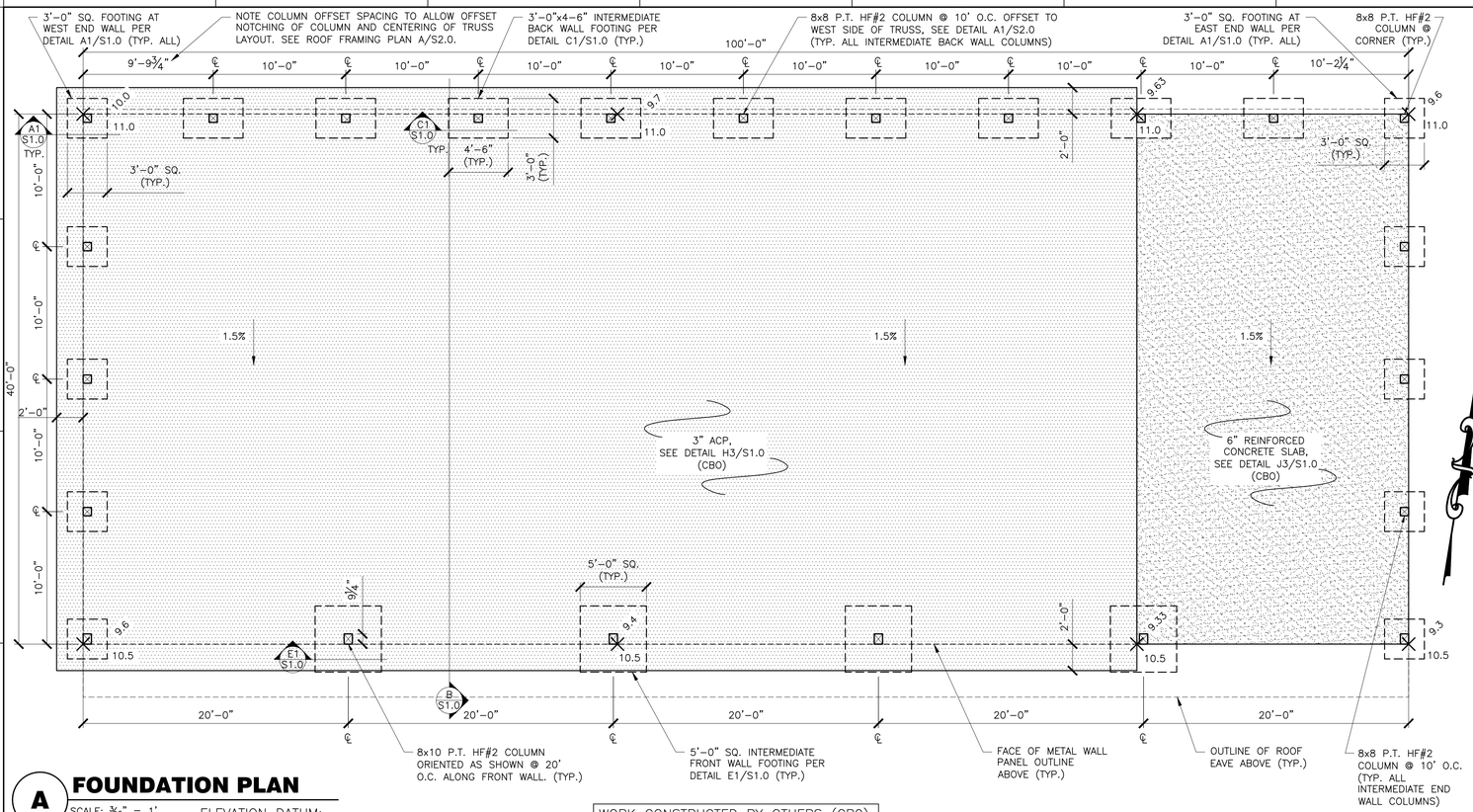


A FOUNDATION PLAN

SCALE: 3/16" = 1'

LEGEND:

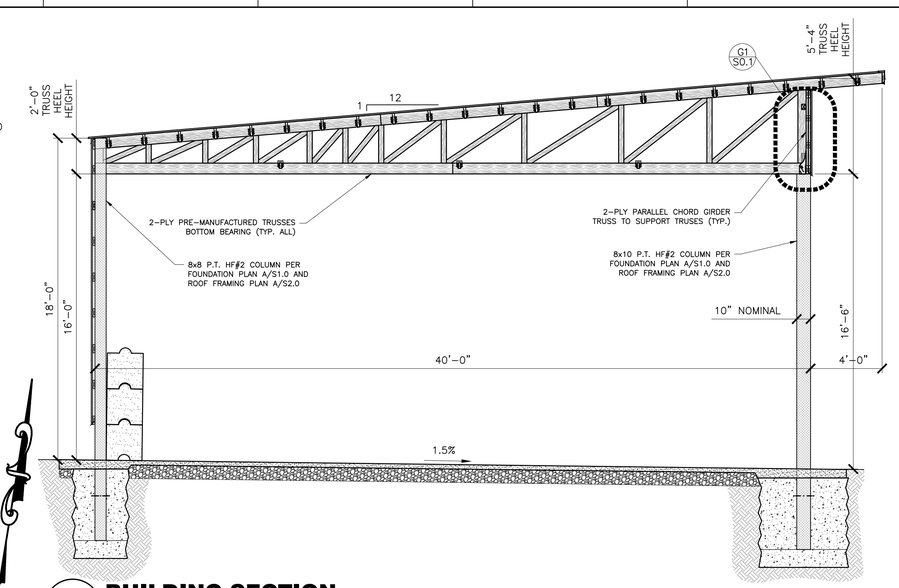
- X.XX EXISTING GRADE
- X.XX PROPOSED GRADE

ELEVATION DATUM:

1. BENCH MARK: TOP OF EAST FUEL ISLAND BARRIER ON NORTH CORNER ASSUMED @ 10.00
2. THE EXISTING GRADE IS TO BE RAISED FROM THE EXISTING CONDITIONS AND THE SITE IS TO BE PREPARED TO ACP AND CONCRETE SLAB GRADE PRIOR TO THE CONSTRUCTION OF THE STRUCTURE ADDRESSED IN THESE PLANS. SEE ALSO "WORK COMPLETED BY OTHERS" NOTE. THE OVERALL GRADE MAY DIFFER FROM THESE DEPENDING ON THE SITE PREPARATION WORK, HOWEVER THE ELEVATION DIFFERENCES BETWEEN THE FINISHED GRADES WITHIN THE STRUCTURE SHOWN IN THIS FOUNDATION PLAN WILL REMAIN THE SAME REGARDLESS OF THE BASE ELEVATION.

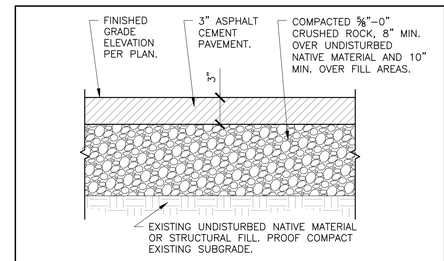
WORK CONSTRUCTED BY OTHERS (CBO):

NEW ACP AND CONCRETE AS WELL AS THE GRAVEL SUBGRADE ARE TO BE COMPLETED BY OTHER, CONTRACTOR TO MAKE ACCOMMODATIONS ACCORDINGLY TO ALLOW THIS WORK TO BE CONSTRUCTED AS SHOWN HEREIN. SEE ALSO "ELEVATION DATUM ON THIS SHEET AND "PROJECT SCOPE OUTLINE" ON SHEET S0.1.



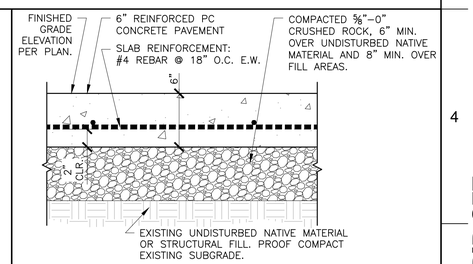
B BUILDING SECTION

SCALE: ¼" = 1'



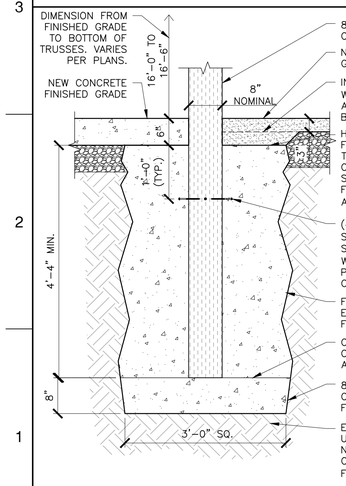
H3 ACP SECTION (CBO)

SCALE:1 1/2" = 1'



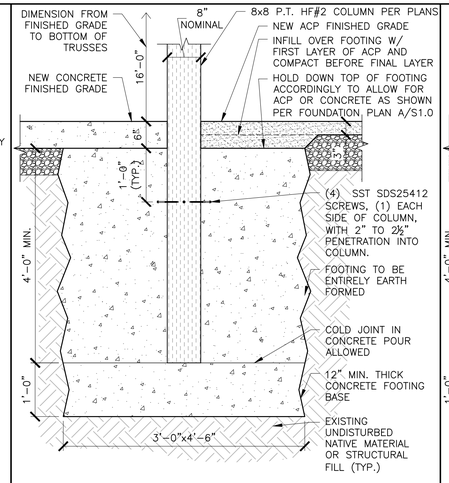
J3 PCC PAVEMENT SECTION (CBO)

SCALE:1 1/2" = 1'



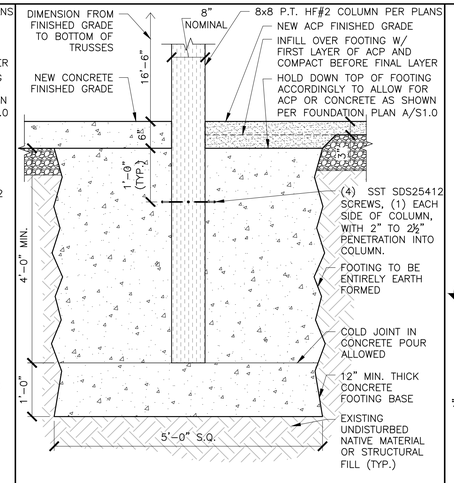
A1 E & W - END WALL COL. FTG

SCALE: 3/4" = 1'



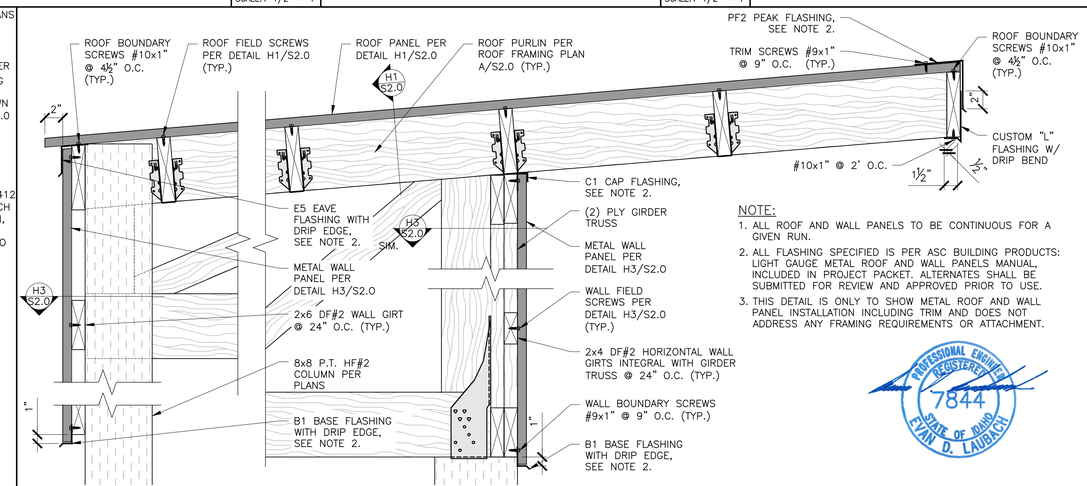
C1 N - SIDE WALL COL. FOOTING

SCALE: 3/4" = 1'



E1 S - SIDE WALL COL. FOOTING

SCALE: 3/4" = 1'



NOTE:

1. ALL ROOF AND WALL PANELS TO BE CONTINUOUS FOR A GIVEN RUN.
2. ALL FLASHING SPECIFIED IS PER ASC BUILDING PRODUCTS: LIGHT GAUGE METAL ROOF AND WALL PANELS MANUAL, INCLUDED IN PROJECT PACKET. ALTERNATES SHALL BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO USE.
3. THIS DETAIL IS ONLY TO SHOW METAL ROOF AND WALL PANEL INSTALLATION INCLUDING TRIM AND DOES NOT ADDRESS ANY FRAMING REQUIREMENTS OR ATTACHMENT.

PROFESSIONAL ENGINEER REGISTERED 7844 STATE OF IDAHO EVAN D. LAUBACH

G1 METAL SHEATHING AND FLASHING ATTACHMENT

SCALE: 3/4" = 1'

BID SET

DATE	INIT.	REVISIONS

FOR: **CITY OF MOSCOW**
206 E THIRD ST
MOSCOW, IDAHO 83843

SHEET TITLE: **FOUNDATION PLAN, SECTION AND DETAILS**

PROJECT: **SALT AND MATERIAL STORAGE BUILDING**
650 N VAN BUREN ST
MOSCOW, IDAHO 83843

RELIANT ENGINEERING, PLLC
PROVIDING CONSTRUCTIBLE SOLUTIONS
248 NW Sunrise Drive, Pullman, WA 99163
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engineer@reliantengr.com

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EL, JW, JR	05/27/20	S1.0
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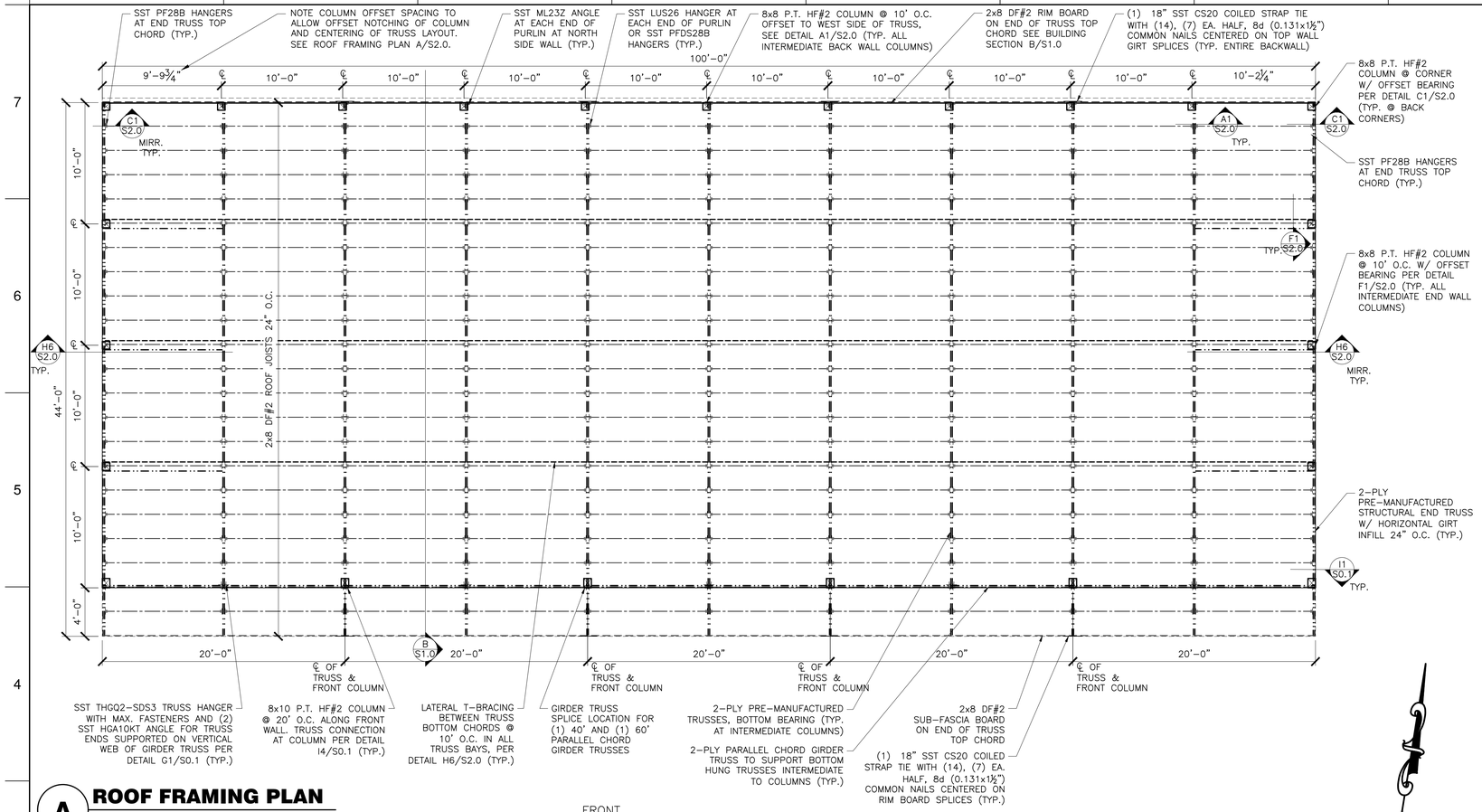
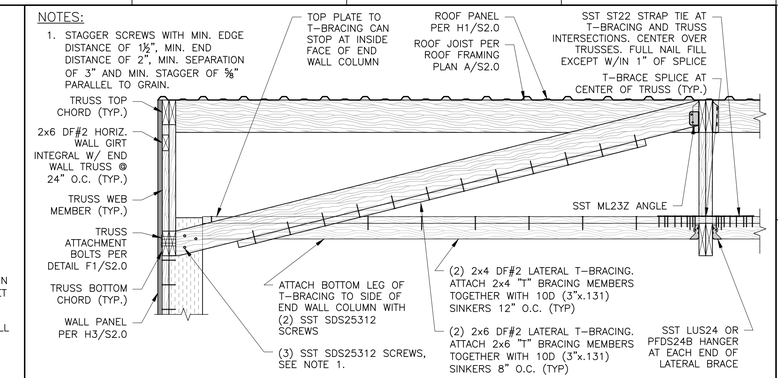


A ROOF FRAMING PLAN

SCALE: 3/16" = 1'

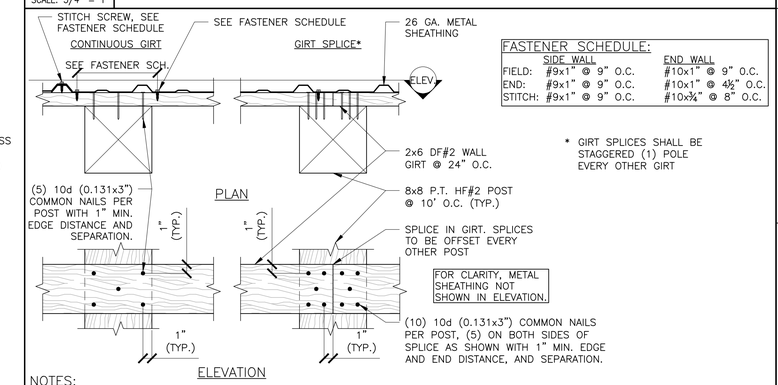
NOTES:

1. STAGGER SCREWS WITH MIN. EDGE DISTANCE OF 1½", MIN. END DISTANCE OF 2", MIN. SEPARATION OF 3" AND MIN. STAGGER OF ⅝" PARALLEL TO GRAIN.



H6 LATERAL T-BRACING ELEVATION

SCALE: 3/4" = 1'



FASTENER SCHEDULE:

	SIDE WALL	END WALL
FIELD:	#9x1" @ 9" O.C.	#10x1" @ 9" O.C.
END:	#9x1" @ 9" O.C.	#10x1" @ 4½" O.C.
STITCH:	#9x1" @ 9" O.C.	#10x¾" @ 8" O.C.

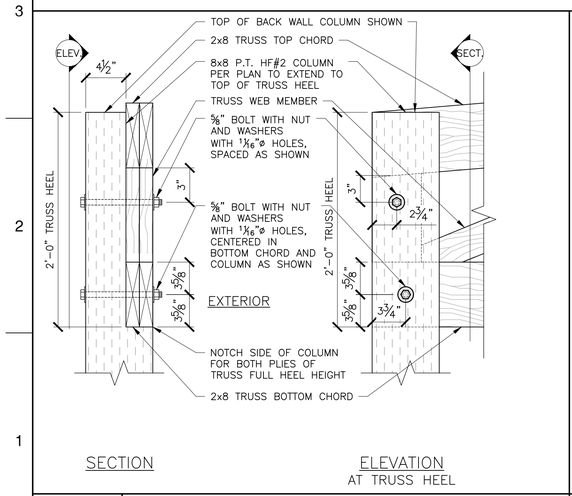
* GIRT SPLICES SHALL BE STAGGERED (1) POLE EVERY OTHER GIRT

NOTES:

1. USING SCREWS PER FASTENER SCHEDULE, FASTEN THE 26 GA. 36" WIDE METAL SHEATHING PANELS TO THE FRAMING MEMBERS WITH THE SCREWS SPACED ADJACENT TO EACH OF THE MAJOR RIBS AS PER MANUFACTURER REQUIREMENTS. THE FASTENERS SHALL BE ½" MIN. FROM PANEL EDGES. INCREASE LENGTH OF SCREW BY THICKNESS OF ANY APPLIED SUB-SHEATHING.
2. FOR NON-STANDING SEAM METAL ROOFS WITH ROOF SLOPE OF LESS THAN 3:12 AND STANDING SEAM METAL ROOFS WITH ROOF SLOPE OF ¼:12, APPLY LAP SEALANT PER MANUFACTURER'S SPECIFICATIONS IN ACCORDANCE WITH IBC SECTION 1507.4.2.
3. CONTRACTOR/INSTALLER TO CONTACT ENGINEER OF RECORD IF OTHER THAN 26 GA. DELTA III RIB ROOF PANELS.

H3 METAL WALL PANEL AND GIRT ATTACHMENT

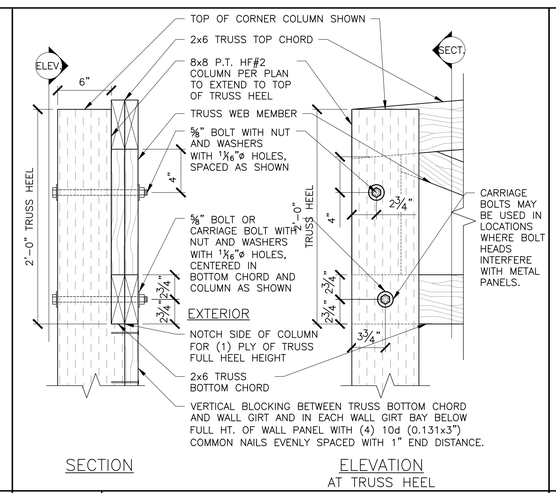
SCALE: 1 1/2"=1'



SECTION — ELEVATION AT TRUSS HEEL

A1 BACK WALL TRUSS TO MIDDLE COL. ATT.

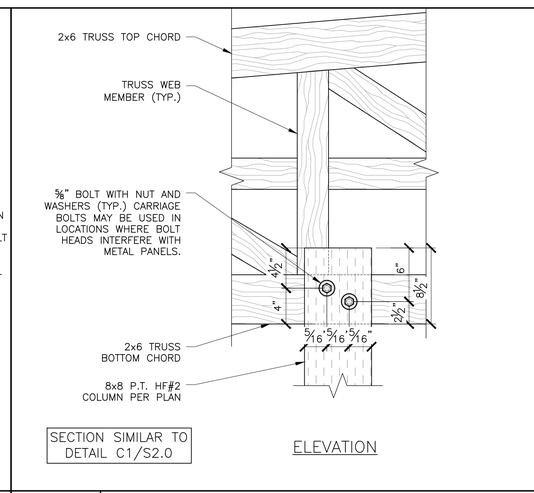
SCALE: 1 1/2" = 1'



SECTION — ELEVATION AT TRUSS HEEL

C1 END WALL TRUSS TO CORNER COL. ATT.

SCALE: 1 1/2" = 1'



SECTION SIMILAR TO DETAIL C1/S2.0

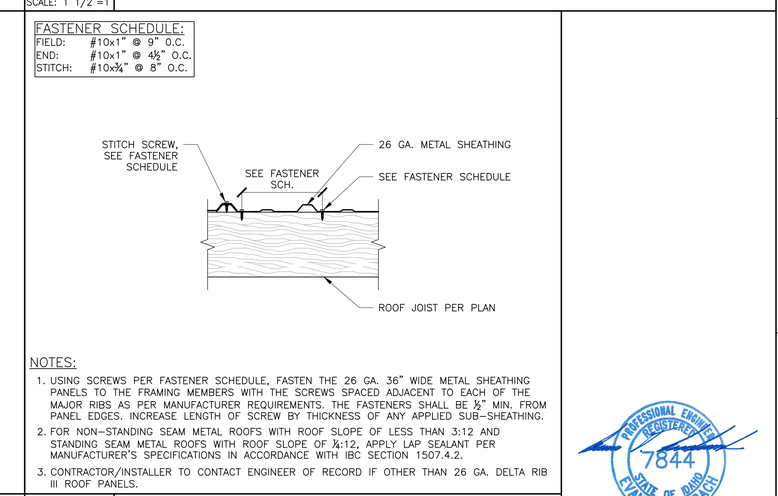
ELEVATION

F1 END WALL TRUSS TO MIDDLE COL. ATT.

SCALE: 1 1/2" = 1'

FASTENER SCHEDULE:

FIELD:	#10x1" @ 9" O.C.
END:	#10x1" @ 4½" O.C.
STITCH:	#10x¾" @ 8" O.C.



NOTES:

1. USING SCREWS PER FASTENER SCHEDULE, FASTEN THE 26 GA. 36" WIDE METAL SHEATHING PANELS TO THE FRAMING MEMBERS WITH THE SCREWS SPACED ADJACENT TO EACH OF THE MAJOR RIBS AS PER MANUFACTURER REQUIREMENTS. THE FASTENERS SHALL BE ½" MIN. FROM PANEL EDGES. INCREASE LENGTH OF SCREW BY THICKNESS OF ANY APPLIED SUB-SHEATHING.
2. FOR NON-STANDING SEAM METAL ROOFS WITH ROOF SLOPE OF LESS THAN 3:12 AND STANDING SEAM METAL ROOFS WITH ROOF SLOPE OF ¼:12, APPLY LAP SEALANT PER MANUFACTURER'S SPECIFICATIONS IN ACCORDANCE WITH IBC SECTION 1507.4.2.
3. CONTRACTOR/INSTALLER TO CONTACT ENGINEER OF RECORD IF OTHER THAN 26 GA. DELTA RIB III ROOF PANELS.

H1 METAL ROOF PANEL ATTACHMENT

SCALE: 1 1/2"=1'

PROFESSIONAL ENGINEER REGISTERED 7844 STATE OF IDAHO EVAN D. LAUBACH

BID SET

DATE	INIT.	REVISIONS

FOR: **CITY OF MOSCOW**
206 E THIRD ST
MOSCOW, IDAHO 83843

SHEET TITLE: **ROOF FRAMING PLAN AND DETAILS**

PROJECT: **SALT AND MATERIAL STORAGE BUILDING**
650 N VAN BUREN ST
MOSCOW, IDAHO 83843

RELIANT ENGINEERING, PLLC
PROVIDING CONSTRUCTIBLE SOLUTIONS
248 NW Sunrise Drive, Pullman, WA 99163
(509) 334-5745
engineer@reliantengr.com

DRAWN BY	DATE	SHEET
EL, JW, JR	05/27/20	S2.0
CHECKED BY	JOB NO.	
EDL	19127	

EXISTING MOSCOW CITY SHOP

650 N VAN BUREN ST, MOSCOW, ID. 83843

SEPTEMBER 27, 2024

SHEET INDEX

GENERAL

0.0	COVER SHEET

ARCHITECTURAL

A1.0	DEMOLITION PLANS
A2.0	FLOOR PLANS - OVERALL
A2.1	ROOF PLAN
A2.1x	FIRST FLOOR PLAN
A2.2	SECOND FLOOR PLAN
A4.0	EXTERIOR ELEVATIONS
A4.1	EXTERIOR ELEVATIONS
A4.2	BUILDING SECTIONS
A5.0	WALL SECTIONS
A7.0	EXTERIOR DETAILS

ABBREVIATIONS

A-E

A.B.	ANCHOR BOLT
ACOUS.	ACOUSTICAL
ADJ.	ADJUSTABLE
A.F.F.	ABOVE FINISH FLOOR
AGGR.	AGGREGATE
AL.	ALUMINUM
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BOT.	BOTTOM
CAB.	CABINET
C.F.O.I.	CONTRACTOR-FURNISHED/OWNER-INSTALLED
C.L.	CENTERLINE
CLG.	CEILING
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONT.	CONTINUOUS
CORR.	CORRIDOR
CTSK.	COUNTERSUNK
CNTR.	COUNTER
CTR.	CENTER
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DRINKING FOUNTAIN
DET.	DETAIL
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
DN.	DOWN
EA.	EACH
E.I.F.S.	EXTERIOR INSULATION AND FINISH SYSTEM
E.J.	EXPANSION JOINT
ELEC.	ELECTRICAL
ELEV.	ELEVATION
ELEV.	ELEVATOR
ENCL.	ENCLOSURE
EQ.	EQUAL
EQUIP.	EQUIPMENT
EXP.	EXPANSION
EXST.	EXISTING
EXT.	EXTERIOR

F-M

F.A.	FIRE ALARM
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH
FLR.	FLOOR
F.O.B.	FACE OF BUILDING
F.O.C.	FACE OF CONCRETE
F.O.E.	FACE OF EXISTING
F.O.F.	FACE OF FINISH
F.O.S.	FACE OF STUDS
FT.	FEET/FOOT
FTG.	FOOTING
FURR.	FURRING
GA.	GAUGE
GALV.	GALVANIZED
GND.	GROUND
GR.	GRADE
GYP.	GYPSUM BOARD
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HGT.	HEIGHT
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
LAB.	LABORATORY
LAV.	LAVATORY
MAX.	MAXIMUM
MECH.	MECHANICAL
MTL.	METAL
MFR.	MANUFACTURER
MH.	MANHOLE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MTD.	MOUNTED

N-R

N/C	NON-COMBUSTIBLE
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVERALL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.C.I.	OWNER FURNISHED/CONTRACTOR-INSTALLED
O.F.O.I.	OWNER FURNISHED/OWNER INSTALLED
OFF.	OFFICE
OPNG.	OPENING
OPP.	OPPOSITE
PL.	PLATE
PL.	PLASTIC LAMINATE
PLAS.	PLASTER
PLYWD.	PLYWOOD
PR.	PAIR
PT.	POINT
P.T.D.	PAPER TOWEL DISPENSER
P.T.R.	PAPER TOWEL RECEPTACLE
Q.T.	QUARRY TILE
RAD.	RADIUS
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCED
REQ.	REQUIRED
RESIL.	RESILIENT
RM.	ROOM
R.O.	ROUGH OPENING
R.W.L.	RAIN WATER LEADER

S-Z

S.C.	SOLID CORE
SECT.	SECTION
SHTH'G.	SHEATHING
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STA.	STATION
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRL.	STRUCTURAL
SUSP.	SUSPENDED
T.C.	TOP OF CURB
TEL.	TELEPHONE
T.O.	TOP OF
T.O.B.	TOP OF BLOCK
T.O.C.	TOP OF CURB
T.O.P.	TOP OF PLATE
T.O.W.	TOP OF WALL
TRD.	TREAD
T.V.	TELEVISION
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL
VERT.	VERTICAL
VEST.	VESTIBULE
W/	WITH
W/O	WITHOUT
W.C.	WATER CLOSET
WD.	WOOD
W.P.	WATERPROOF
W.R.	WATER RESISTANT
WT.	WEIGHT

FOR ADDITIONAL MATERIAL FINISH ABBREVIATIONS, SEE MATERIAL LEGEND ON ROOM FINISH SHEETS.

GRAPHIC AND MATERIAL SYMBOLS

GRID LINE (NUMBERS AND LETTERS)

DETAIL IDENTIFICATION — DETAIL (SIM.), SHEET NUMBER

WALL SECTION — SECTION IDENTIFICATION, SHEET NUMBER

BUILDING SECTION — SECTION IDENTIFICATION, SHEET NUMBER

ELEVATIONS — ELEVATION IDENTIFICATION, SHEET NUMBER

ROOM IDENTIFICATION — ROOM NAME, ROOM NUMBER

KEYNOTE (NUMBER)

WALL TAG — TYPE NUMBER

REVISION (NUMBER)

DOOR IDENTIFICATION — ROOM REFERENCE, DOOR LETTER

WINDOW IDENTIFICATION — WINDOW TYPE (LETTER OR NUMBER)

EARTH FILL
GRAVEL FILL
CONCRETE
SAND OR GROUT
BRICK OR STONE
CMU
STEEL
FINISH WOOD MEMBER
WOOD FRAMING MEMBER
WOOD BLOCKING
BATT BLANKET / BLOWN-IN INSULATION / SPRAY APPLIED FOAM INSULATION
RIGID INSULATION
PLYWOOD
GYPSUM BOARD
GLASS
CERAMIC TILE (PROFILE ONLY)
ACOUSTICAL TILE

DATUM POINT — CONTROL POINT OR WORK POINT

MATCHLINE

NORTH ARROW

ZONING INFORMATION

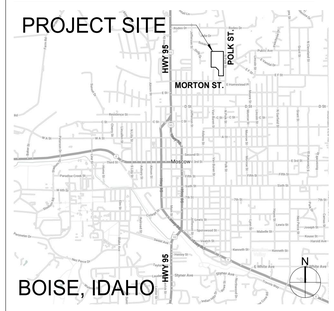
LAND USE ZONE = R3
PARCEL # = 650, 660, 851
CUP# = N/A
DR # = N/A

IBC CODE 2018
AREA OF BUILDING = 20,580 SF
FIRE SPRINKLERS: N/A
FIRE ALARM SYSTEM: NO

CONSULTANT

ARCHITECT
LOMBARD CONRAD ARCHITECTS
472 W. WASHINGTON ST.
BOISE, IDAHO 83702
(208) 345-6677

VICINITY MAP



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INTERIOR DESIGN
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9-27-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP EXISTING BUILDING

CITY OF MOSCOW

CONSULTANTS:

MRK	DATE	DESCRIPTION

JOB NO.:	24000.01
DATE:	09/27/24
DRAWN BY:	BC
CHECKED BY:	MG
PHASE:	Construction Documents

COVER SHEET

SHEET NO.

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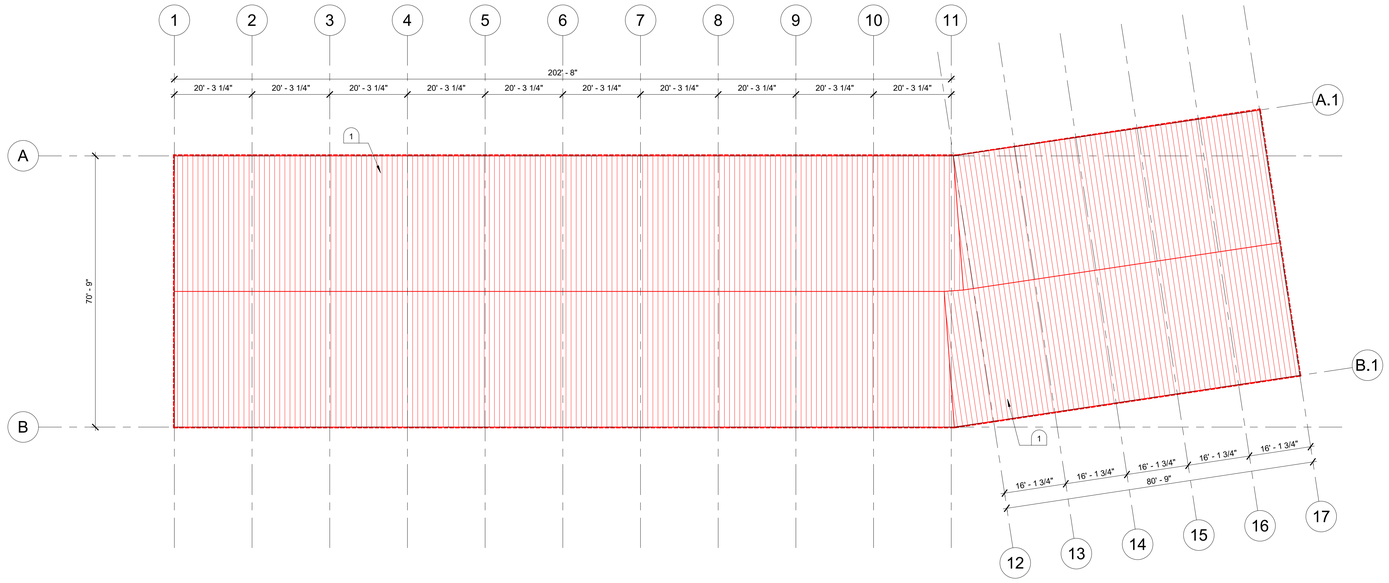
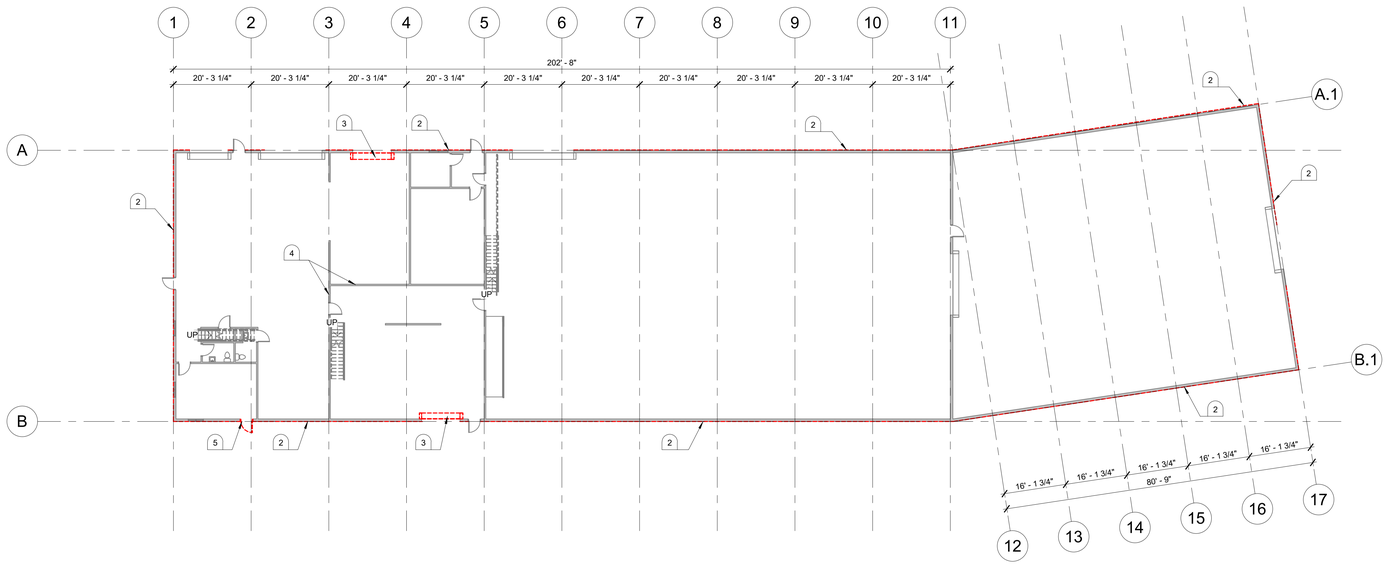


C2 DEMOLITION ROOF PLAN

1/16" = 1'-0"



E2 DEMOLITION FLOOR PLAN

1/16" = 1'-0"

DEMOLITION FLOOR PLAN

KEYNOTES

1. REMOVE LAP-SEAM METAL ROOF PANELS, INSULATION, AND VAPOR BARRIER.
2. REMOVE LAP-SEAM METAL WALL PANELS, INSULATION, AND VAPOR BARRIER, TYPICAL.
3. REMOVE OVERHEAD DOOR.
4. EXISTING INTERIOR WALLS TO REMAIN. SHOWN FOR REFERENCE ONLY.
5. REMOVE DOOR.

LEGEND

- EXISTING PRE-ENGINEERED METAL BUILDING STEEL STRUCTURE AND GIRTS TO REMAIN. PROTECT DURING CONSTRUCTION
- ROOF/WALL METAL CLADDING TO BE REMOVED.

GENERAL DEMOLITION NOTES

1. PROTECT EXISITING STRUCTURE DURING CONSTRUCTION.
2. INTERIOR FINISHES ARE EXISTING TO REMAIN. PROTECT DURING CONSTRUCTION.
3. OVERHEAD DOORS, DOORS, AND WINDOWS ARE EXISITING TO REMAIN UNLESS OTHERWISE NOTED. PROTECT DURING CONSTRUCTION.

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9-27-24

MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP EXISTING BUILDING

CITY OF MOSCOW

CONSULTANTS:

MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
DATE:	**09/27/24**
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CHECKED BY:	**MG**

PHASE: **Construction Documents**

DEMOLITION PLANS

SHEET NO.

A1.0

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CONDOC

133419.E2 INSULATED METAL WALL PANEL.

KEYNOTES

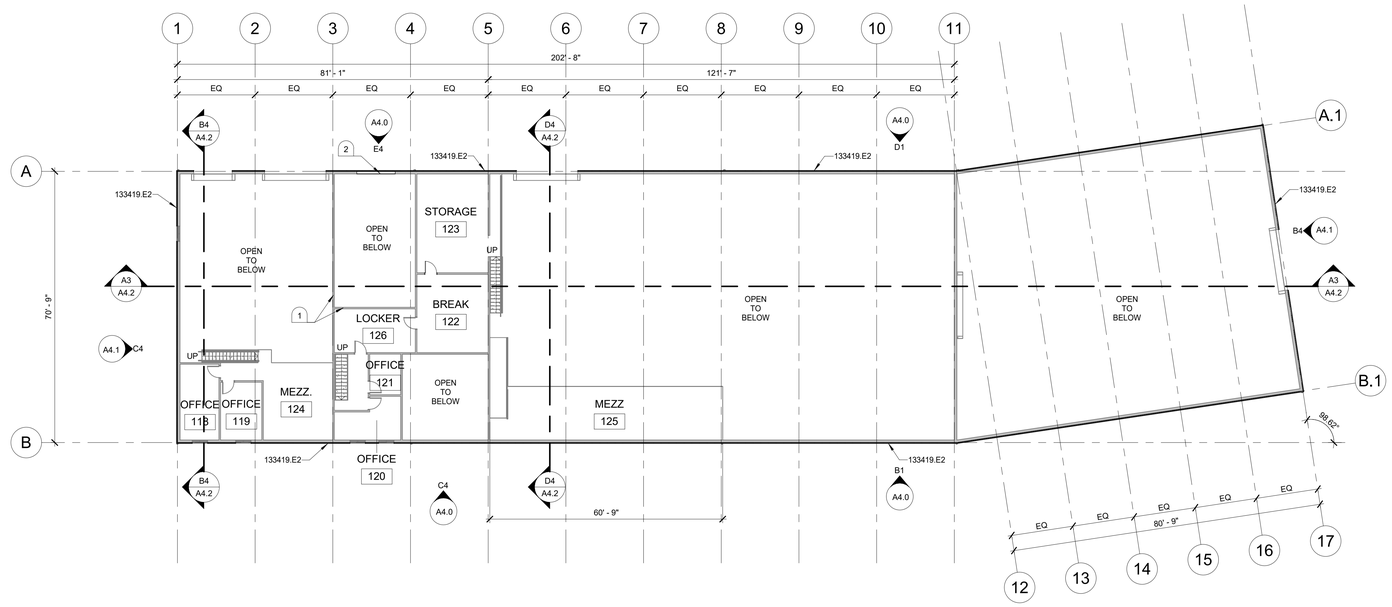
1. EXISTING INTERIOR WALLS TO REMAIN. SHOWN FOR REFERENCE ONLY.
2. PROVIDE NEW PRE-ENGINEERED METAL BUILDING GIRT FRAMING TO INFILL EXISTING OVERHEAD DOOR OPENING.

LEGEND

- EXISTING PRE-ENGINEERED METAL BUILDING STEEL STRUCTION AND GIRTS TO REMAIN.
- NEW INSULATED METAL PANEL CLADDING SEE SPEC SECTION **(133419)**

GENERAL NOTES

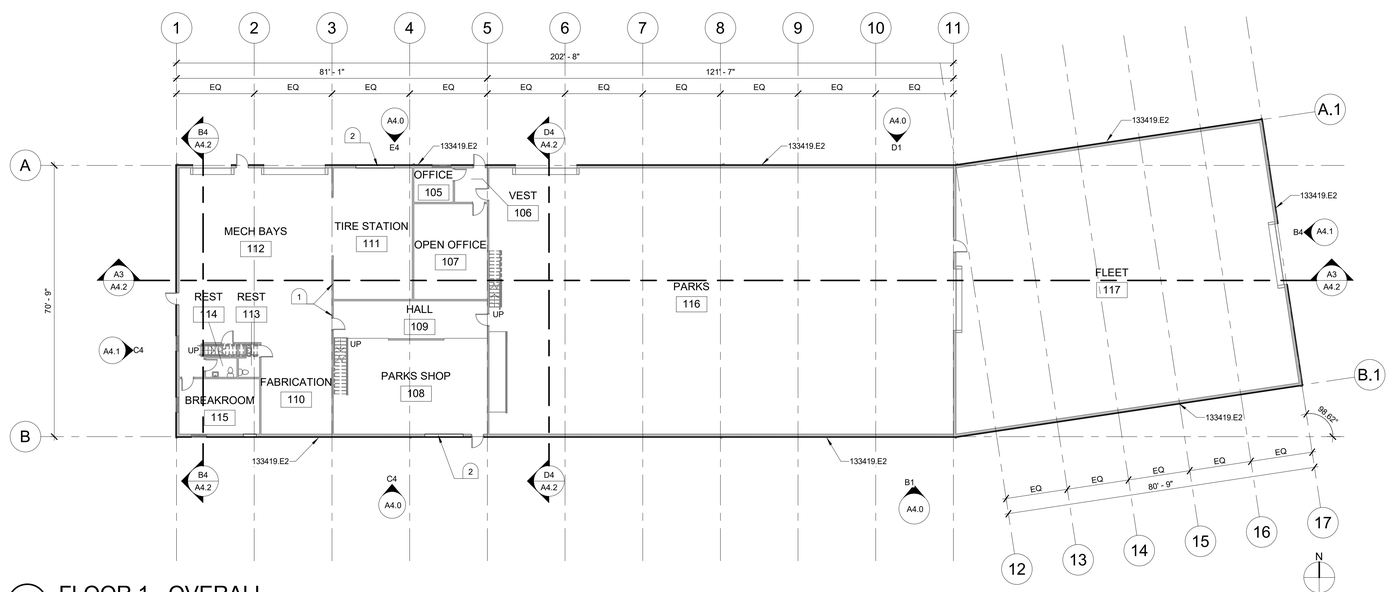
1. EXTERIOR DIMENSIONS ARE TO ROUGH OPENING, CENTERLINE OF COLUMN OR FACE OF FOUNDATION UNLESS OTHERWISE NOTED. SEE WALL SECTIONS FOR RELATIONSHIP OF FRAMING / FINISHES TO FACE OF FOUNDATION.
2. REFER TO WALL SECTIONS FOR EXTERIOR WALL REQUIREMENTS.



C2 FLOOR 2 - OVERALL

1/16" = 1'-0"

FLOOR 2 PLAN



E2 FLOOR 1 - OVERALL

1/16" = 1'-0"

FLOOR 1 PLAN

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FLOOR PLANS - OVERALL

SHEET NO.

A2.0

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CONDOC

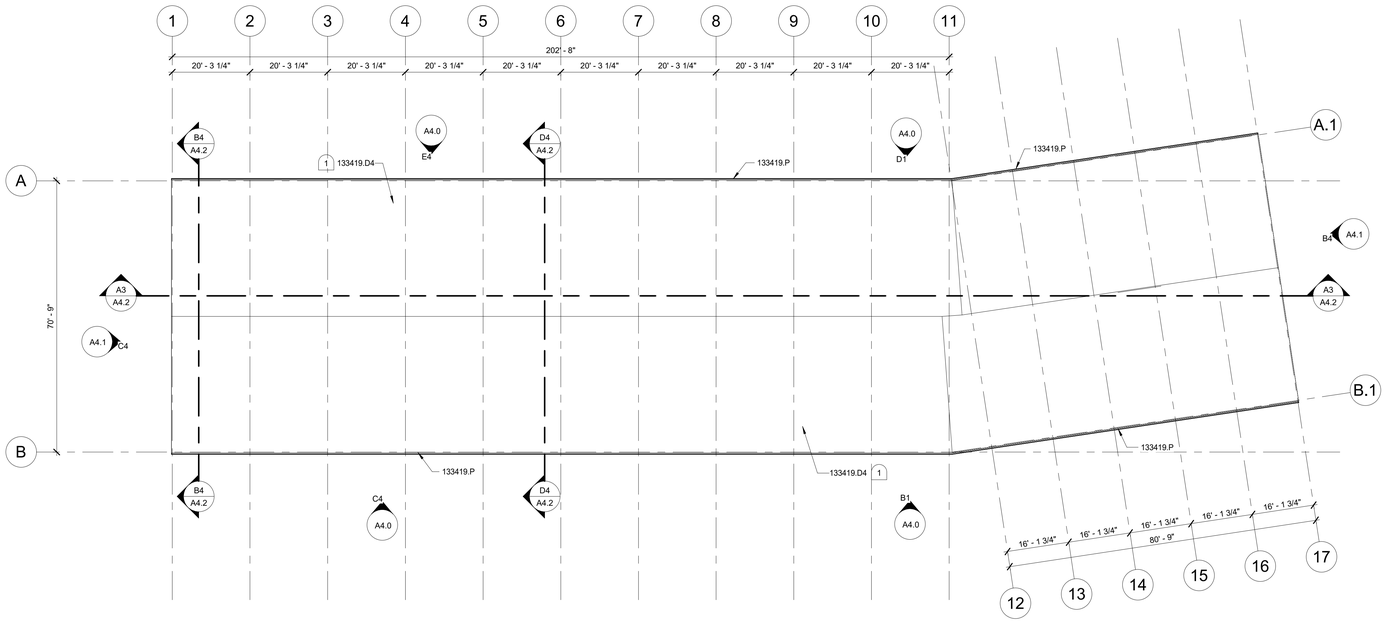
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.P	GUTTER.

KEYNOTES

1. SEE DETAIL **C4/A7.0** FOR ROOF STANDING SEAM PANEL JOINT.

GENERAL NOTES

1. PROVIDE WATER TIGHT SEAL AROUND ALL ROOFTOP EQUIPMENT AND PENETRATIONS. INCLUDING THOSE NOT SHOWN HERE. REFER TO MECHANICAL DRAWINGS FOR EQUIPMENT NOT SHOWN HERE.



D2 ROOF PLAN
1/16" = 1'-0"

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ROOF PLAN

SHEET NO.
A2.1

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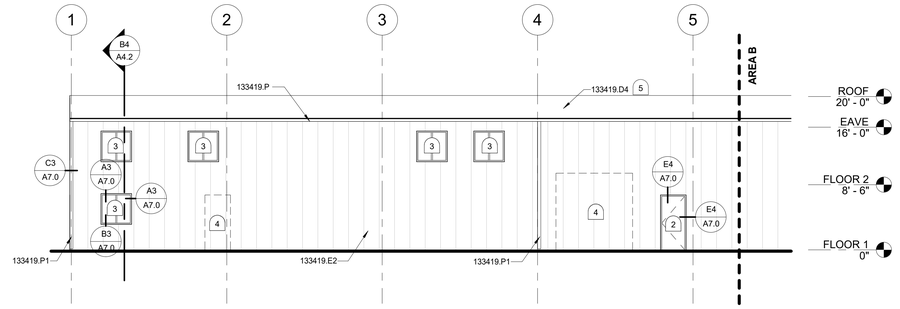
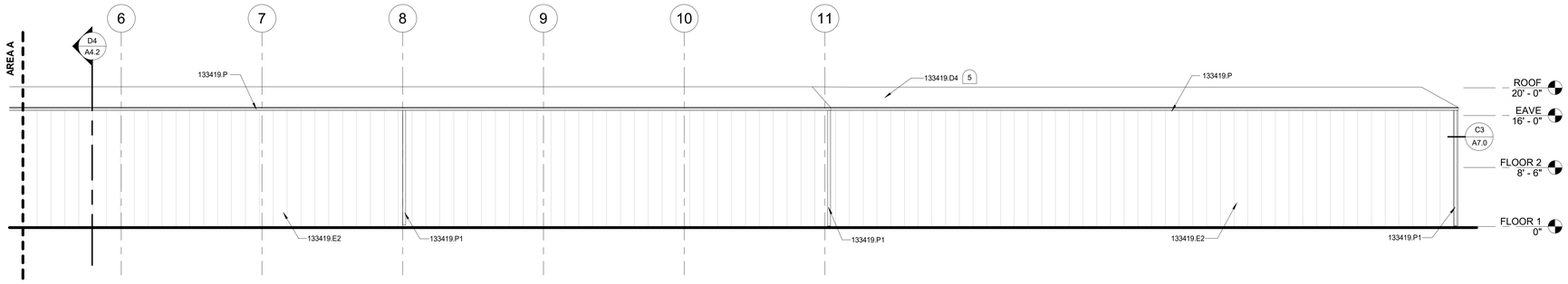
CONDOC

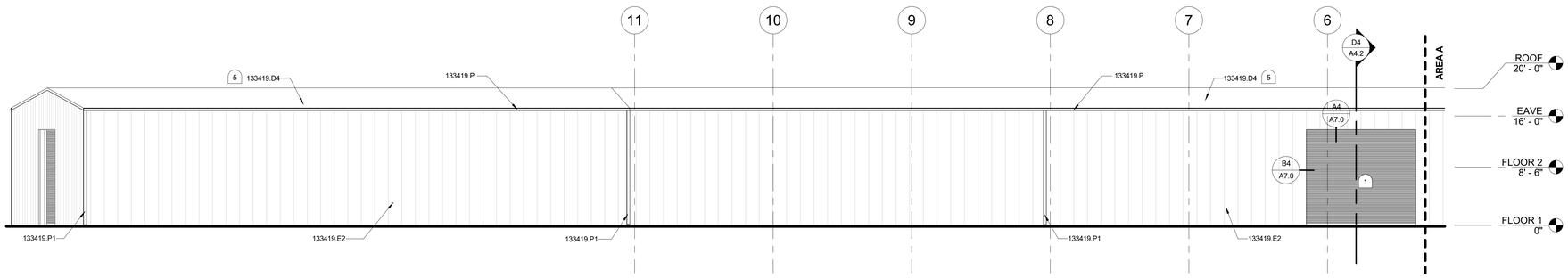
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.P	GUTTER.
133419.P1	DOWNSPOUT.



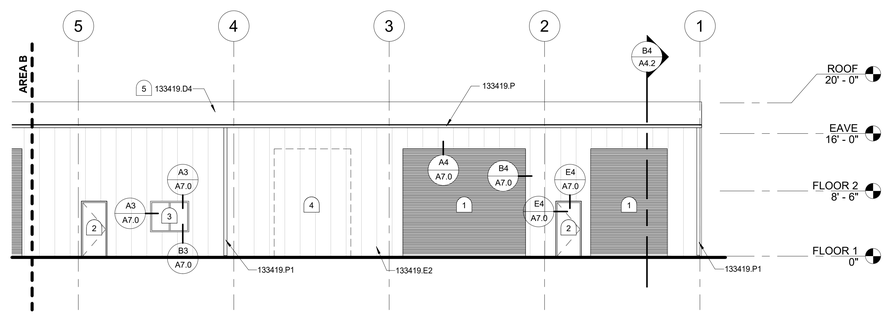
C4 SOUTH ELEVATION - AREA A
1/8" = 1'-0"



B1 SOUTH ELEVATION - AREA B
1/8" = 1'-0"



D1 NORTH ELEVATION - AREA B
1/8" = 1'-0"



E4 NORTH ELEVATION - AREA A
1/8" = 1'-0"

KEYNOTES

1. EXISTING OVERHEAD DOOR TO REMAIN, TYPICAL.
2. EXISTING DOOR TO REMAIN, TYPICAL.
3. EXISTING WINDOW TO REMAIN, TYPICAL.
4. PROVIDE NEW PRE-ENGINEERED METAL BUILDING GIRT FRAMING TO INFILL EXISTING OVERHEAD DOOR, & DOOR OPENING.
5. SEE DETAIL **C4/A7.0** FOR ROOF STANDING SEAM PANEL JOINT.

GENERAL NOTES

1. ALL EXPOSED METAL FLASHING ADJACENT TO OVERHEAD DOORS, DOORS, AND WINDOWS SHALL BE PRE-FINISHED TO MATCH METAL BUILDING SIDING.
2. ALIGN CLADDING JOINTS AND/OR REVEALS WITH WINDOW MULLIONS AND OTHER BUILDING ELEMENTS AS INDICATED. PROVIDE BLOCKING OR STRAPPING BEHIND CLADDING JOINTS AS REQUIRED BY MANUFACTURER.
3. INSTALL SEALANT BETWEEN ALL DISSIMILIAR MATERIALS IN COLORS THAT APPROXIMATE COLORS OF ADJACENT FINISHES U.O.N. (**079200**). (COLOR SELECTION SHALL BE CONFIRMED BY ARCHITECT)
4. ALL EXTERIOR WALL-MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURER RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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LICENSED ARCHITECT AR-983148
9-27-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP EXISTING BUILDING

CITY OF MOSCOW

CONSULTANTS:

MRK	DATE	DESCRIPTION

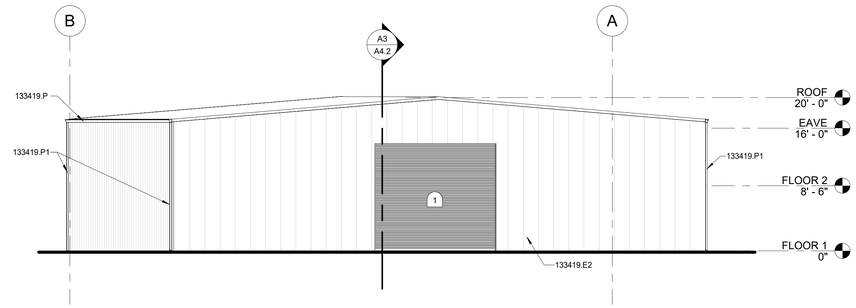
JOB NO.:	**24000.01**
DATE:	**09/27/24**
DRAWN BY:	**BC**
CHECKED BY:	**MG**
PHASE:	**Construction Documents**

EXTERIOR ELEVATIONS

SHEET NO.

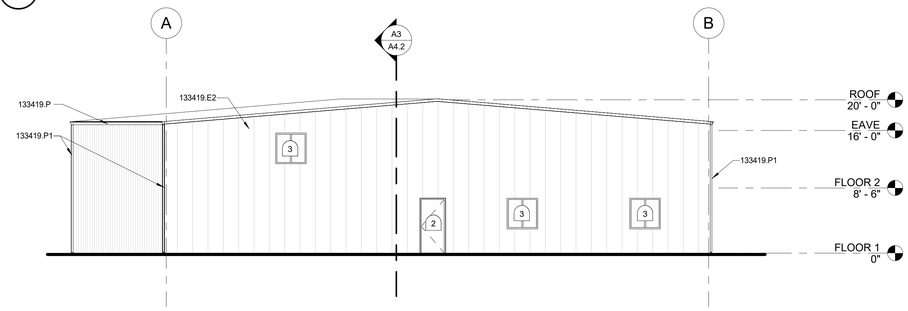
A4.0

9/26/2024 3:34:41 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop Existing_Central_V23_bchurchHDWZ7.rvt



B4 EAST ELEVATION

1/8" = 1'-0"



C4 WEST ELEVATION

1/8" = 1'-0"

CONDOC

133419.E2	INSULATED METAL WALL PANEL.
133419.P	GUTTER.
133419.P1	DOWNSPOUT.

KEYNOTES

1. EXISTING OVERHEAD DOOR TO REMAIN, TYPICAL.
2. EXISTING DOOR TO REMAIN, TYPICAL.
3. EXISTING WINDOW TO REMAIN, TYPICAL.

GENERAL NOTES

1. ALL EXPOSED METAL FLASHING ADJACENT TO OVERHEAD DOORS, DOORS, AND WINDOWS SHALL BE PRE-FINISHED TO MATCH METAL BUILDING SIDING.
2. ALIGN CLADDING JOINTS AND/OR REVEALS WITH WINDOW MULLIONS AND OTHER BUILDING ELEMENTS AS INDICATED. PROVIDE BLOCKING OR STRAPPING BEHIND CLADDING JOINTS AS REQUIRED BY MANUFACTURER.
3. INSTALL SEALANT BETWEEN ALL DISSIMILIAR MATERIALS IN COLORS THAT APPROXIMATE COLORS OF ADJACENT FINISHES U.O.N. (**079200**). (COLOR SELECTION SHALL BE CONFIRMED BY ARCHITECT)
4. ALL EXTERIOR WALL-MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURER RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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EXTERIOR ELEVATIONS

SHEET NO.

A4.1

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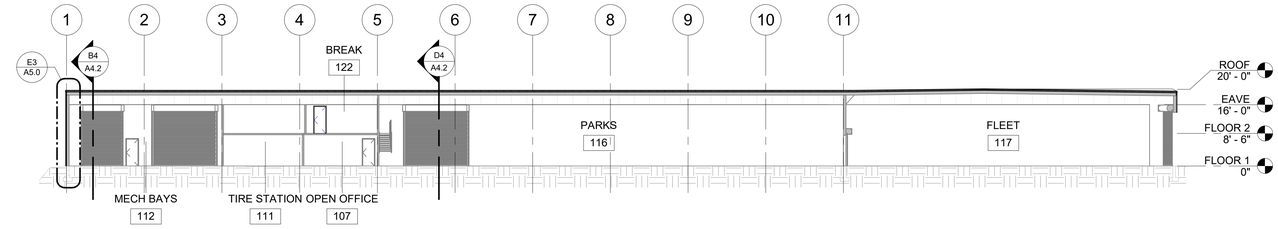
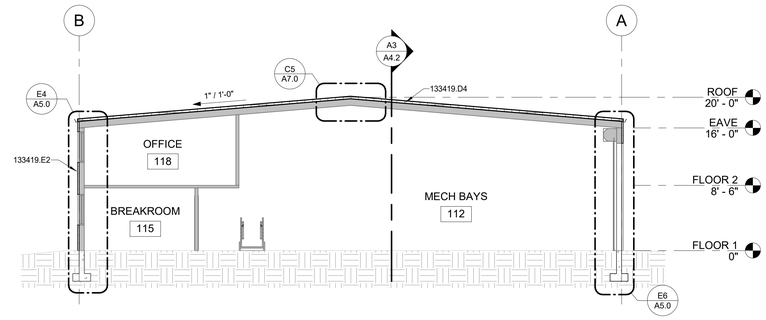
CONDOC

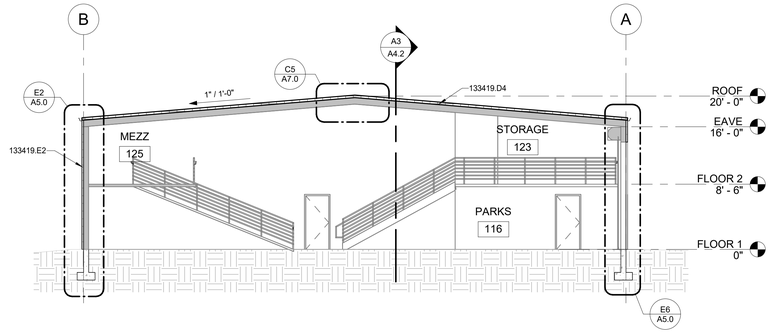
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.



A3 BUILDING SECTION
1/16" = 1'-0"



B4 BUILDING SECTION
1/8" = 1'-0"



D4 BUILDING SECTION
1/8" = 1'-0"

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BUILDING SECTIONS

SHEET NO.

A4.2

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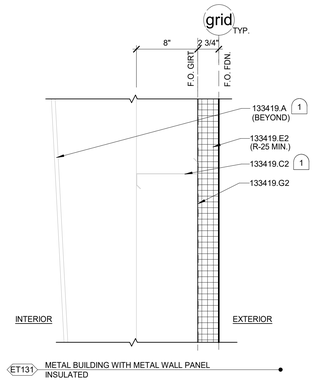
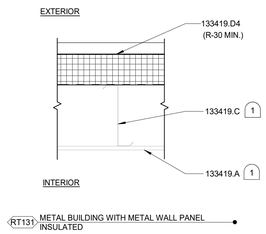
EXTERIOR WALL TYPES



EXTERIOR ROOF TYPES



CONDOC

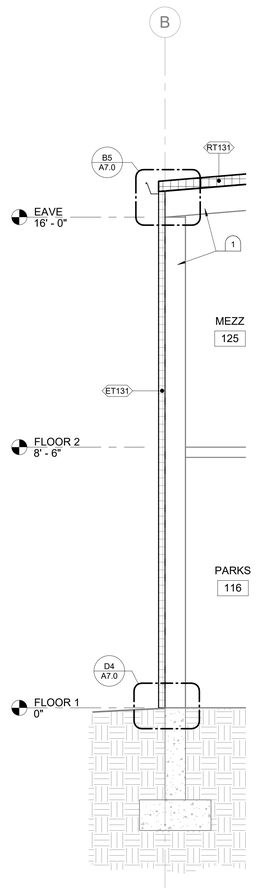
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C	PURLIN.
133419.C2	WALL GIRTS.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.G2	THERMAL BLOCK.

KEYNOTES

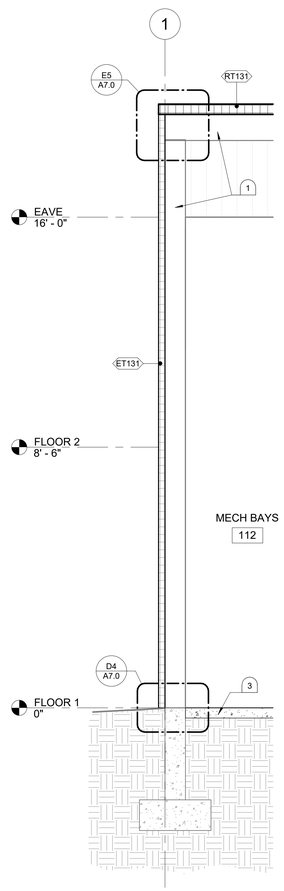
1. EXISTING PRE-ENGINEERED METAL BUILDING STEEL STRUCTURE AND GIRTS TO REMAIN.
2. EXISTING OVERHEAD DOORS, DOORS, AND WINDOWS TO REMAIN.
3. EXISTING CONCRETE FOUNDATION TO REMAIN.

GENERAL NOTES

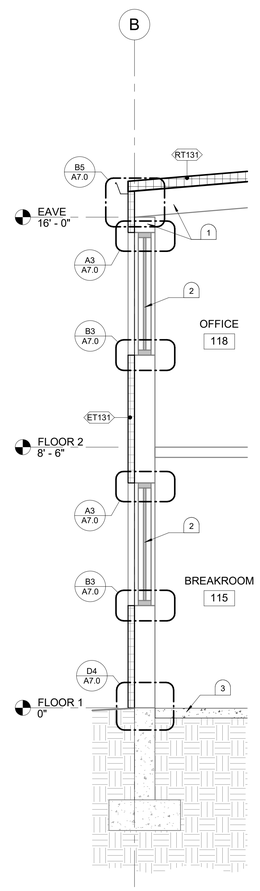
1. PROVIDE POSITIVE ATTACHMENT TO STRUCTURE AT ALL METAL PANEL JOINTS PER MANUFACTURER REQUIREMENTS.
2. MILLWORK NOT SHOWN IN WALL SECTIONS. SEE FINISH AND EQUIPMENT PLANS FOR MILLWORK EXTENTS, DETAILS, AND ELEVATION REFERENCES.
3. MECHANICAL AND ELECTRICAL ITEMS SHOWN ON WALL SECTIONS ARE FOR REFERENCE ONLY AND MAY NOT REFLECT EXACT LOCATIONS, HEIGHTS, ETC. REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR LAYOUT.



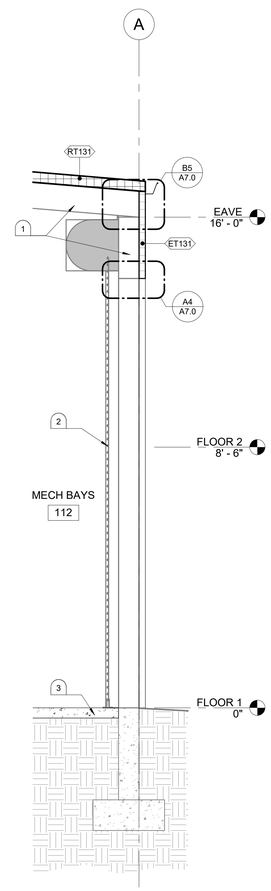
E2 WALL SECTION
1/2" = 1'-0"



E3 WALL SECTION
1/2" = 1'-0"



E4 WALL SECTION
1/2" = 1'-0"



E6 WALL SECTION
1/2" = 1'-0"

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WALL SECTIONS

SHEET NO.

A5.0

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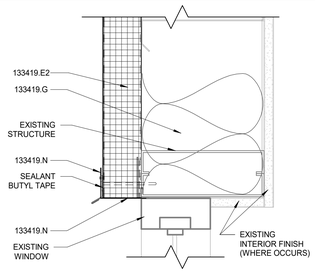
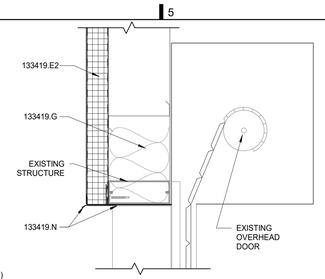
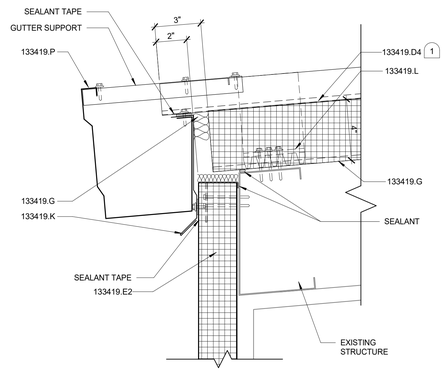


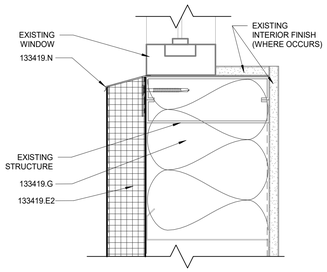
A3 HEAD DETAIL (JAMB SIM.)
3" = 1'-0" EDW18



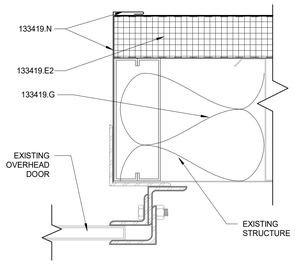
A4 HEAD DETAIL
1 1/2" = 1'-0" EDW17



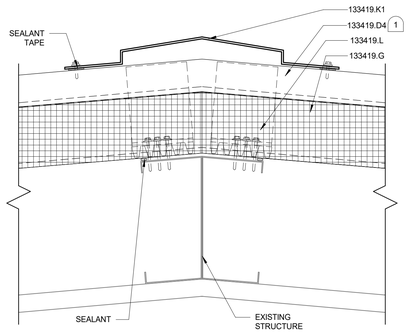
B5 EAVE GUTTER
3" = 1'-0" EXT09



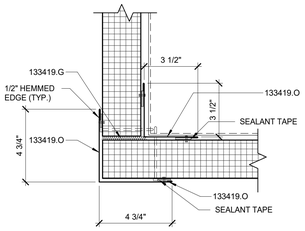
B3 SILL DETAIL
3" = 1'-0" EDW19



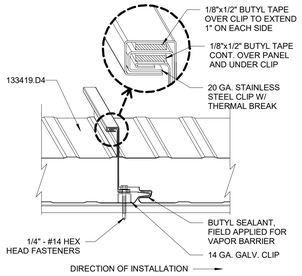
B4 JAMB DETAIL
3" = 1'-0" EDW15



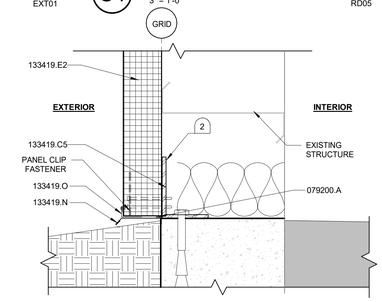
C5 RIDGE DETAIL
3" = 1'-0" EXT10



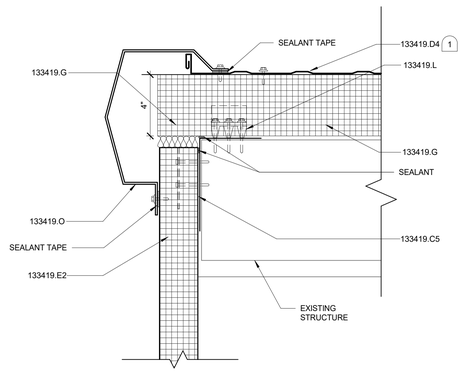
C3 OUTSIDE CORNER TRIM
3" = 1'-0" EXT01



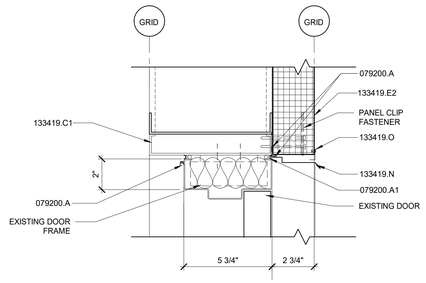
C4 PANEL JOINT
3" = 1'-0" RD05



D4 WALL PANEL SILL
3" = 1'-0" EXT11



E5 RAKE TRIM
3" = 1'-0" EXT19



E4 DOOR HEAD
3" = 1'-0" EXT21

CONDOC

079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
133419.C1	SUB PURLINS / JOIST.
133419.C5	WALL / BASE ANGLE.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.G	METAL BUILDING INSULATION.
133419.K	EAVE CLOSURE.
133419.K1	RIDGE CLOSURE.
133419.L	METAL ROOF CLIPS.
133419.N	METAL FLASHING.
133419.O	METAL TRIM.
133419.P	GUTTER.

KEYNOTES

1. SEE DETAIL **C4/A7.0** FOR ROOF STANDING SEAM PANEL JOINT.
2. SEAL VAPOR BARRIER AT INSIDE FACE OF METAL PANEL.

GENERAL NOTES

1. SEE SHEET **A5.00** FOR ASSEMBLY TYPES.
2. ALL EXPOSED METAL FLASHING ADJACENT TO OVERHEAD DOORS, DOORS, AND WINDOWS SHALL BE PRE-FINISHED TO MATCH METAL BUILDING SIDING.
3. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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EXTERIOR DETAILS

SHEET NO.
A7.0

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MOSCOW CITY SHOP

650 N VAN BUREN ST, MOSCOW, ID 83843

PERMIT SET
JULY 24, 2024

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0.20	LIFE SAFETY PLANS

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C2	EROSION CONTROL AND GRADING PLAN
C3	EROSION CONTROL AND GRADING NOTES AND DETAILS
C4	UTILITY LAYOUT PLAN
C5	GENERAL NOTES AND DETAILS
C6	R-TANK DETAILS 1
C7	R-TANK DETAILS 2

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A2.11	FIRST FLOOR - AREA A
A2.12	FIRST FLOOR - AREA B
A2.31	FINISH FLOOR PLAN - AREA A
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A2.41	REFLECTED CEILING PLAN - AREA A
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A2.50	EQUIPMENT PLANS
A2.60	OVERALL ROOF PLAN
A3.00	DOOR SCHEDULE
A3.10	FRAME TYPES
A3.20	ASSEMBLY TYPES
A4.00	EXTERIOR ELEVATIONS
A4.10	EXTERIOR ELEVATIONS
A4.20	BUILDING SECTIONS
A5.00	WALL SECTIONS
A5.10	WALL SECTIONS
A6.00	ENLARGED PLANS / INTERIOR ELEVATIONS
A6.10	ENLARGED PLANS / INTERIOR ELEVATIONS
A6.20	ENLARGED PLANS - MEZZANINE
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A7.1	EXTERIOR DETAILS
A8.0	INTERIOR DETAILS
A8.1	INTERIOR DETAILS
A8.2	CABINET SECTIONS / ELEVATIONS
A9.0	STAIR PLANS / SECTIONS
A9.1	STAIR DETAILS

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S0.02	STRUCTURAL DESIGN NOTES
S0.03	SPECIAL INSPECTION TABLES
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S1.01B	FOUNDATION PLAN - AREA B
S2.01	ENLARGED MEZZANINE FRAMING PLANS
S4.01	SCHEDULES
S5.01	GENERAL CONCRETE DETAILS
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S5.21	GENERAL STRUCTURAL STEEL DETAILS
S5.31	GENERAL CFS DETAILS
S5.32	GENERAL CFS DETAILS
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S7.01	FLOOR FRAMING DETAILS

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M1.12	HVAC PLAN - AREA B
M1.13	HVAC ROOF PLAN
M1.14	HVAC ENLARGED PLANS & SECTIONS.
M2.00	HVAC DETAILS
M2.01	HVAC DETAILS
M2.02	HVAC DETAILS
M3.00	HVAC SCHEDULES
M3.01	HVAC SCHEDULES
M4.00	HVAC CONTROLS

P1.10	FOUNDATION OVERALL PLAN
P1.11	FOUNDATION PLAN - AREA A
P1.12	FOUNDATION PLAN - AREA B
P2.10	PLUMBING OVERALL PLAN
P2.11	PLUMBING PLAN - AREA A
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P3.00	PLUMBING DETAILS
P3.01	PLUMBING DETAILS
P4.00	PLUMBING SCHEDULES

ELECTRICAL

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E1.00	SITE ELECTRICAL PLAN
E2.10	ELECTRICAL OVERALL PLAN
E2.11F	FIRE ALARM PLAN - AREA A
E2.11L	LIGHTING PLAN - AREA A
E2.11M	MECHANICAL POWER PLAN - AREA A
E2.11P	POWER PLAN - AREA A
E2.11S	SYSTEMS PLAN - AREA A
E2.12F	FIRE ALARM PLAN - AREA B
E2.12L	LIGHTING PLAN - AREA B
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E4.00	ELECTRICAL DETAILS
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E5.01	PANEL SCHEDULES
E5.02	PANEL SCHEDULES

ABBREVIATIONS

A-E

A.B.	ANCHOR BOLT
ACOUS.	ACOUSTICAL
ADJ.	ADJUSTABLE
A.F.F.	ABOVE FINISH FLOOR
AGGR.	AGGREGATE
AL.	ALUMINUM
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BOT.	BOTTOM
CAB.	CABINET
C.F.O.I.	CONTRACTOR-FURNISHED/OWNER-INSTALLED
C.L.	CENTERLINE
CLG.	CEILING
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONT.	CONTINUOUS
CORR.	CORRIDOR
CTSK.	COUNTERSUNK
CNTR.	COUNTER
CTR.	CENTER
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DRINKING FOUNTAIN
DET.	DETAIL
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
DN.	DOWN
EA.	EACH
E.I.F.S.	EXTERIOR INSULATION AND FINISH SYSTEM
E.J.	EXPANSION JOINT
ELEC.	ELECTRICAL
ELEV.	ELEVATION
ELEV.	ELEVATOR
ENCL.	ENCLOSURE
EQ.	EQUAL
EQUIP.	EQUIPMENT
EXP.	EXPANSION
EXST.	EXISTING
EXT.	EXTERIOR

F-M

F.A.	FIRE ALARM
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH
FLR.	FLOOR
F.O.B.	FACE OF BUILDING
F.O.C.	FACE OF CONCRETE
F.O.E.	FACE OF EXISTING
F.O.F.	FACE OF FINISH
F.O.S.	FACE OF STUDS
FT.	FEET/FOOT
FTG.	FOOTING
FURR.	FURRING
GA.	GAUGE
GALV.	GALVANIZED
GND.	GROUND
GR.	GRADE
GYP.	GYPSUM BOARD
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HGT.	HEIGHT
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
LAB.	LABORATORY
LAV.	LAVATORY
MAX.	MAXIMUM
MECH.	MECHANICAL
MTL.	METAL
MFR.	MANUFACTURER
MH.	MANHOLE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MTD.	MOUNTED

N-R

N/C	NON-COMBUSTIBLE
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVERALL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.C.I.	OWNER FURNISHED/ CONTRACTOR-INSTALLED
O.F.O.I.	OWNER FURNISHED/ OWNER INSTALLED
OFF.	OFFICE
OPNG.	OPENING
OPP.	OPPOSITE
PL.	PLATE
PL.	PLASTIC LAMINATE
PLAS.	PLASTER
PLYWD.	PLYWOOD
PR.	PAIR
PT.	POINT
P.T.D.	PAPER TOWEL DISPENSER
P.T.R.	PAPER TOWEL RECEPTACLE
Q.T.	QUARRY TILE
RAD.	RADIUS
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCED
REQ.	REQUIRED
RESIL.	RESILIENT
RM.	ROOM
R.O.	ROUGH OPENING
R.W.L.	RAIN WATER LEADER

S-Z

S.C.	SOLID CORE
SECT.	SECTION
SHTH'G.	SHEATHING
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STA.	STATION
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRL.	STRUCTURAL
SUSP.	SUSPENDED
T.C.	TOP OF CURB
TEL.	TELEPHONE
T.O.	TOP OF
T.O.B.	TOP OF BLOCK
T.O.C.	TOP OF CURB
T.O.P.	TOP OF PLATE
T.O.W.	TOP OF WALL
TRD.	TREAD
T.V.	TELEVISION
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL
VERT.	VERTICAL
VEST.	VESTIBULE
W/	WITH
W/O	WITHOUT
W.C.	WATER CLOSET
WD.	WOOD
W.P.	WATERPROOF
W.R.	WATER RESISTANT
WT.	WEIGHT

FOR ADDITIONAL MATERIAL FINISH ABBREVIATIONS, SEE MATERIAL LEGEND ON ROOM FINISH SHEETS.

GRAPHIC AND MATERIAL SYMBOLS

GRID LINE (NUMBERS AND LETTERS)
DETAIL IDENTIFICATION (DETAIL, SIM., SHEET NUMBER)
WALL SECTION (SECTION IDENTIFICATION, SHEET NUMBER)
BUILDING SECTION (SECTION IDENTIFICATION, SHEET NUMBER)
ELEVATIONS (ELEVATION IDENTIFICATION, SHEET NUMBER)
ROOM IDENTIFICATION (ROOM NAME, ROOM NUMBER)
KEYNOTE (NUMBER)
WALL TAG (TYPE NUMBER)
REVISION (NUMBER)
DOOR IDENTIFICATION (ROOM REFERENCE, DOOR LETTER)
WINDOW IDENTIFICATION (WINDOW TYPE (LETTER OR NUMBER))

EARTH FILL
GRAVEL FILL
CONCRETE
SAND OR GROUT
BRICK OR STONE
CMU
STEEL
FINISH WOOD MEMBER
WOOD FRAMING MEMBER
WOOD BLOCKING
BATT BLANKET / BLOWN-IN INSULATION / SPRAY APPLIED FOAM INSULATION
RIGID INSULATION
PLYWOOD
GYPSUM BOARD
GLASS
CERAMIC TILE (PROFILE ONLY)
ACOUSTICAL TILE

DATUM POINT (CONTROL POINT OR WORK POINT)
MATCHLINE
NORTH ARROW

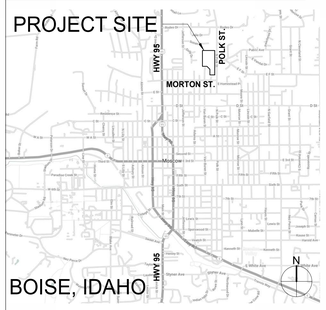
ZONING INFORMATION

LAND USE ZONE = R3
PARCEL # = 650, 660, 851
CUP# = N/A
DR # = N/A

IBC CODE 2018
OCCUPANCY GROUPS: B, S-1
CONSTRUCTION TYPE : V-B
AREA OF BUILDING W/ADDITION = 18,800 SF
FIRE SPRINKLERS: NFPA 13
FIRE ALARM SYSTEM: YES

SEE SHEET A0.1 FOR ADDITIONAL INFORMATION.

VICINITY MAP



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COMcheck Software Version 4.1.5.3

Envelope Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	
Location:	Boise, Idaho
Climate Zone:	5b
Project Type:	New Construction
Vertical Glazing / Wall Area:	24%

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
Enhanced Interior Lighting Controls, 1.0 credit

Building Area	Floor Area
1-Office : Nonresidential	18825

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Metal Building, Standing Seam, Double Insulation Layer with Thermal Blocks (d), [Bldg. Use 1 - Office]	19704	0.0	20.0	0.048	0.035
Floor 1: Slab-On-Grade:Unheated, Vertical 2 ft., [Bldg. Use 1 - Office] (c)	831	---	5.0	0.580	0.540
NORTH					
Panel Wall - North: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	1358	0.0	16.0	0.053	0.064
Glazing - North: Metal Frame with Thermal Break:Fixed, Perf. Specs.: Product ID NA, SHGC 0.35, [Bldg. Use 1 - Office] (b)	48	---	---	0.380	0.380
Concrete Base - North: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	103	0.0	10.0	0.078	0.064
Retaining Wall - North: Solid Concrete:12" Thickness, Normal Density, Furring: Metal, Wall Ht 20.0, Depth B.G. 14.6, [Bldg. Use 1 - Office]	577	0.0	10.0	0.080	0.119
EAST					
Panel Wall - East: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	6567	0.0	16.0	0.053	0.064
Overhead Door - East: Insulated Metal, Garage door 14% glazing, [Bldg. Use 1 - Office]	2304	---	---	0.250	0.310
Swing Door - East: Insulated Metal, Swinging, [Bldg. Use 1 - Office]	105	---	---	0.250	0.370
Concrete Base - East: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	824	0.0	10.0	0.078	0.064
Steel Stud Wall - East: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	970	21.0	0.0	0.106	0.064
Glazing - East: Metal Frame with Thermal Break:Fixed, Perf. Specs.: Product ID NA, SHGC 0.35, [Bldg. Use 1 - Office] (b)	466	---	---	0.380	0.380
SOUTH					
Panel Wall - South: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	1509	0.0	16.0	0.053	0.064
Steel Stud Wall - South: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	682	0.0	21.0	0.042	0.064
Glazing - South: Metal Frame with Thermal Break:Fixed, Perf. Specs.: Product ID NA, SHGC 0.35, [Bldg. Use 1 - Office] (b)	352	---	---	0.380	0.380
Concrete Base - South: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	75	0.0	10.0	0.078	0.064
WEST					
Panel Wall - West: Steel-Framed, 24" o.c., [Bldg. Use 1 - Office]	4224	0.0	16.0	0.053	0.064
Glazing - West: Metal Frame with Thermal Break:Fixed, Perf. Specs.: Product ID NA, SHGC 0.35, [Bldg. Use 1 - Office] (b)	128	---	---	0.380	0.380
Overhead Door - West: Insulated Metal, Garage door 14% glazing, [Bldg. Use 1 - Office]	800	---	---	0.250	0.310
Swing Door - West: Insulated Metal, Swinging, [Bldg. Use 1 - Office]	42	---	---	0.250	0.370
Concrete Base - West: Steel-Framed, 16" o.c., [Bldg. Use 1 - Office]	417	0.0	10.0	0.078	0.064
Retaining Wall - West: Solid Concrete:12" Thickness, Normal Density, Furring: Metal, Wall Ht 20.0, Depth B.G. 12.4, [Bldg. Use 1 - Office]	2163	0.0	10.0	0.080	0.119

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.
(d) Thermal spacer block with minimum R-3.5 must be installed above the purlin/batt, and the roof deck secured to the purlins.

Envelope PASSES: Design 3% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.3 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ryker Belnap - Architect — Name - Title
Signature
07/19/2024 — Date

CHAPTER 3
USE AND OCCUPANCY

LEVEL	OCCUPANCY CLASS (302.1)	OCCUPANCY LOAD FACTOR (1004.1.2)	OCCUPANCY AREA	OCCUPANCY LOAD	SPACE BY SPACE MAX OCCUPANCY
1	B (OFFICE A)	1 OCC. / 150 S.F.	2,599 S.F.	18	48
1	S-1 (REPAIR A)	1 OCC. / 500 S.F.	4,192 S.F.	9	11
1	B (OFFICE B)	1 OCC. / 150 S.F.	3,093 S.F.	21	93
1	S-1 (REPAIR B)	1 OCC. / 500 S.F.	7,909 S.F.	16	20
			TOTAL:	66	173

CHAPTER 4
REQUIREMENTS BASED ON USE

406.2.4 FLOOR SURFACES
FLOOR SURFACES SHALL BE OF CONCRETE OR SIMILAR APPROVED NONCOMBUSTIBLE AND NONABSORBENT MATERIALS. THE AREA OF FLOOR USED FOR THE PARKING OF AUTOMOBILES OR OTHER VEHICLES SHALL BE SLOPED TO FACILITATE THE MOVEMENT OF LIQUIDS TO A DRAIN OR TOWARD THE MAIN VEHICLE ENTRY DOORWAY. THE SURFACE OF VEHICLE FUELING PADS IN MOTOR FUEL-DISPENSING FACILITIES SHALL BE IN ACCORDANCE WITH SECTION 406.7.1.

406.8.1 VENTILATION
REPAIR GARAGES SHALL BE MECHANICALLY VENTILATED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE. THE VENTILATION SYSTEM SHALL BE CONTROLLED AT THE ENTRANCE TO THE GARAGE.

406.8.2 GAS DETECTION SYSTEM
REPAIR GARAGES USED FOR REPAIR OF VEHICLES FUELED BY NONODORIZED GASES INCLUDING BUT NOT LIMITED TO HYDROGEN AND NONODORIZED LNG, SHALL BE PROVIDED WITH A GAS DETECTION SYSTEM THAT COMPLIES WITH SECTION 916. THE GAS DETECTION SYSTEM SHALL BE DESIGNED TO DETECT LEAKAGE OF NONODORIZED GASEOUS FUEL. WHERE LUBRICATION OR CHASSIS SERVICE PITS ARE PROVIDED IN GARAGES USED FOR REPAIRING NONODORIZED LNG-FUELED VEHICLES, GAS SENSORS SHALL BE PROVIDED IN SUCH PITS.

406.8.3 AUTOMATIC SPRINKLER SYSTEM
A REPAIR GARAGE SHALL BE EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.2.9.1.

CHAPTER 5
BUILDING HEIGHTS AND AREAS

ALLOWED HEIGHT (TABLE 504.3)

OCCUPANCY TYPE	TYPE OF CONSTRUCTION	ALLOWED HEIGHT	ACTUAL HEIGHT
B	V-B	60'	29'-0"
S-1	V-B	60'	29'-0"

ALLOWED STORIES (TABLE 504.4)

B	V-B	3 STORIES	1 STORY
S-1	V-B	2 STORIES	1 STORY

BUILDING AREA (506.2)

OCCUPANCY TYPE	TYPE OF CONSTRUCTION	ALLOWED AREA SQ./FT. PER FLOOR	ACTUAL AREA SQ./FT. PER FLOOR
B	V-B	36,000	13,065
S-1	V-B	36,000	5,759

SPECIAL PROVISIONS (510)

NONE

CHAPTER 6
TYPES OF CONSTRUCTION

TYPE OF CONSTRUCTION (602.1)	TYPE III-B
FIRE RESISTIVE REQ. FOR BLDG ELEMENTS (TABLE 601)	
PRIMARY STRUCTURAL FRAME	0 HR
EXTERIOR BEARING WALLS	N/A
INTERIOR BEARING WALLS	N/A
NON BEARING EXTERIOR WALLS (TABLE 602)	0 HR
NON BEARING INTERIOR WALLS	0 HR
FLOOR CONSTRUCTION	0 HR
ROOF / FLOOR ABOVE CONSTRUCTION	0 HR
FIRE RTDT TREATED WOOD ALLOWED (603.1)	

CHAPTER 7
FIRE AND SMOKE PROTECTIONS

SHAFT ENCLOSURES 5 STORIES (TABLE 716.5)

	WALL RATING	DOOR RATING
SHAFT, INTERIOR EXIT STAIR	2 HR	1.5 HR

CHAPTER 8
INTERIOR FINISHES

INTERIOR WALL AND CEILING REQUIREMENTS BY OCCUPANCY (TABLE 803.11)

OCCUPANCY	CLASS	FLAME SPREAD	SMOKE
B	C	76-200	0-450

CHAPTER 9
FIRE PROTECTION SYSTEMS

AUTOMATIC SPRINKLER SYSTEM	NFPA 13
FIRE EXTINGUISHERS (906.1)	
MAX DISTANCE BETWEEN EXTINGUISHERS =	75'
FIRE ALARM (907)	

907.2 - FIRE ALARM SYSTEM IS NOT REQUIRED PER 907.2.2.

CHAPTER 10
MEANS OF EGRESS

STAIRWAY SIZING (1005.3.1)	
LOAD FACTOR	6 / 2 = 3 OCC.
EGRESS SIZE (1005.3.2) (OCCUPANT LOAD) x .2"	3 x .2" = 0.6"
EGRESS DOOR SIZING (1005.3.2)	
LOAD FACTOR (WORST CONDITION)	69 / 1 = 69 OCC.
EGRESS SIZE (1005.3.2) (OCCUPANT LOAD) x .2"	69 x .2" = 13.8"

NUMBER OF EXITS (1006.2.1)

OCCUPANCY	MAX OCC LOAD	REQUIRED EXITS	PROVIDED EXITS
B/S-1	184	2	9

MAX COMMON PATH OF EGRESS (TABLE 1006.2.1)

OCCUPANCY	MAX TRAVEL
B/S-1	100'

MAX EXIT ACCESS TRAVEL DISTANCE (TABLE 1017.2)

OCCUPANCY	MAX TRAVEL
B/S-1	250'

LOCATION AND CODES

PROPERTY

ADDRESS	650 N VAN BUREN ST MOSCOW, ID 83843
ASSESSOR PARCEL #	650, 660, 851

CURRENTLY ADOPTED CODES

2018	INTERNATIONAL BUILDING CODE
2018	INTERNATIONAL ENERGY CONSERVATION CODE & 2013 ASHRAE 90.1
2017	IDAHO STATE PLUMBING CODE / 2015 UNIFORM PLUMBING CODE
2017	NATIONAL ELECTRICAL CODE
2018	INTERNATIONAL FIRE CODE
2018	INTERNATIONAL MECHANICAL CODE
2018	INTERNATIONAL FUEL GAS CODE

LOCAL DESIGN CRITERIA

SEISMIC DESIGN CATEGORY	C
ULTIMATE DESIGN WIND SPEED	115 MPH EXPOSURE C
GROUND SNOW LOAD	64 PSF
UNIFORM ROOF SNOW LOAD	45 PSF
FROST LINE DEPTH	24" MIN.

ZONING

BUILDING SETBACK

PROPERTY LINE	MIN. DISTANCE	PROVIDED
NORTH	UL	43'-2"
EAST	UL	31'-3"
SOUTH	UL	262'-11"
WEST	UL	283'-11"
LANDSCAPE SETBACK		
LOCAL	10'	NA
COLLECTOR	20'	NA
ARTERIAL	25'	NA
ENTRYWAY CORRIDOR	35'	NA
INTERSTATE	50'	50' MIN.
PARKING		
PARKING STALLS	248	489
ADA PARKING STALLS	9	10
BIKE RACKS	20	20

CHAPTER 29
PLUMBING PER IBC (2902.1)

AREA	OCCUPANCY TYPE	WATER CLOSETS REQUIRED/PROVIDED 1 PER 25/50 MALE	WATER CLOSETS FEMALE	LAVATORIES REQUIRED/PROVIDED 1 PER 40/80 MALE	LAVATORIES FEMALE	DRINKING FOUNTAINS REQUIRED/PROVIDED 1 PER 100	SERVICE SINKS REQUIRED/PROVIDED 1 PER FLOOR
A	B (OFFICE)	0.96 / 1	0.96 / 1	0.6 / 1	0.6 / 1	2 / 2	1 / 1
A	S-1 (STORAGE)	0.06 / 1	0.06 / 1	0.06 / 1	0.06 / 1		
	AREA A TOTAL	**1.02 / 2**	**1.02 / 2**	**0.66 / 2**	**0.66 / 2**		
B	B (OFFICE)	1.86 / 2	1.86 / 1	1.16 / 2	1.16 / 1	2 / 2	1 / 1
B	S-1 (STORAGE)	0.09 / 1	0.09 / 1	0.09 / 1	0.09 / 1		
	AREA B TOTAL	**1.95 / 3**	**1.95 / 2**	**1.25 / 3**	**1.25 / 2**		

1

PLUMBING PER UPC (422.1)

AREA	OCCUPANCY TYPE	WATER CLOSETS REQUIRED/PROVIDED MALE WC	MALE U	FEMALE	LAVATORIES REQUIRED/PROVIDED 1 PER 75/50 MALE	FEMALE	DRINKING FOUNTAINS REQUIRED/PROVIDED 1 PER 150	SERVICE SINKS REQUIRED/PROVIDED 1 PER FLOOR
A	B (OFFICE)	0.48 / 1	0.24 / 1	1.6 / 2	0.32 / 1	0.48 / 1	2 / 2	1 / 1
A	S-1 (STORAGE)	0.06 / 1	NA	0.06 / 2	0.03 / 1	0.03 / 1		
	AREA A TOTAL	**0.54 / 1**	**0.24 / 1**	**1.66 / 2**	**0.35 / 2**	**0.51 / 2**		
B	B (OFFICE)	0.94 / 1	0.47 / 1	2.85 / 2	1.16 / 2	1.16 / 1	2 / 2	1 / 1
B	S-1 (STORAGE)	0.10 / 1	NA	0.10 / 1	0.09 / 1	0.09 / 1		
	AREA B TOTAL	**1.04 / 1**	**0.47 / 1**	**2.95 / 3**	**1.25 / 3**	**1.25 / 2**		

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW COMMENTS

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CODE INFORMATION

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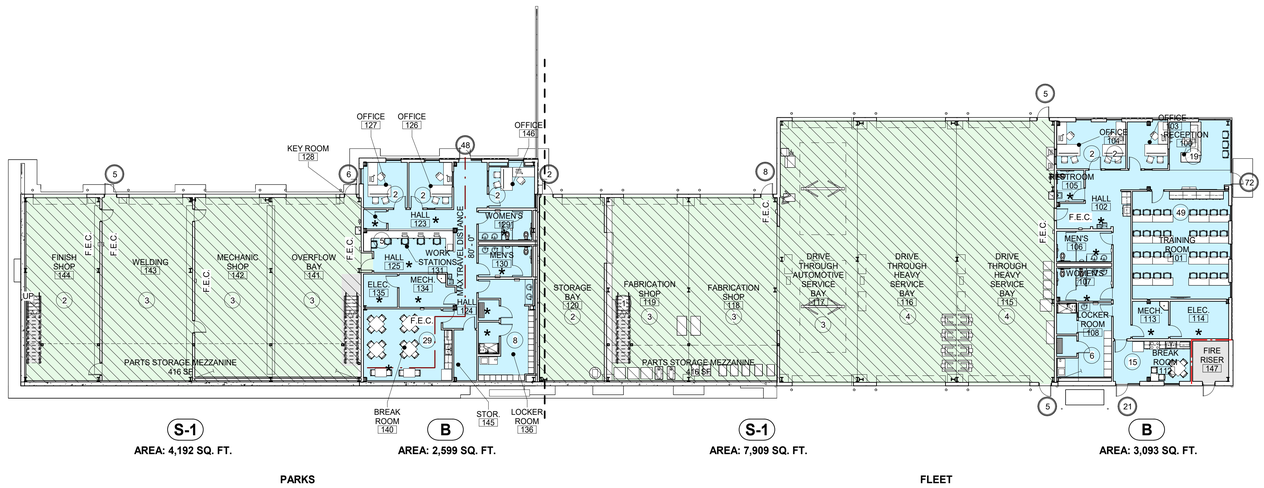

D2 FLOOR 1 LIFE SAFETY PLAN

1/16" = 1'-0"

LEGEND

ROOM NAME

101	ROOM NAME AND NUMBER
B	OCCUPANCY TYPE
#	TOTAL OCCUPANT LOAD IN ROOM (AS PER I.B.C. TABLE 1004.1.1)
#	TOTAL OCCUPANT LOAD EXITING FROM SPACE
#	TOTAL OCCUPANT LOAD EXITING FROM BUILDING / OCCUPANCY
*	INDICATES ACCESSORY SPACE FOR OCCUPANCY LOADING CALCULATIONS
	SPACE EGRESS
	REQUIRED BUILDING EGRESS WITH LOAD AND MINIMUM WIDTH
Required Width	REQUIRED EXIT WIDTH (AS PER I.B.C. TABLE 1005.1)
Clear Exit Width	ACTUAL EXIT WIDTH
	1-HOUR WALL PER UL#419 (OPENING RATING PER IBC TABLE 716.1(2))
	MAXIMUM TRAVEL DISTANCE
FACP	FIRE ALARM CONTROL PANEL LOCATION
F.E.C.	LOCATION OF FIRE EXTINGUISHER CABINET. SEE DETAIL ????
	AREA 2 OCCUPANCY TYPE S-1

SEE SHEET A0.3 FOR U.L. ASSEMBLIES

GENERAL NOTES

1. ALL PENETRATIONS THROUGH RATED WALLS AND ROOFS INCLUDING STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL ELEMENTS SHALL BE SEALED ACCORDING TO TESTED AND LISTED DESIGNS. PENETRATIONS SHALL BE MADE BY TRAINED AND KNOWLEDGEABLE REPRESENTATIVES OF THE TRADE MAKING OR REQUIRING THE PENETRATION IN CONFORMANCE WITH APPLICABLE CODES AND STANDARDS. CONTRACTOR SHALL COORDINATE AND VERIFY THAT ALL REQUIRED PENETRATIONS THROUGHOUT RATED ASSEMBLIES MEET DESIGN AND RATING REQUIREMENTS.
2. ALL GYPSUM BOARD INSTALLED IN RATED ASSEMBLIES OF A-3 AND B OCCUPANCY SHALL BE TYPE "X."
3. INCLUDED ON THE U.L. ASSEMBLIES SHEET ARE PRE-APPROVED LISTED PENETRATION ASSEMBLIES. HOWEVER CONTRACTORS ARE RESPONSIBLE FOR THE RATING OF ALL PENETRATION ASSEMBLIES WHETHER OR NOT THEY ARE INDICATED HERE. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION FOR ANY RATED PENETRATION NOT INDICATED ON THIS SHEET OR LISTED IN THE MECHANICAL OR ELECTRICAL SHEETS.
4. ALL RATED WALL ASSEMBLIES SHALL TERMINATE WITH AN APPROVED FIRE RESISTIVE ASSEMBLY THAT IS EQUAL TO FIRE-RESISTANCE RATING OF THE FLOOR OR ROOF ASSEMBLY.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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LICENSED ARCHITECT AR-985148

07-29-24

MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
405 S WASHINGTON ST.
MOSCOW, ID 83843
(208) 882-3520

STRUCTURAL ENGINEER
LOCHSA ENGINEERING
201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
8727 W. ARDENE, SUITE 102
BOISE, IDAHO 83709
(208) 345-7127

MRK	DATE	DESCRIPTION

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DATE:	07/24/2024
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CHECKED BY:	MG

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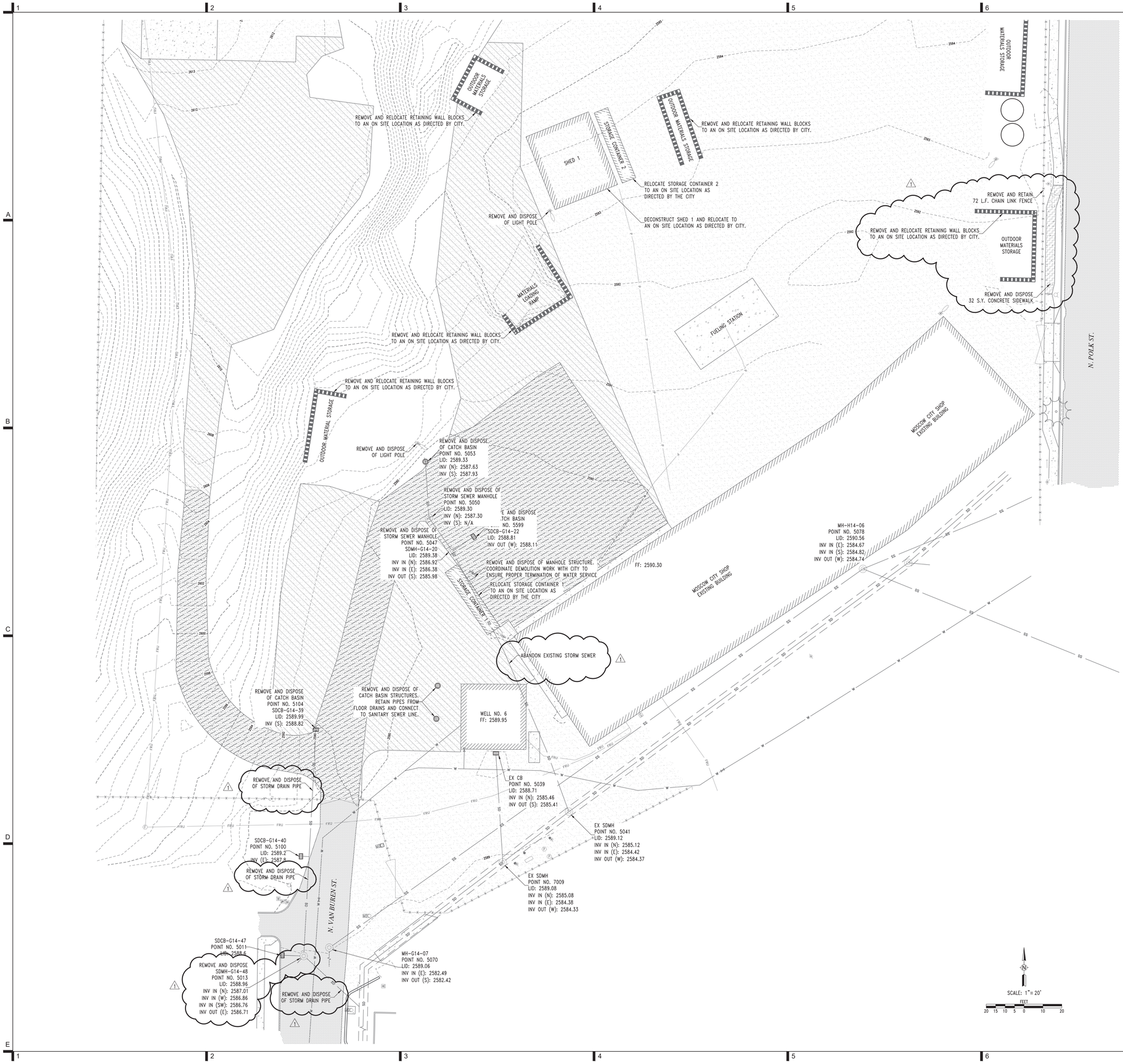
LIFE SAFETY PLANS

SHEET NO.

0.20

7/29/2024 11:48:11 AM C:\Users\ryherb\Documents\24000-01 Moscow City Shop_Central_V23_RyherBetinap.rvt



LEGEND

- MANHOLE
- CATCH BASIN
- EXISTING FIRE HYDRANT
- WATER METER
- WATER VALVE
- GAS METER
- FRANCHISE UTILITY PEDESTAL(S)
- UTILITY POLE
- LIGHT POLE
- WATER LINE
- SANITARY SEWER LINE
- STORM DRAIN LINE
- GAS, POWER, TELECOMMUNICATIONS – 1' SEPARATION BETWEEN SERVICES, 30" BELOW GRADE, 6" SAND BED
- GAS LINE
- EXISTING FENCE
- WALL – AS DESCRIBED
- STANDING CURB (TYPE A)
- CONCRETE PAVING – TO BE RETAINED
- CONCRETE PAVING – TO BE DEMOLISHED
- ASPHALT PAVING – TO BE RETAINED
- ASPHALT PAVING – TO BE DEMOLISHED
- GRAVEL SURFACE – TO BE RETAINED
- GRAVEL SURFACE – TO BE DEMOLISHED

APPROVAL AREA

Know what's **below.** **Call** before you dig.

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(208) 384-0585

ELECTRICAL ENGINEER
CATOR RUMA
420 S. ORCHARD ST.
BOISE, IDAHO 83705
(208) 343-3663

MRK	DATE	DESCRIPTION
1	9/27/2024	PLAN REVIEW COMMENTS

JOB NO.:	24000.01
DATE:	09/27/2024
DRAWN BY:	NN
CHECKED BY:	NN/SB

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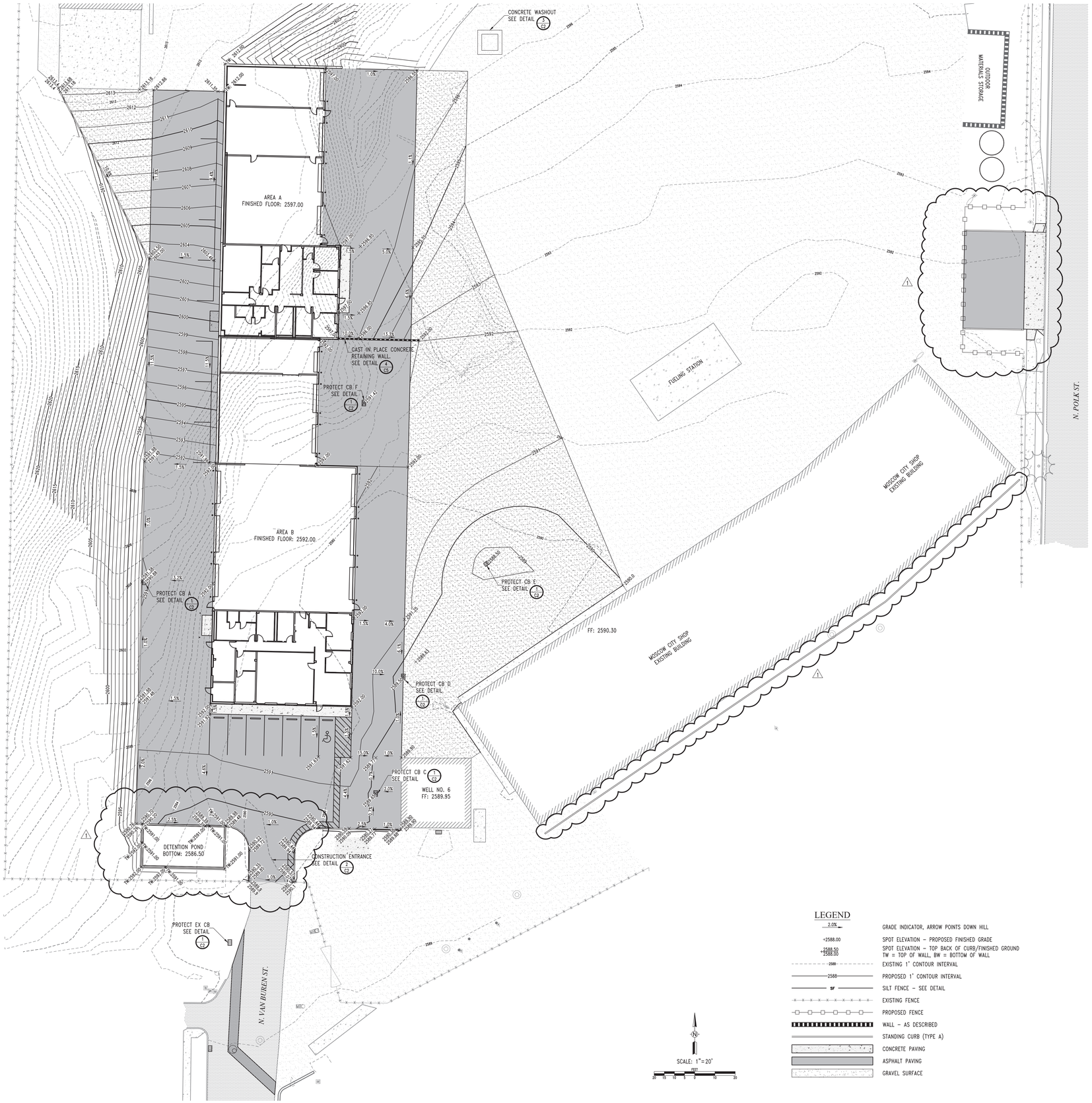
DEMOLITION PLAN

SHEET NO.

C1



LEGEND

2.0%	GRADE INDICATOR, ARROW POINTS DOWN HILL
+2588.00	SPOT ELEVATION – PROPOSED FINISHED GRADE
+2588.50 / 2588.00	SPOT ELEVATION – TOP BACK OF CURB/FINISHED GROUND; TW = TOP OF WALL, BW = BOTTOM OF WALL
2588	EXISTING 1' CONTOUR INTERVAL
2588	PROPOSED 1' CONTOUR INTERVAL
SF	SILT FENCE – SEE DETAIL
	EXISTING FENCE
	PROPOSED FENCE
	WALL – AS DESCRIBED
	STANDING CURB (TYPE A)
	CONCRETE PAVING
	ASPHALT PAVING
	GRAVEL SURFACE

SCALE: 1"=20'

APPROVAL AREA

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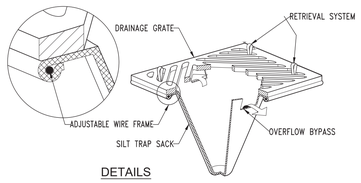
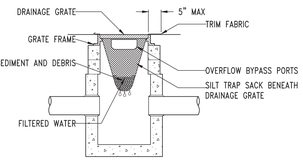
EROSION CONTROL AND GRADING PLAN

SHEET NO.

C2



DETAILS



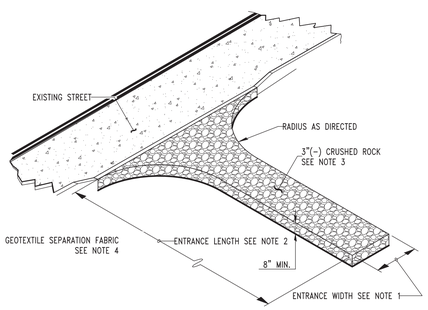
SECTION

NOT TO SCALE

NOTES:
1. SIZE AND SHAPE OF THE SILT TRAP SACK TO FIT THE STORM STRUCTURE IT WILL SERVICE, (RECTANGULAR OR ROUND).
2. THE SILT TRAP SACK SHALL HAVE A BUILT-IN HIGH-FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
3. THE SILT TRAP SACK ASSEMBLY MUST ALLOW REMOVAL WITHOUT SPILLING THE COLLECTED MATERIAL.
4. EMPTY SILT TRAP SACK AND DISPOSE OF SEDIMENT AND DEBRIS BEFORE THE SACK IS HALF-FULL.
5. ENSURE THE SILT TRAP SACK ASSEMBLY DOES NOT SPILL OR FALL INTO THE STORM STRUCTURE. IF SEDIMENT IS SPILLED INTO THE STORM STRUCTURE, REMOVE THE SPILLED MATERIAL BY SUCTION HOSE OR OTHER APPROVED METHOD.
6. GEOTEXTILE UNDER INLETS SHOULD NOT BE USED. THEY CAN CAUSE FLOODING AND ARE DIFFICULT TO REMOVE WHEN FILLED WITH SEDIMENT.

INLET PROTECTION

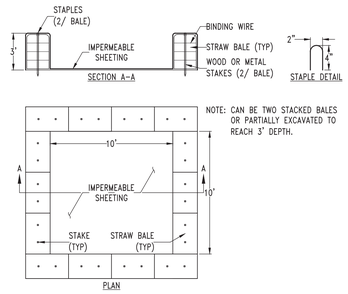
NTS (1 / C2)



NOTES:
1. ENTRY WIDTH SHALL BE 12' MINIMUM.
2. ENTRY LENGTH SHALL BE 20' MINIMUM FOR RESIDENTIAL AND 50' FOR COMMERCIAL.
3. INSTALL 8" THICK OF 3"(-) CRUSHED ROCK FOR THE FULL WIDTH OF THE ENTRANCE.
4. SEPARATION GEOTEXTILE SHALL BE PLACED UNDER CRUSHED ROCK ON PROJECTS 1 ACRE AND GREATER IN SIZE. NOT REQUIRED ON SINGLE FAMILY RESIDENCE LOT.
5. CONSTRUCTION ENTRANCES SHOULD BE INSPECTED REGULARLY FOR SIGNS OF THINNING AREAS WHERE MUD BEGINS TO SHOW THROUGH. ADD GRAVEL PERIODICALLY TO MAINTAIN INTEGRITY OF THE PAD WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY.

CONSTRUCTION ENTRANCE

NTS (2 / C2)

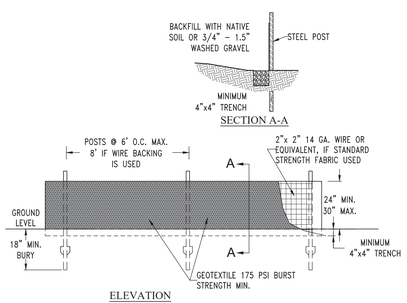


CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50' AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4" OF FREEBOARD. TYPICAL DIMENSIONS ARE 10'x10'x3' DEEP.
3. PREPARE SOIL BASE FREE OF ROCK OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75% FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NO REUSE PLASTIC LINER. WET-VACUUM STORED STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORM, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

ONSITE CONCRETE WASHOUT STRUCTURE

NTS (3 / C2)



SILT FENCE NOTES:
1. ATTACH WIRE MESH TO POSTS WITH APPROVED METAL DEVICES.
2. ATTACH GEOTEXTILE FABRIC TO THE UP-SLOPE SIDE OF THE POSTS AND WIRE MESH TOP AND BOTTOM WITH APPROVED METAL FASTENERS @ 24" O.C. MAXIMUM SPACING.
3. GEOTEXTILE FABRIC TOP EDGE SHALL BE 24" MINIMUM ABOVE GROUND.
4. OVERLAP VERTICAL SILT FENCE SPLICES 8' MINIMUM (POST TO POST). SEE ELEVATION, ABOVE. AVOID SUMPS AND OTHER LOW POINTS.

SILT FENCE

NTS (4 / C2)

BASIS OF ELEVATION

THE BASIS OF ELEVATION FOR THIS SURVEY IS NAVD88, ESTABLISHED BY GPS. THE BASE POSITION BEING CORRECTED BY NGS ONLINE POSITIONING USER SERVICE (OPUS).

GRADING NOTES

ESTIMATED GRADING QUANTITIES

CUT VOLUME = 12,392 C.Y.

FILL VOLUME = 480 C.Y. (ASSUMES 22% SHRINKAGE DUE TO COMPACTION)

1. THIS PLAN IS ACCURATE FOR GRADING AND THE RELATED EROSION AND SEDIMENT CONTROL PURPOSES ONLY.
2. ALL AREAS TO RECEIVE EMBANKMENT (FILL) SHALL FIRST BE CLEARED AND GRUBBED.
3. ALL TOPSOIL SHALL BE EXCAVATED AND REMOVED FROM EMBANKMENT (FILL) AREAS. EXCAVATED TOPSOIL MATERIAL MAY BE STOCKPILED ON-SITE FOR USE AS LANDSCAPING MATERIAL - PROVIDE SILT FENCE AROUND STOCKPILES.
4. BORROW FOR EMBANKMENT (FILL) SHALL CONSIST OF NATIVE PALOUSE LOESS OR CLAY, OR ANY APPROVED GRAVELLY MATERIAL. ALL BORROW SHALL BE FREE OF ROOTS, BARK, TOPSOIL, ORGANIC OR OTHER DELETERIOUS MATERIALS.
5. COMPACT ALL EMBANKMENT (FILL) TO 95% MINIMUM OF THE PROCTOR VALUE DENSITY DETERMINED BY THE AASHTO T-99 METHOD. THE METHOD FOR CONSTRUCTING EMBANKMENT (FILL) SHALL BE SUCH THAT 95% MINIMUM DENSITIES ARE ACHIEVED THROUGHOUT.
6. WHERE EMBANKMENT (FILL) IS PLACED ON AN EXISTING SLOPE 4:1 OR STEEPER THE EXISTING SLOPE SHALL BE BENCHED HORIZONTAL PRIOR TO PLACING BORROW. THE WIDTH OF THE BENCHES SHALL NOT BE LESS THAN FIVE (5) FEET IN WIDTH.
7. COMPACTION TESTING SHALL BE PROVIDED BY THE OWNER. COMPACTION TEST LOCATIONS SHALL BE RECORDED ON A SITE PLAN SHOWING TEST NUMBER, DATE, AND ELEVATION OF EACH TEST. A REPORT OF THESE TESTS SHALL BE PROVIDED TO THE OWNERS, ENGINEER, CONTRACTOR, AND CITY. THERE SHALL BE A SUFFICIENT NUMBER OF TESTS TO ASSURE THAT 95% MINIMUM COMPACTION HAS BEEN ACHIEVED THROUGHOUT ALL EMBANKMENT (FILL) AREAS.
8. OWNER IS RESPONSIBLE TO SECURE ALL NECESSARY AUTHORIZATION FOR GRADING ACTIVITIES REQUIRED ON ADJACENT PROPERTIES.
9. A CITY OF MOSCOW GRADING PERMIT IS REQUIRED.
10. COMPLIANCE WITH NPDES PHASE II IS REQUIRED

EROSION CONTROL NOTES

1. EROSION CONTROL MEASURES AS SET FORTH IN THIS PLAN SHALL APPLY TO ALL CONSTRUCTION ACTIVITY RELATIVE TO THIS SITE, INCLUDING BUT NOT LIMITED TO, ALL EARTHWORK AND INSTALLATION OF PUBLIC IMPROVEMENTS.
2. SHOULD THE CITY ENGINEER DETERMINE THAT THE EROSION CONTROL MEASURES INSTALLED AS INDICATED ON THIS EROSION CONTROL PLAN ARE INADEQUATE AND/OR INEFFECTIVE, THE CITY ENGINEER SHALL DIRECT THE IMPLEMENTATION OF ADDITIONAL EROSION CONTROL MEASURES (AT THE EXPENSE OF THE DEVELOPER) TO ALLEVIATE INADEQUACIES.
3. THE OWNER AND/OR DEVELOPER OF THE PROPERTY IS ULTIMATELY RESPONSIBLE FOR THE FURNISHING, INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES NECESSARY FOR FULL COMPLIANCE WITH MOSCOW CITY CODE.

   OWNERS AND OPERATORS OF CONSTRUCTION PROJECTS THAT: 1) DISTURB ONE OR MORE ACRES (OR ARE PART OF A COMMON PLAN OF DEVELOPMENT THAT DISTURBS ONE OR MORE ACRES) AND 2) DISCHARGE STORM WATER, MUST OBTAIN COVERAGE UNDER THE STORM WATER CONSTRUCTION GENERAL PERMIT FROM THE IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY. APPLICANTS MUST USE DEQ'S IPDES E-PERMITTING SYSTEM TO ELECTRONICALLY PREPARE AND SUBMIT THE NOI FOR COVERAGE UNDER THIS PERMIT UNLESS APPLICANT RECEIVES AN ELECTRONIC REPORTING WAIVER FROM DEQ.

   THE IPDES E-PERMITTING SYSTEM MAY BE ACCESSED AT:
   HTTPS://WWW2.DEQ.IDAHO.GOV/WATER/IPDES

PRIOR TO CONSTRUCTION ACTIVITIES:
1. INFORM CITY, AND OTHER INSPECTORS, OF WORK SCHEDULED FOR WEEKENDS OR HOLIDAY.
2. CONSTRUCT GRAVEL PADS AT ENTRANCES TO SITE, AS INDICATED ON PLAN AND WHEREVER CONSTRUCTION VEHICLES WILL BE EXITING SITE.
3. TEMPORARY CONSTRUCTION BMPS SHALL BE INSPECTED BY THE CITY'S ENVIRONMENTAL COMPLIANCE INSPECTOR BEFORE GRADING CAN BEGIN. PLEASE CALL 208-883-7114 TO SCHEDULE INSPECTION.

DURING CONSTRUCTION ACTIVITIES AND WINTER SHUTDOWN, AS NECESSARY:
1. SUSPEND ALL EXCAVATION AND EMBANKMENT WORK DURING RAIN STORMS TO MINIMIZE EROSION AND SEDIMENT IMPACTS. MONITOR SITE CONDITIONS DURING AND FOLLOWING RAIN EVENTS FOR EROSION AND SEDIMENT CONTROL PROBLEMS - INSTALL CORRECTIVE MEASURES AND INITIATE CLEANUP MEASURES AS REQUIRED.
2. SPRAY WATER ON DISTURBED AREAS TO CONTROL DUST EROSION DURING DRY SEASON.
3. CONSTRUCT STORM WATER FACILITIES AS EARLY AS POSSIBLE DURING CONSTRUCTION. PROTECT NEW STORM WATER FACILITIES SIMILAR TO EXISTING.
4. SEED AND MULCH ALL DISTURBED AREAS.
5. ALL GRADED AREAS, FINISHED OR UNFINISHED, SHALL HAVE ACCEPTABLE EROSION CONTROL MEASURES APPLIED PRIOR TO OCTOBER 1 - NO EXCEPTIONS WITHOUT PRIOR WRITTEN CITY APPROVAL. ACCEPTABLE EROSION CONTROL MEASURES SHALL BE CONSIDERED ONE OF THE FOLLOWING:
   a. HYDRAULICALLY APPLIED MIXTURE OF MULCH AND TACKIFIER - OF A TYPE AND APPLICATION RATE RECOMMENDED FOR MOSCOW AREA OPEN SOIL EROSION PROTECTION - SEED TO BE INCLUDED IF AREA IS FINISH GRADED.
   b. AREAS SLOPING LESS THAN 4:1 TILLED WITH A FARM IMPLEMENT SUCH AS A DISC, PLOW OR SPRING TOOTH THAT RESULTS IN COARSE SURFACE TEXTURE.
   c. STRAW SPREAD AND TRACKED INTO THE SURFACE. TRACK PERPENDICULAR TO THE DIRECTION OF FLOW.
   d. EROSION CONTROL BLANKETS - INCLUDING AN APPROVED GRASS SEED/FERTILIZER MIX IF AREA IS FINISH GRADED.
   e. OTHER METHODS AS SPECIFICALLY APPROVED BY THE CITY ENGINEER.
6. ALL SLOPES 4:1 OR STEEPER SHALL BE CAT-TRACKED PERPENDICULAR TO THE DIRECTION OF FLOW PRIOR TO OCTOBER 1 - IN ADDITION TO ONE OF THE ACCEPTABLE EROSION CONTROL MEASURES SET FORTH IN NO. 5 ABOVE.
7. SEED MIXTURES SHALL INCLUDE FERTILIZERS OF THE TYPE AND RATE OF APPLICATION AS RECOMMENDED BY GENERALLY ACCEPTED AREA PRACTICES.

UPON COMPLETION OF CONSTRUCTION ACTIVITIES:
1. PERIODIC MAINTENANCE OF EROSION CONTROL MEASURES IS REQUIRED UNTIL PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL AND SUFFICIENT VEGETATION IS ESTABLISHED. SUCH MAINTENANCE INCLUDES, BUT IS NOT LIMITED TO: CLEANING OF CATCH BASINS AND STORM SEWER MANHOLES, MAINTAINING SILT FENCING, REMOVAL OF ACCUMULATED SOIL, AND STREET CLEANING. A TYPICAL SCHEDULE FOR SUCH MAINTENANCE WOULD BE AT LEAST ONCE PER MONTH AND AFTER ALL SIGNIFICANT STORM EVENTS.

UPON ESTABLISHMENT OF SUFFICIENT VEGETATION AND PERMANENT DRAINAGE FACILITIES OPERATION:
1. REMOVE ALL EROSION CONTROL MEASURES UPON RECEIPT OF APPROVAL FOR SUCH REMOVAL FROM CITY ENGINEER. CLEAR STREETS AND SIDEWALKS OF ACCUMULATED SILT, MUD, AND DEBRIS.
2. CONTINUED EROSION CONTROL IS THE PROPERTY OWNER'S RESPONSIBILITY AFTER EROSION CONTROL MEASURES ARE REMOVED, AND RECEIPT OF APPROVAL FROM THE CITY ENGINEER.

APPROVAL AREA

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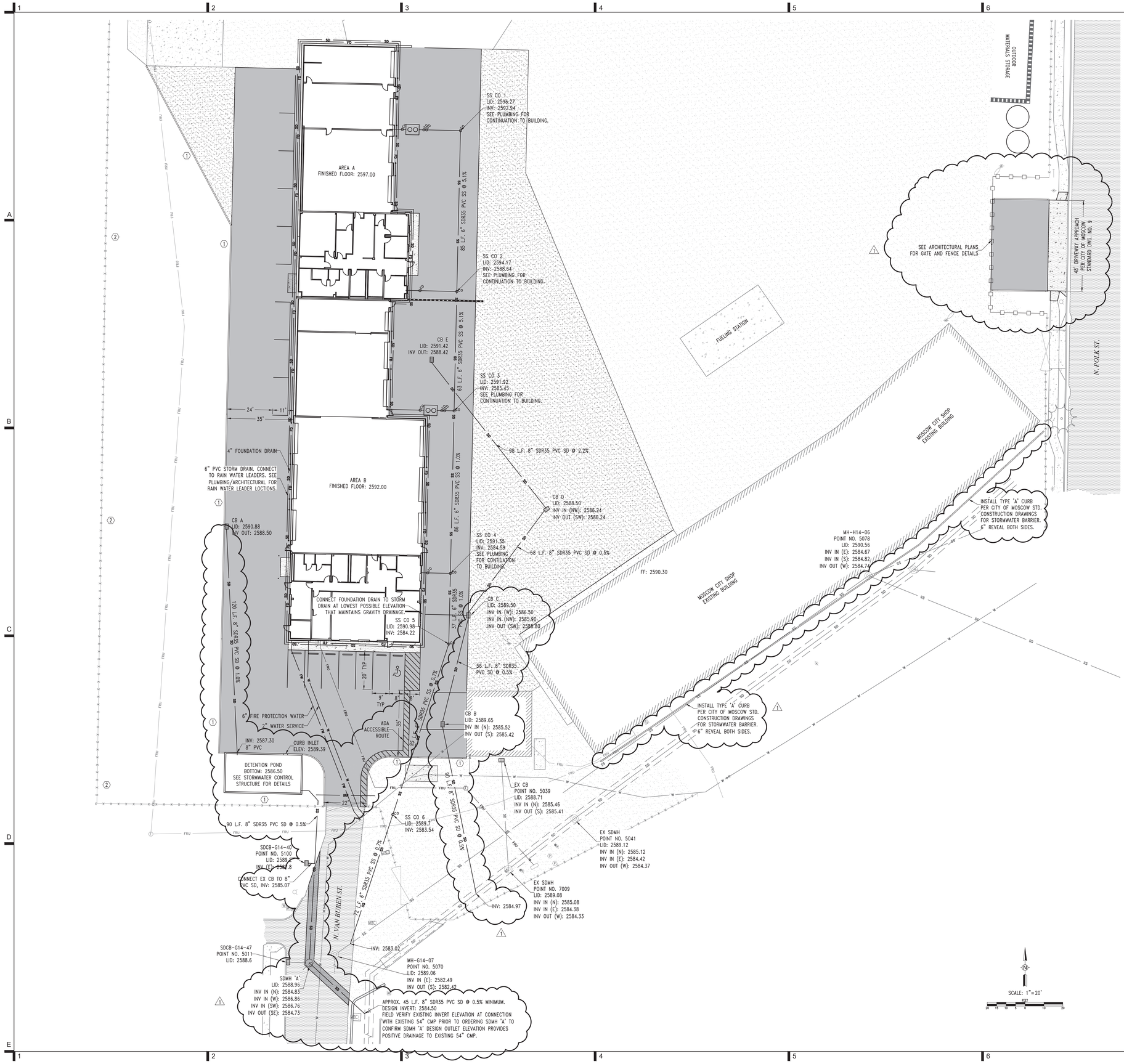
EROSION CONTROL AND GRADING NOTES AND DETAILS

SHEET NO.

C3



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LEGEND

- MANHOLE
- CATCH BASIN
- CLEAN OUT
- EXISTING FIRE HYDRANT
- WATER METER
- WATER VALVE
- NATURAL GAS METER
- FRANCHISE UTILITY PEDESTAL(S)
- UTILITY POLE
- LIGHT POLE
- W — WATER LINE
- IRR — IRRIGATION SLEEVE
- FW — FIRE PROTECTION WATER LINE
- SS — SANITARY SEWER LINE
- SD — STORM DRAIN LINE
- FD — FOUNDATION DRAIN LINE
- FRU — GAS, POWER, TELECOMMUNICATIONS – 1' SEPARATION BETWEEN SERVICES, 30" BELOW GRADE, 6" SAND BED
- G — EXISTING GAS LINE
- EXISTING FENCE
- PROPOSED FENCE
- WALL – AS DESCRIBED
- STANDING CURB (TYPE A)
- CONCRETE PAVING
- ASPHALT PAVING
- GRAVEL SURFACE

KEY NOTES

1. PROVIDE 3' LANDSCAPE BUFFER CONTAINING 1 TREE EVERY 40' AND SHRUB EVERY 6'. PROVIDE DRIP IRRIGATION SYSTEM FOR LANDSCAPE BUFFER. SEE MOSCOW CITY CODE, TITLE 4, SEC. 6-2.F.3.a FOR DETAILS.
2. OWNER TO PROVIDE TYPE A BUFFER YARD PER CITY OF MOSCOW CODE, TITLE 04, SEC. 6-5 BUFFER YARD REQUIREMENTS.

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STAMP:

PROFESSIONAL ENGINEER LICENSED 17473 09-26-2024 STATE OF IDAHO Nuri W. Nimmer

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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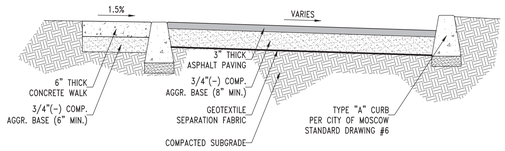
MRK	DATE	DESCRIPTION
1	9/27/2024	PLAN REVIEW COMMENTS

JOB NO.: **24000.01**
DATE: **09/27/2024**
DRAWN BY: **NN**
CHECKED BY: **NN/SB**

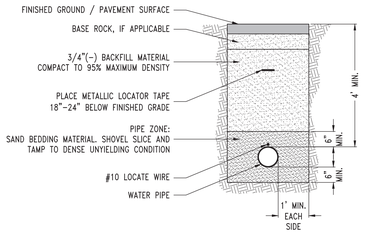
PHASE: **PERMIT SET**

UTILITY LAYOUT PLAN

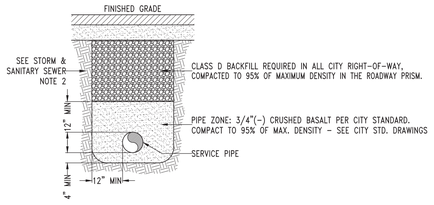
SHEET NO.
C4



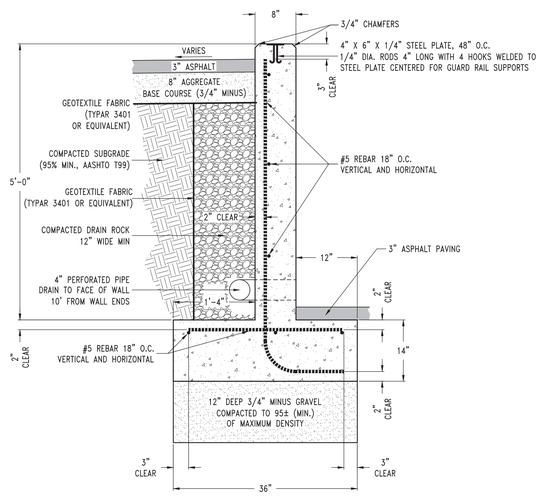
PARKING LOT PAVING
TYPICAL SECTION NTS 1 C5



WATER LINE TRENCH
TYPICAL SECTION NTS 2 C5



STORM & SANITARY SEWER TRENCH
TYPICAL SECTION NTS 3 C5



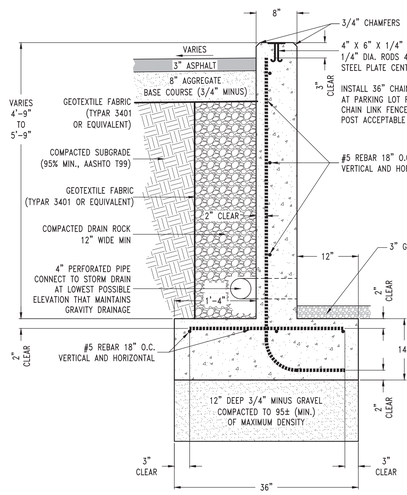
CIP CONCRETE RETAINING WALL
TYPICAL SECTION NTS 4 C5

GENERAL NOTES

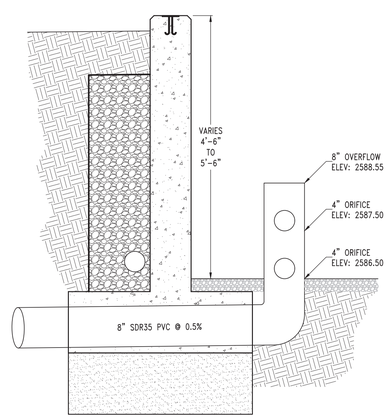
1. ALL WORK TO BE IN ACCORDANCE WITH CITY OF MOSCOW STANDARDS.
2. UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS ARE NOT GUARANTEED ACCURATE OR COMPLETE. CALL 811 FOR UTILITY LOCATES BEFORE BEGINNING CONSTRUCTION.
3. ALL CONSTRUCTION MUST COMPLY WITH STATE OF IDAHO STANDARDS FOR DRINKING WATER SYSTEMS AND WITH THE STATE OF IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY CRITERIA FOR SEWAGE WORKS DESIGN.
4. THE OWNER AND/OR OWNER'S AGENT IS RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL ORDINANCES, POLICIES AND LAWS. AN APPROVED EROSION CONTROL PLAN IS PROVIDED AS PART OF THESE CONSTRUCTION DRAWINGS.
5. MAXIMUM DENSITY AND OPTIMUM MOISTURE CONTENT WILL BE DETERMINED USING AASHTO T99 EXCEPT AS NOTED. IN PLACE DENSITY AND MOISTURE CONTENT SHALL BE DETERMINED BY ASTM D 2922 (NUCLEAR DENSOMETER).

PARKING LOT & DRIVE AISLE

1. ALL BACKFILL AND SUBGRADE IN PARKING LOT AND DRIVE AISLE SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
2. SEE TYPICAL SECTION 1 THIS SHEET. PLACE TYPE 'A' CURB. (SEE DWG #6 CITY OF MOSCOW STANDARD DRAWINGS)
3. ADJUST ALL MANHOLES AND WATER VALVE BOXES TO FINISHED GRADE PRIOR TO PAVING.
4. ALL OFFSET DIMENSIONS ARE FROM INDICATED STATION LINES UNLESS OTHERWISE NOTED.
5. ALL CUT OR FILL SLOPES SHALL BE MULCHED TO PREVENT EROSION. SEE EROSION CONTROL PLAN, SHEET C3.



DETENTION POND CONCRETE WALLS
TYPICAL SECTION NTS 5 C5



STORMWATER CONTROL STRUCTURE
TYPICAL SECTION NTS 6 C5

1

STORM & SANITARY SEWER

1. THE CITY OF MOSCOW IS OPERATOR OF WATER AND SEWER FACILITIES SERVING THIS DEVELOPMENT.
2. ALL TRENCH AND FOUNDATION EXCAVATIONS GREATER THAN FOUR FEET DEEP SHALL HAVE SLOPES OF 1.5:1 (HORIZONTAL TO VERTICAL) OR, BRACING OR SHORING SHALL BE PROVIDED IN ACCORDANCE WITH OSHA AND OTHER APPROPRIATE LOCAL CODES.
3. ALL SATURATED, LOOSE, OR DISTURBED SOIL SHALL BE REMOVED FROM THE BOTTOM OF UTILITY TRENCHES PRIOR TO PLACEMENT OF PIPE BEDDING. PIPE BEDDING AND TRENCH BACKFILL SHALL BE PLACED IN ACCORDANCE WITH CITY OF MOSCOW STANDARDS.
4. SEWER STUBS SHALL BE INSTALLED AT A MINIMUM SLOPE OF 1/4" PER FOOT, AND CONNECTED TO MAINS USING MANUFACTURED WYES. SEE CITY OF MOSCOW STANDARD DRAWING #28 FOR DETAILS.
5. SANITARY SEWER STUBS SHALL BE TERMINATED BY PROVIDING AN ELBOW AND CAPPED RISER TO 12" MINIMUM ABOVE FINISHED GRADE. TERMINATE AT PROPERTY LINE. MATERIAL SHALL BE GREEN (SDR 35) PVC. WRAP 'SEWER' LOCATE TAPE ON ENDS; TAPE FURNISHED BY CONTRACTOR.
6. FOUNDATION DRAIN STUBS SHALL BE TERMINATED BY PROVIDING AN ELBOW & CAPPED RISER TO 12" MINIMUM ABOVE GRADE. TERMINATE AT PROPERTY LINE. MATERIAL SHALL BE WHITE PVC. WRAP 'STORM SEWER' LOCATE TAPE ON ENDS; TAPE FURNISHED BY CONTRACTOR.
7. ALL STORM AND SANITARY SEWER LINES SHALL HAVE 2.0' MINIMUM COVER.
8. USE ECCENTRIC CONES EXCEPT WHEN SPECIFICALLY APPROVED BY THE ENGINEER. PLACE THE CONE ENTRY HOLE ABOVE THE OUTLET PIPE. FLAT TOPS ARE NOT ALLOWED WITHOUT APPROVAL OF THE ENGINEER.
9. SANITARY SEWER PIPE (SS): ALL SS PIPE TO BE SDR 35, PVC (GREEN), UNLESS OTHERWISE NOTED.
10. STORM SEWER PIPE (SD): ALL SD PIPE TO BE SDR 35, PVC (WHITE), UNLESS OTHERWISE NOTED.

WATER

1. WATER SERVICES SHALL BE DUG AND INSTALLED BY CONTRACTOR AT OWNER'S EXPENSE. CITY TO FURNISH ALL WATER SERVICE MATERIALS AND PERFORM TAPS TO EXISTING MAINS ONLY. CONTRACTOR TO MAKE ALL TAPS TO NEW PIPE OWNED BY CONTRACTOR.
2. ALL WATER SERVICES SHALL BE INSPECTED BY THE CITY PRIOR TO BACKFILLING TRENCHES.
3. INSTALL "LOCATE" TAPE 18"- 24" BELOW FINISHED GRADE AND #10 LOCATE WIRE DIRECTLY ABOVE PIPE IN PVC WATER LINE TRENCH. REFER TO DETAIL, THIS SHEET.
4. TESTING PERFORMED BY CONTRACTOR. HYDROSTATIC TESTING AND DISINFECTION OF WATER MAINS SHALL BE DONE IN ACCORDANCE WITH CITY OF MOSCOW STANDARDS. THE CONTRACTOR SHALL NOTIFY CITY OF PIPE TESTING AT LEAST 48 HOURS IN ADVANCE OF THE TIME ACTUAL TESTS SHALL BE PERFORMED.
5. BACK FLOW DEVICES SHALL BE PROVIDED PER CITY CODES AND POLICIES.
6. FIRE HYDRANTS SHALL BE PLACED WITH THE STEAMER PORT FACING THE STREET OR DRIVEWAY AS APPROPRIATE AND SHALL BE MAINTAINED CLEAR AND ACCESSIBLE FOR FIRE PROTECTION DURING CONSTRUCTION. NO OBSTRUCTIONS SHALL BE PLACED WITHIN THREE FEET OF THE FIRE HYDRANT.
7. WATER PIPE: ALL WATER MAINS TO BE C 900 CLASS 150 PVC, UNLESS OTHERWISE NOTED.
8. ALL WATER SERVICE MATERIALS SHALL BE IRON PIPE SIZE (IPS).
9. WATER MAIN DISINFECTION:
   A. NEW WATER MAIN DISINFECTION SHALL BE CONDUCTED IN ACCORDANCE WITH ANSI/AWWA C651 AND SHALL CONFORM TO ALL STATE OF IDAHO AND CITY OF MOSCOW STANDARDS FOR WATER MAIN DISINFECTION.
   B. MINIMUM CHLORINATION SOLUTION SHALL BE 25 M\L.
   C. MINIMUM CHLORINATION CONTACT TIME SHALL BE 24 HOURS WITH A RESIDUAL CHLORINE SOLUTION OF 10 MG\L.

SEPARATION OF POTABLE, NON-POTABLE AND RAW WATER PIPELINES

1. RAW WATER PIPELINES MUST BE PROTECTED FROM CONTAMINATION FROM NON-POTABLE PIPELINES, AND MUST NOT CONTAMINATE POTABLE PIPELINES. THEY SHALL THEREFORE MEET EQUIVALENT SEPARATION DISTANCES SHOWN BELOW FROM EITHER POTABLE OR NON-POTABLE PIPELINES.

A. PARALLEL INSTALLATION REQUIREMENTS.

i. POTABLE MAINS IN RELATION TO NON-POTABLE MAINS
1. GREATER THAN TEN (10) FEET SEPARATION: NO ADDITIONAL REQUIREMENTS.
2. TEN (10) FEET TO SIX (6) FEET SEPARATION: SEPARATE TRENCHES, WITH THE BOTTOM OF THE POTABLE MAIN ABOVE THE TOP OF THE NO-POTABLE MAIN, AND NON-POTABLE MAIN CONSTRUCTED WITH POTABLE WATER CLASS PIPE.
3. LESS THAN SIX (6) FEET SEPARATION: DESIGN ENGINEER TO SUBMIT DATA TO DEQ FOR REVIEW AND APPROVAL SHOWING THAT THIS INSTALLATION WILL PROTECT PUBLIC HEATH AND THE ENVIRONMENT, NON-POTABLE MAIN TO BE CONSTRUCTED OF POTABLE WATER CLASS PIPE, AND WITH THE BOTTOM THE POTABLE MAIN ABOVE THE TOP OF THE NON-POTABLE MAIN.
4. NON-POTABLE MAINS ARE PROHIBITED FROM BEING LOCATED IN THE SAME TRENCH AS POTABLE MAIN.
5. PRESSURE WASTEWATER MAINS OR OTHER PRESSURIZED MAINS OR LINES CONTAINING NON-POTABLE FLUIDS SHALL BE NO CLOSER HORIZONTALLY THAN TEN (10) FEET FROM POTABLE MAINS.

ii. NEW POTABLE SERVICES IN RELATION TO NON-POTABLE SERVICES, NEW POTABLE SERVICES IN RELATION TO NON-POTABLE MAIN, AND NEW NON-POTABLE SERVICES IN RELATION TO POTABLE MAINS.
1. GREATER THAN SIX (6) FEET SEPARATION: NO ADDITIONAL REQUIREMENTS BASED ON SEPARATION DISTANCE.
2. LESS THAN SIX (6) FEET SEPARATION: DESIGN ENGINEER TO SUBMIT DATA THAT THIS INSTALLATION WILL PROTECT PUBLIC HEALTH AND THE ENVIRONMENT AND NON-POTABLE SERVICE CONSTRUCTED WITH POTABLE WATER CLASS PIPE.
3. NEW POTABLE SERVICES ARE PROHIBITED FROM BEING LOCATED IN THE SAME TRENCH AS NON-POTABLE WATER MAINS OR SERVICES.

B. REQUIREMENTS FOR POTABLE WATER MAINS OR SERVICES CROSSING NON-POTABLE WATER MAINS OR SERVICES.

i. IF THEIR IS EIGHTEEN (18) INCHES OR MORE VERTICAL SEPARATION WITH THE POTABLE WATER PIPELINE ABOVE THE NON-POTABLE PIPELINE, THEN THE POTABLE PIPELINE JOINTS MUST BE AS FAR AS POSSIBLE FROM THE NON-POTABLE WATER PIPELINE.

ii. IF THERE IS EIGHTEEN (18) INCHES OR MORE VERTICAL SEPARATION WITH THE POTABLE WATER PIPELINE BELOW THE NON-POTABLE PIPELINE, THEN THE POTABLE PIPELINE JOINTS MUST BE AS FAR AS POSSIBLE FROM THE NON-POTABLE PIPELINE, AND THE NON-POTABLE PIPELINE MUST BE SUPPORTED THROUGH THE CROSSING TO PREVENT SETTLING.

iii. LESS THAN EIGHTEEN (18) INCHES VERTICAL SEPARATION:
1. POTABLE PIPELINE JOINTS TO BE AS FAR AS POSSIBLE FROM THE ON-POTABLE PIPELINE; AND EITHER:
   a. NON-POTABLE PIPELINE CONSTRUCTED WITH POTABLE WATER CLASS PIPE FOR A MINIMUM OF TEN (10) FEET EITHER SIDE OF POTABLE PIPELINE WITH A SINGLE TWENTY (20) FOOT SECTION OF POTABLE WATER CLASS PIPE CENTERED ON THE CROSSING; OR
   b. SLEEVE NON-POTABLE OR POTABLE PIPELINE WITH POTABLE WATER CLASS PIPE FOR TEN (10) FEET EITHER SIDE OF CROSSING. USE OF HYDRAULIC CEMENTITIOUS MATERIALS SUCH AS CONCRETE, CONTROLLED DENSITY FILL, AND CONCRETE SLURRY FOR ENCASEMENT IS NOT ALLOWED AS A SUBSTITUTE FOR SLEEVING.
2. IF POTABLE PIPELINE IS BELOW NON-POTABLE PIPELINE, THE NON-POTABLE PIPELINE MUST ALSO BE SUPPORTED THROUGH THE CROSSING TO PREVENT SETTLING.

iv. PRESSURE WASTEWATER MAINS OR OTHER PRESSURIZED MAINS OR LINES CONTAINING NON-POTABLE FLUIDS SHALL BE NO CLOSER VERTICALLY THAN EIGHTEEN (18) INCHES FROM POTABLE MAINS.

C. EXISTING POTABLE SERVICES IN RELATION TO NEW NON-POTABLE MAINS, EXISTING NON-POTABLE SERVICES IN RELATION TO NEW POTABLE MAINS, AND EXISTING POTABLE SERVICES IN RELATION TO NEW NON-POTABLE SERVICES SHALL MEET THE REQUIREMENTS OF IDAPA 58.01.08 SUBSECTION 542.07.b., WHERE PRACTICAL BASED ON COST, CONSTRUCTION FACTORS, AND PUBLIC HEALTH SIGNIFICANCE. IF IDAHO DEQ DETERMINES THAT THERE ARE SIGNIFICANT HEALTH CONCERNS WITH THESE SERVICES, SUCH AS WHERE A LARGE EXISTING SERVICE SERVES AN APARTMENT BUILDING OR A SHOPPING CENTER, THEN THE DESIGN SHALL CONFORM WITH IDAPA 58.01.08 SUBSECTION 542.07.b.

APPROVAL AREA

811 Know what's below. Call before you dig.

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ARCHITECTURE | PLANNING
INTERIOR DESIGN
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PROFESSIONAL ENGINEER LICENSED Nuri W. Nimmer 17473 09-26-2024 STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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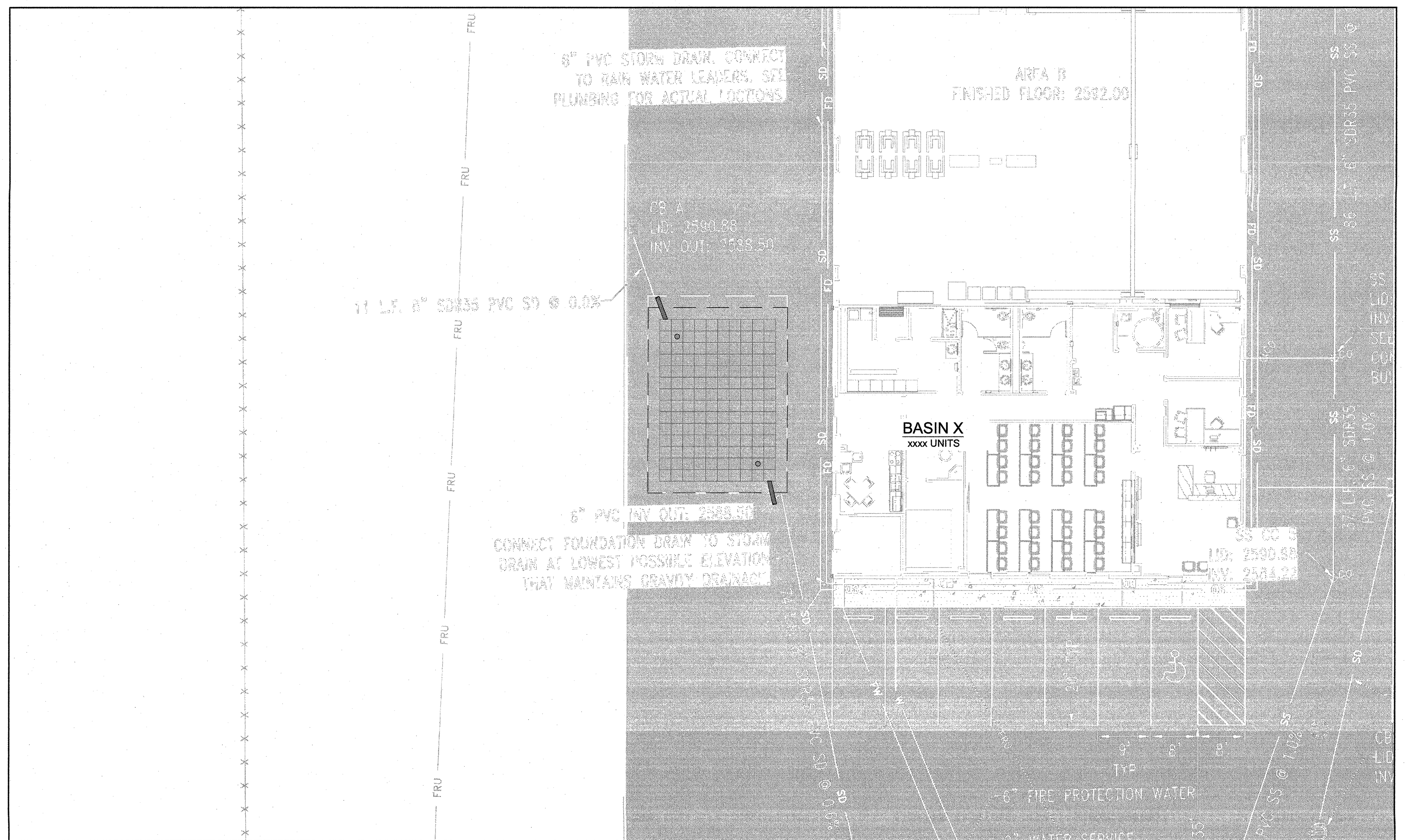
MRK	DATE	DESCRIPTION
1	9/27/2024	PLAN REVIEW COMMENTS

JOB NO.: 24000.01
DATE: 09/27/2024
DRAWN BY: NN
CHECKED BY: NN/SB

PHASE: PERMIT SET

GENERAL NOTES AND DETAILS

SHEET NO.
C5



DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY: FERGUSON WATERWORKS

R-Tank — MODULAR STORMWATER STORAGE SYSTEM — 0 / 30' / 60'

SYSTEM OVERLAY
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB — DATE: 07/05/2024 — SHEET NO.: 1 of 6

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO FERGUSON WATERWORKS BY THE DESIGN ENGINEER, CONTRACTOR, OR OTHER PROJECT REPRESENTATIVE. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVED THAT THE DEPICTED LAYOUT AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE REGULATIONS AND PROJECT SPECIFIC REQUIREMENTS.

R-TANK SYSTEM OVERLAY
DETAIL — NTS — 1/C6

R-TANK QUANTITIES	
TRAFFIC LOAD	HS-20
# OF UD SINGLE R-TANKS	140
TOTAL SYSTEM STORAGE	1,079 CF
R-TANK STORAGE VOLUME	608 CF
STONE STORAGE VOLUME (40% VOID RATIO)	470 CF
STONE BED FOOTPRINT	747 SF
STONE QUANTITY	44 CY
N080 NON-WOVEN GEOTEXTILE TANK WRAP	153 SY
N080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	225 SY
ACF BX-12 GEOGRID	142 SY
INSPECTION PORTS (10")	2
GEOTEXTILE PIPE BOOTS (8")	2
STORMRING CPS (8")	2

R-TANK ELEVATIONS

DESCRIPTION	ELEVATION
BASE INV.	2588.25
TANK INV.	2588.50
TOP OF TANK	2589.68
GEOGRID	2590.68
MIN. ALLOW. FINAL GRADE	2590.68
MAX. ALLOW. FINAL GRADE	2594.68

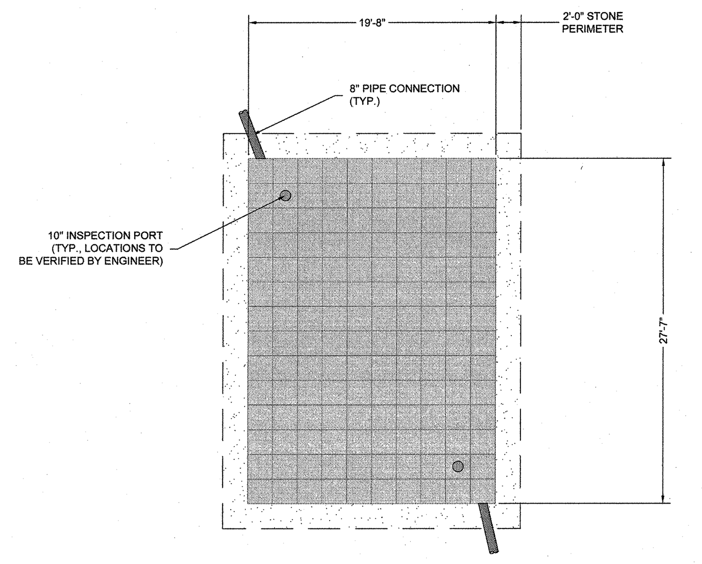
LEGEND

- R-TANK UD SINGLE UNITS
- INSPECTION PORT
- PIPE CONNECTION
- EXCAVATION PERIMETER
- PERIMETER BACKFILL

NOTES & DISCLAIMERS

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. BACKFILL, GEOTEXTILE, AND/OR LINER QUANTITIES ARE APPROXIMATIONS BASED ON DIMENSIONS SHOWN.
3. CONSULTANT DRAWINGS ARE BEING RELIED UPON AS BEING ACCURATE IN DEPICTING SITE CONDITIONS, THAT THEY SATISFY ANY LOCAL BUILDING CODE REQUIREMENTS, AND THAT THEY ACCURATELY DEPICT SUBSURFACE CONDITIONS.
4. FERGUSON SUPPLIES THE PRODUCTS ONLY AND TAKES NO RESPONSIBILITY FOR INSTALLATION AND HAS NO ROLE IN THE INSTALLATION OF THE PRODUCTS.
5. R-TANK SYSTEMS ARE NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS, RETAINING WALLS, ETC. THEREFORE, THE ENGINEER OF RECORD MUST COORDINATED WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN FOUNDATION DESIGN.

811 Know what's **below.** **Call** before you dig.



DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY: FERGUSON WATERWORKS

R-Tank — MODULAR STORMWATER STORAGE SYSTEM — 0 / 15' / 30'

SYSTEM LAYOUT
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB — DATE: 07/05/2024 — SHEET NO.: 2 of 6

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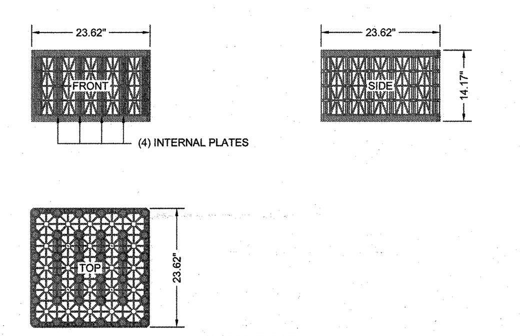
R-TANK SYSTEM LAYOUT
DETAIL — NTS — 2/C6



MODULE DATA

GEOMETRY:	LOAD RATING:
LENGTH = 23.62 IN. (600 MM)	134.2 PSI, (MODULE ONLY)
WIDTH = 23.62 IN. (600 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 14.17 IN. (360 MM)	COVER REQUIREMENTS
TANK VOLUME = 4.58 CF	MATERIAL:
STORAGE VOLUME = 4.35 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	INTERNAL PLATES REQUIRED:
VOID SURFACE AREA: 95%	4/SEGMENT, 4/MODULE

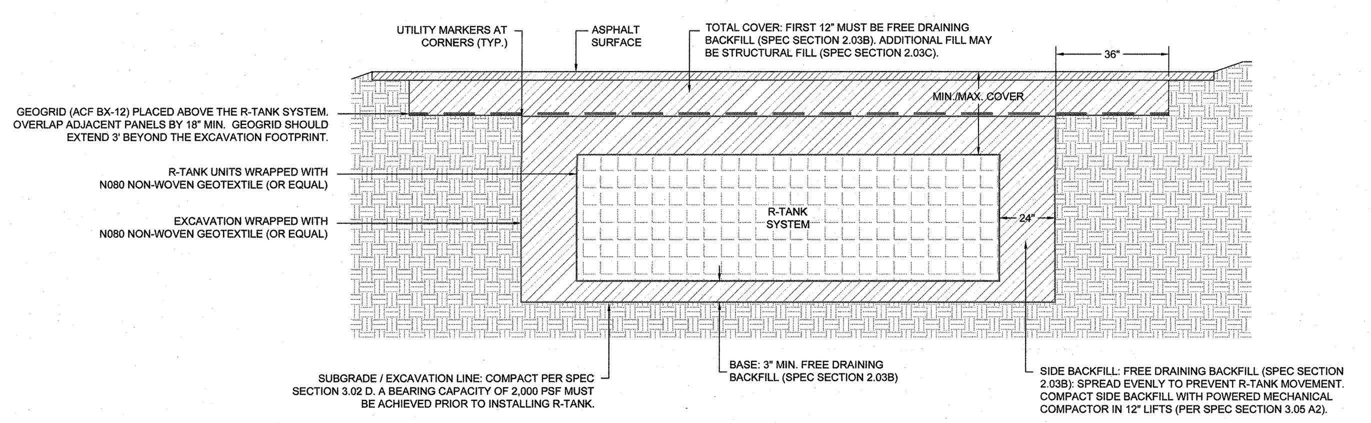
SINGLE R-TANK^{UD} - MODULE DETAIL

R-TANK UNIT LOAD RATING

UNIT TYPE	COMPRESSION STRENGTH	NON-VEHICULAR MIN. COVER*	HS-20 MIN. COVER*	HS-25 MIN. COVER*	MAX. COVER*
UD	134.2 PSI	12"	12" (STONE); 14" (SAND)	15" (STONE); 17" (SAND)	5.00'

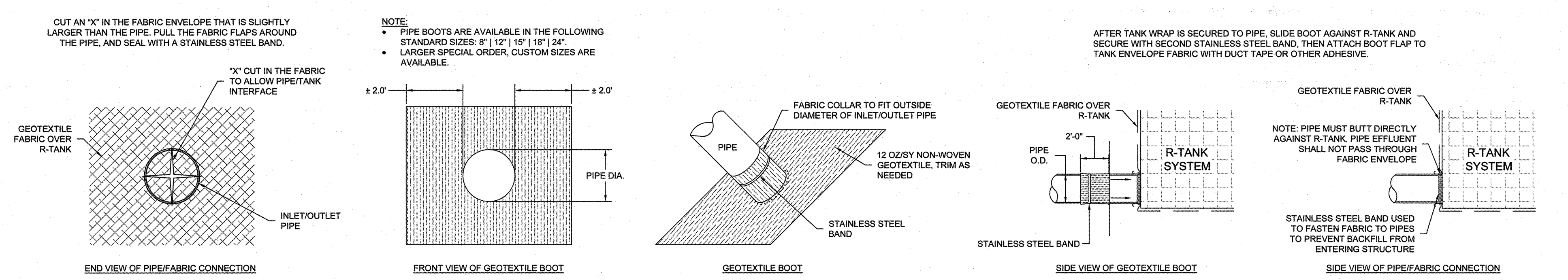
* MINIMUM AND MAXIMUM COVER ARE MEASURED FROM THE TOP OF THE R-TANK UNIT TO THE TOP OF THE FINISHED SURFACE.

NOTES:
1. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
2. FOR INFILTRATION APPLICATIONS, UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK FOOTPRINT. THE ENGINEER OF RECORD IS RESPONSIBLE FOR ASSESSING THE BEARING CAPACITY OF THE SUBGRADE, AND BASE.
3. FOR INSTALLATIONS IN LANDSCAPED AREAS, THE INSTALLATION OF TREES IS PROHIBITED ABOVE THE R-TANK UNITS. PLEASE CONTACT YOUR LOCAL FERGUSON WATERWORKS REPRESENTATIVE FOR MORE INFORMATION.
4. THE R-TANK SYSTEM IS NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS OR STRUCTURES. THEREFORE, THE ENGINEER OF RECORD MUST COORDINATE WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN THE FOUNDATION DESIGN.



R-TANK SECTION VIEW

NOTE:
- PIPE BOOTS ARE AVAILABLE IN THE FOLLOWING STANDARD SIZES: 8" | 12" | 15" | 18" | 24".
- LARGER SPECIAL ORDER, CUSTOM SIZES ARE AVAILABLE.



R-TANK TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY: FERGUSON WATERWORKS

R-Tank — MODULAR STORMWATER STORAGE SYSTEM

SYSTEM DETAILS
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB — DATE: 07/05/2024 — SHEET NO.: 3 of 6

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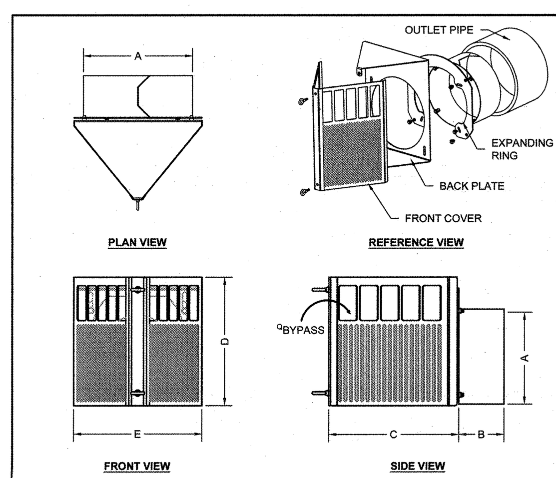
R-TANK SYSTEM DETAILS 1
DETAIL — NTS — 3/C6



PART NUMBER	NOMINAL PIPE DIA.	EXPANDING COLLAR DIA. (A) MIN.	EXPANDING COLLAR DIA. (A) MAX.	STUB LENGTH (B)	CPS DEPTH (C)	CPS HEIGHT (D)	CPS WIDTH (E)
SCA6-1	6"	5.63"	6.50"	6.00"	10.00"	10.13"	10.13"
SCA8-1	8"	7.50"	8.50"	6.00"	13.00"	11.88"	11.38"
SCA10-1	10"	9.50"	10.50"	8.00"	13.50"	13.50"	13.25"
SCA12-1	12"	11.38"	12.63"	8.00"	15.50"	15.38"	15.38"
SCA15-1	15"	14.25"	15.50"	8.00"	15.50"	21.38"	18.38"
SCA18-1	18"	17.38"	18.63"	8.00"	15.75"	28.00"	21.38"
SCA24-1	24"	23.25"	24.50"	9.00"	17.00"	40.00"	28.38"

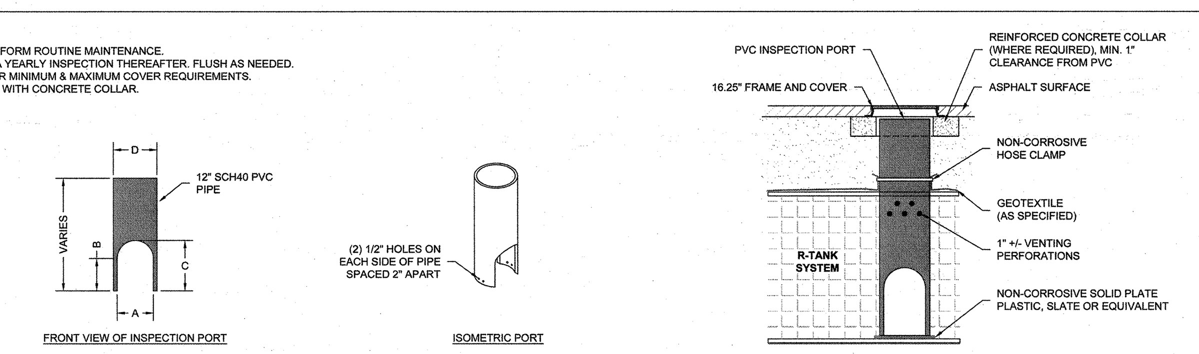
STORMRING CPS PRETREATMENT DETAIL

NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS MODULE TO INSPECT THE LEVEL OF SEDIMENT ACCUMULATION AND PERFORM ROUTINE MAINTENANCE.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
4. IF INSPECTION PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.

R-TANK INSPECTION PORT DIMENSIONS

UNIT TYPE	DOGHOUSE BOTTOM WIDTH ("A")	DOGHOUSE VERTICAL LENGTH ("B")*	DOGHOUSE OPENING HEIGHT ("C")	PORT DIAMETER ("D")
HD	10"	9"	14"	12"
SD	10"	3"	8"	12"
UD	8"	7"	12"	10"
XD	10"	VARIES**	VARIES**	12"

* PORTS ARE SUPPLIED WITH A STANDARD DOGHOUSE LENGTH OF 9". THE OPENING LENGTH SHALL BE REDUCED IN THE FIELD TO CORRESPOND WITH THE SPECIFIED PRODUCT TYPE.
** VERTICAL HEIGHTS VARY BASED ON THE STACKING HEIGHT OF THE XD SYSTEM. THE TOP OF ANY OPENING SHOULD NOT EXCEED THE TOP OF THE STACK HEIGHT.



R-TANK TYPICAL VEHICULAR LOAD RATED INSPECTION PORT

DATE	INITIALS	DESCRIPTIONS

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R-Tank — MODULAR STORMWATER STORAGE SYSTEM

SYSTEM DETAILS
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB — DATE: 07/05/2024 — SHEET NO.: 4 of 6

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R-TANK SYSTEM DETAILS 2
DETAIL — NTS — 4/C6

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MOSCOW CITY SHOP

CITY OF MOSCOW

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R-TANK DETAILS 1

SHEET NO.
C6

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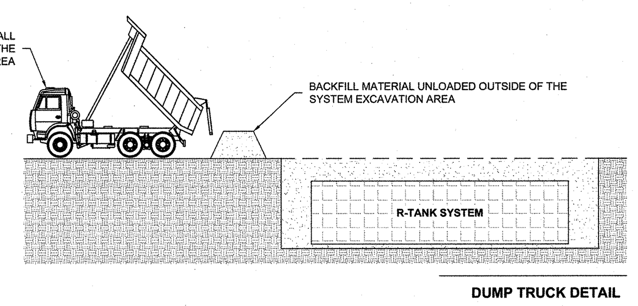
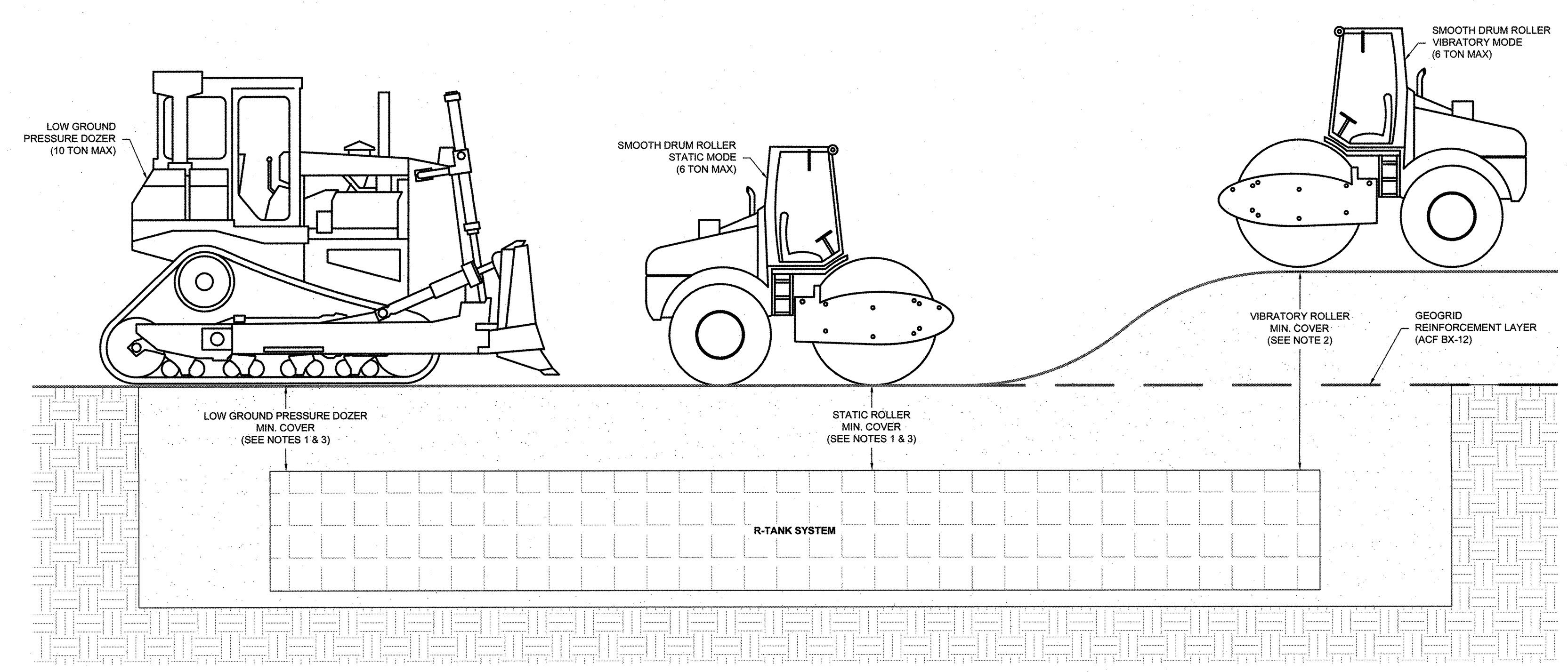
R-TANK CONSTRUCTION EQUIPMENT RECOMMENDATIONS				
UNIT TYPE	COMPRESSION STRENGTH	10 TON LOW GROUND PRESSURE DOZER MIN. COVER	6 TON SMOOTH DRUM STATIC ROLLER MIN. COVER	6 TON SMOOTH DRUM VIBRATORY ROLLER MIN. COVER
HD	33.4 PSI	12" (SEE NOTE 1, 2 & 3)	12" (SEE NOTE 1, 2 & 3)	24" (SEE NOTE 2)
SD	42.9 PSI	12" (SEE NOTE 1, 2 & 3)	12" (SEE NOTE 1, 2 & 3)	24" (SEE NOTE 2)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B1) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. AFTER THE GEOGRID IS INSTALLED OVER THE INITIAL LAYER, THE GRADED AGGREGATE BASE MATERIALS CAN BE PUSHED OUT (MAX MACHINE SIZE IS 10 TON LGP DOZER OR SMALLER) IN A SINGLE LIFT AND STATIC ROLLED BY A MACHINE WITH A MAX GROSS VEHICLE WEIGHT OF 6 TONS. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. SPEC SECTION 3.05 A5
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL FERGUSON REPRESENTATIVE FOR ADDITIONAL INFORMATION.



DUMP TRUCK DETAIL



R-TANK HD OR SD CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC

DATE	INITIALS	DESCRIPTIONS

RTANK

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R-Tank
MODULAR STORMWATER STORAGE SYSTEM

CONSTRUCTION EQUIPMENT COVER DETAIL
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB
DATE: 07/05/2024
SHEET NO.: 5 of 6

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R-TANK COVER DETAIL
DETAIL NTS 1/C7

R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-Tank system and all related products per the manufacturer's installation guidelines.
C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.02 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate knowledge and experience in the installation of subsurface storage system. A pre-installation conference shall be performed per section 1.05.
C. Installation Personnel: Performed only by skilled workers with experience in bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.03 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.05 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.06 PROJECT CONDITIONS
A. Coordinate installation for the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plates assembled to form a modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank^HD VALUE	R-Tank^SD VALUE	R-Tank^UD VALUE	R-Tank^XD VALUE
Void Area	Volume available for water storage	95%	95%	95%	90%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	33.4 psi	42.9 psi	134.2 psi	240.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	22.4 psi	28.9 psi	N/A	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	20"	18"	12" (STONE BACKFILL)	6"
HS-25 Minimum Cover	Cover required to support HS-25 loads	24"	19"	15" (STONE BACKFILL)	6"
Maximum Cover	Maximum allowable cover depth	< 7 feet	< 10 feet	5 feet	16.7 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.62 lbs/cf	3.96 lbs / cf	4.33 lbs / cf	7.55 lbs / cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.18 inches	N/A	N/A
Service Temperature	Safe temperature range for use	-14 – 167° F	-14 – 167° F	-14 – 167° F	-14 to 185° F

C. Supplier: Ferguson Waterworks; visit www.fergusongss.com for more information.

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile.
2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankUD installations, and is often not required for non-traffic load applications.

2.03 BACKFILL & COVER MATERIALS
A. Bedding Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to and above the R-Tank system.
a. For HD, and SD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System). For UD modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the UD module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14" or more.
b. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Vehicular Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ½" (+/- ¼") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
1. Standard Applications: Static roll or otherwise compact bedding materials until they are firm and unyielding.
2. Infiltration Applications: Bedding materials shall be prepared in accordance with the contract documents.
B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper installation and compaction of backfill.

3.04 INSTALLATION OF THE R-TANKS
A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
C. Install R-Tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
1. For LD, HD, and SD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details
2. For UD installations, there is no perpendicular end row required.
D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with 'U' bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 BACKFILLING OF THE R-TANK UNITS
A. Backfill and fill with recommended materials as follows:
1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
4. No compaction equipment is permissible to operate directly on the R-Tank modules.
5. Top Backfill: Only low pressure track vehicles shall be operated over the R-Tank system during construction. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system using tracked equipment with an operating weight of less than 10 tons.
a. Typical Applications: Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B) over the R-Tank Units, maintaining 12" between equipment tracks and R-Tank System. Lightly compacted using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24" of cover has been placed over the modules. Sheep foot rollers should not be used.
b. Shallow Applications (< 18" total cover): Install top backfill in accordance with plans.
6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
B. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement).
C. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
D. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

3.06 MAINTENANCE REQUIREMENTS
A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
B. All inlet pipes and Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.
C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
D. All inspection and maintenance activities should be performed in accordance with the R-Tank Operation, Inspection & Maintenance Manual.

DATE	INITIALS	DESCRIPTIONS

RTANK

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R-Tank
MODULAR STORMWATER STORAGE SYSTEM

R-TANK SPECIFICATION
MOSCOW CITY SHOP
MOSCOW , ID

DRAWN BY: CGB
DATE: 07/05/2024
SHEET NO.: 6 of 6

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R-TANK SPECIFICATION
DETAIL NTS 2/C7

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MOSCOW CITY SHOP

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DATE: **07/24/2024**
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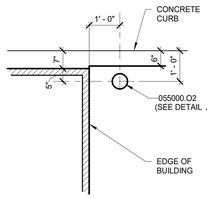
CHECKED BY: **NN/SB**

PHASE: **PERMIT SET**

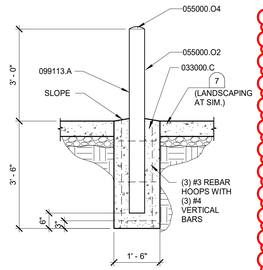
R-TANK DETAILS 2

SHEET NO.
C7

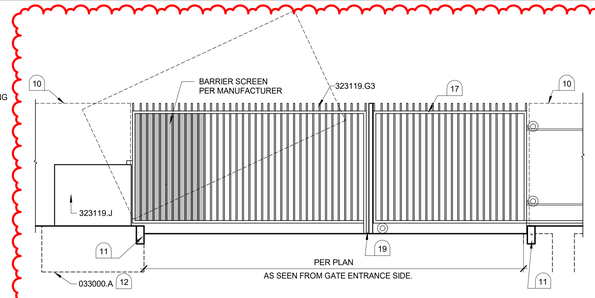
F:\4742-Moscow City Shop Design\4742-Acad\DETAIL.dwg 7/18/2024 4:17 PM



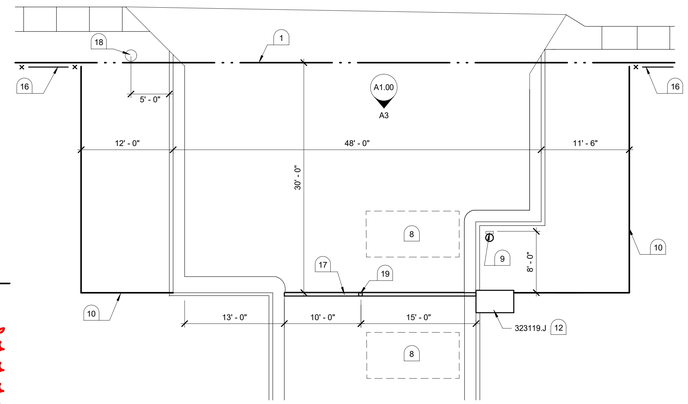
A1 BOLLARD AT BLDG.
1/2" = 1'-0"
BOLLARD AT BLDG.



A2 PIPE BOLLARD
1/2" = 1'-0"
PIPE BOLLARD



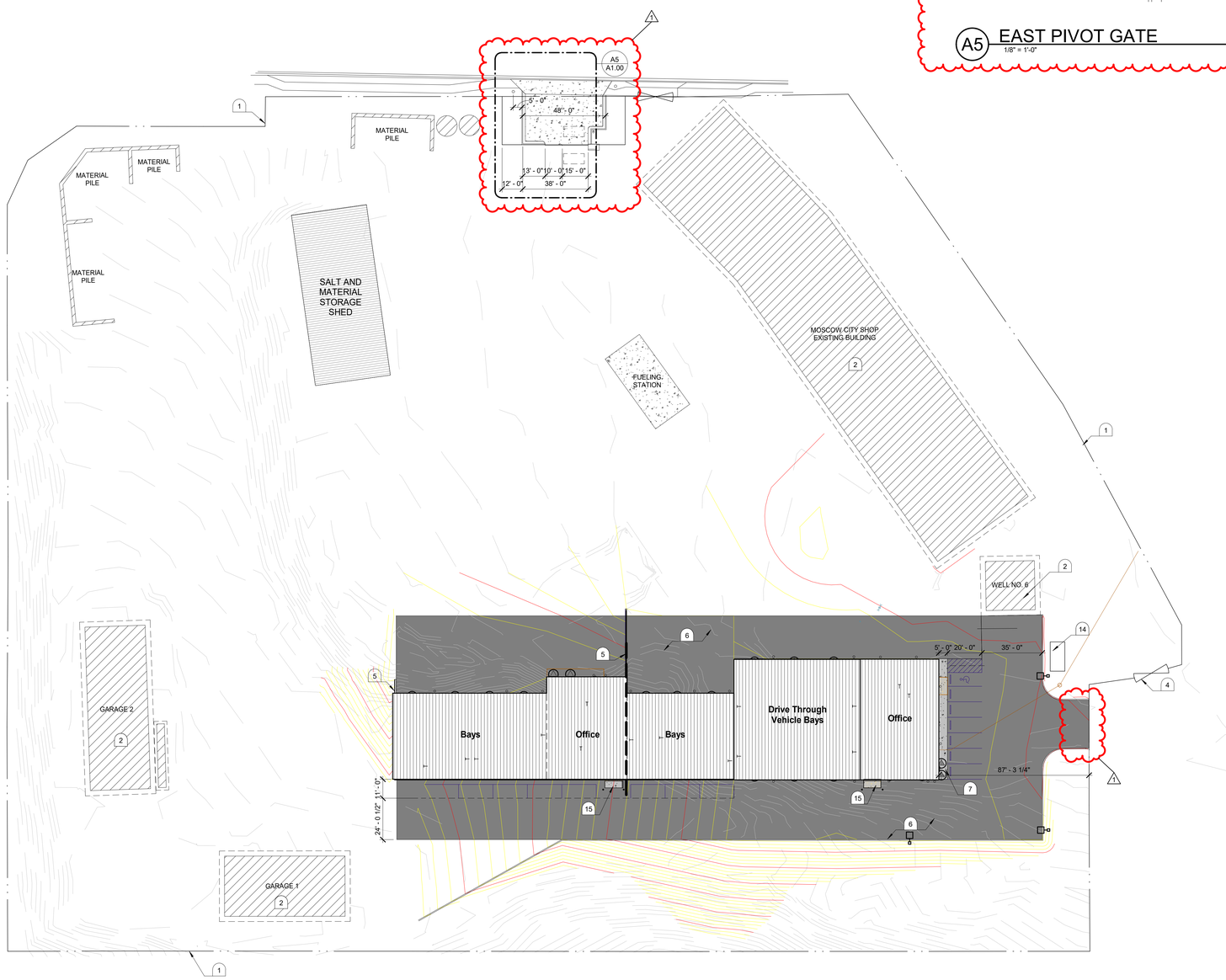
A3 PIVOT GATE
1/4" = 1'-0"



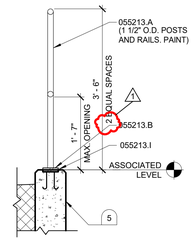
A5 EAST PIVOT GATE
1/8" = 1'-0"

CONDOC

033000.A	CONCRETE, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
055000.O2	6" DIAMETER METAL BOLLARD.
055000.O4	PREMANUFACTURED METAL BOLLARD CONCRETE CAP.
055213.A	METAL PIPE RAILING.
055213.B	METAL PLATE.
055213.I	WELDED CONNECTION.
099113.A	EXTERIOR PAINT.
323119.G3	VERTICAL PIVOT GATE.
323119.J	GATE OPERATOR.



E1 ARCHITECTURAL SITE PLAN
1" = 30'-0"



B6 GUARDRAIL
3/4" = 1'-0"

KEYNOTES

1. PROPERTY LINE.
2. EXISTING BUILDING TO REMAIN.
3. GATE.
4. EXISTING GATE.
5. RETAINING WALL, SEE CIVIL DRAWINGS SHEET **C2**.
6. ASPHALT PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
7. CONCRETE PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
8. AUTO LOOP.
9. ENTRY GATE CARD READER PEDESTAL; SEE ELECTRICAL.
10. 8' HIGH DECORATIVE METAL FENCE. SEE CIVIL DRAWINGS FOR LOCATION.
11. CONCRETE CURB, SEE CIVIL DRAWINGS SHEET **2/C3**.
12. CONCRETE FOUNDATION FOR GATE CONTROLLER AS REQUIRED BY MANUFACTURER.
13. PAD MOUNTED GATE YOKE BY GATE MANUFACTURER. BREAK ISLAND FOR GATES AS REQUIRED.
14. GENERATOR, SEE ELECTRICAL.
15. MECHANICAL PAD AND EQUIPMENT, SEE MECHANICAL.
16. EXISTING FENCE.
17. MANUAL ROLLING GATE. GATE TO MATCH PERIMETER METAL FENCE DESIGN.
18. EXISTING ELECTRICAL POLE TO REMAIN.
19. REMOVEABLE CENTER POST.

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07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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8727 W. ARDENE, SUITE 102
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(208) 345-7127

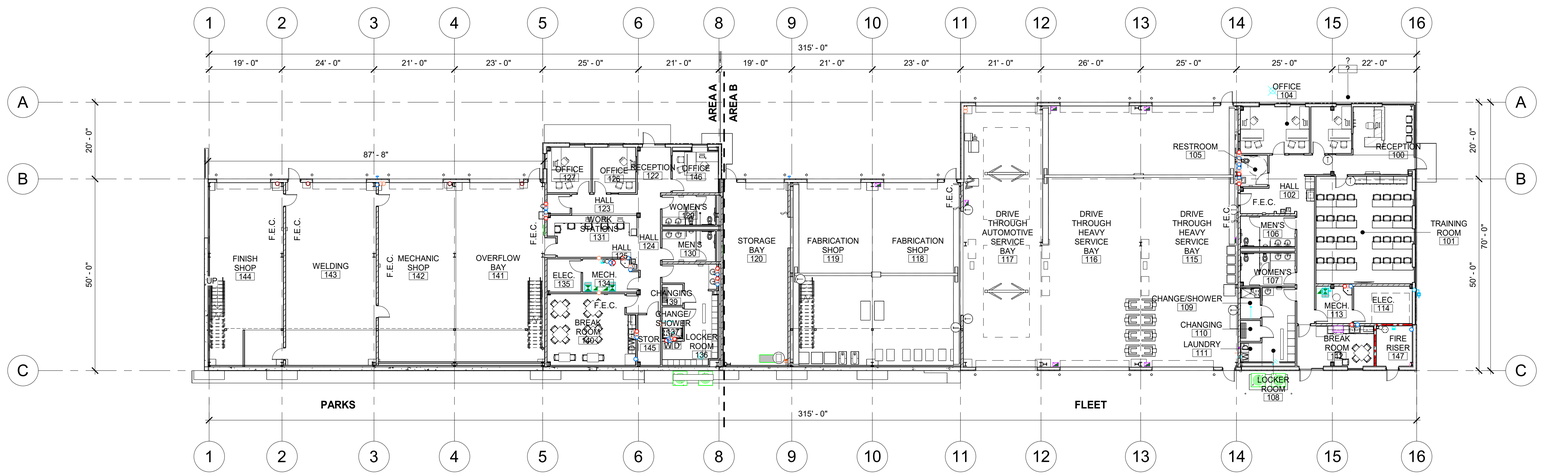
MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**
PHASE:	**PERMIT SET**

ARCHITECTURAL SITE PLAN

SHEET NO.
A1.00

9/26/2024 3:09:35 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V23_bchurchHOWZF.rvt



E2 OVERALL FLOOR PLAN
1/16" = 1'-0"

OVERALL PLAN

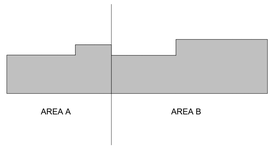
LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**

GENERAL NOTES

1. EXTERIOR DIMENSIONS ARE TO ROUGH OPENING, CENTERLINE OF COLUMN OR FACE OF FOUNDATION UNLESS OTHERWISE NOTED. SEE WALL SECTION FOR RELATIONSHIP OF FRAMING/FINISHED TO FACE OF FOUNDATION.
2. INTERIOR DIMENSIONS ARE TO CENTERLINE OF COLUMN OR GRIDLINE, OR FACE OF STUD AT FRAMED WALLS UNLESS OTHERWISE NOTED.
3. ALL INTERIOR WALLS SHALL EXTEND FROM FINISH FLOOR TO BOTTOM OF STRUCTURE UNLESS OTHERWISE NOTED.
4. SEE FINISH PLANS FOR ROOM FINISH SCHEDULES AND FLOOR FINISH INFORMATION.
5. SEE CIVIL DRAWINGS SHEET **C2** FOR RELATIONSHIP OF SITE WORK TO BUILDING.
6. SEE WALL SECTIONS SHEET **A5.00 & A5.10** FOR EXTERIOR WALL REQUIREMENTS.
7. SEE EQUIPMENT PLANS SHEET **A2.50** FOR LOCATION OF SPECIALITY EQUIPMENT.

KEY PLAN



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FLOOR PLAN - OVERALL

SHEET NO.
A2.10

7/29/2024 11:46:15 AM C:\Users\ryker\Documents\24000-01 Moscow City Shop_Central_V23_RykerBelnap.rvt

CONDOC

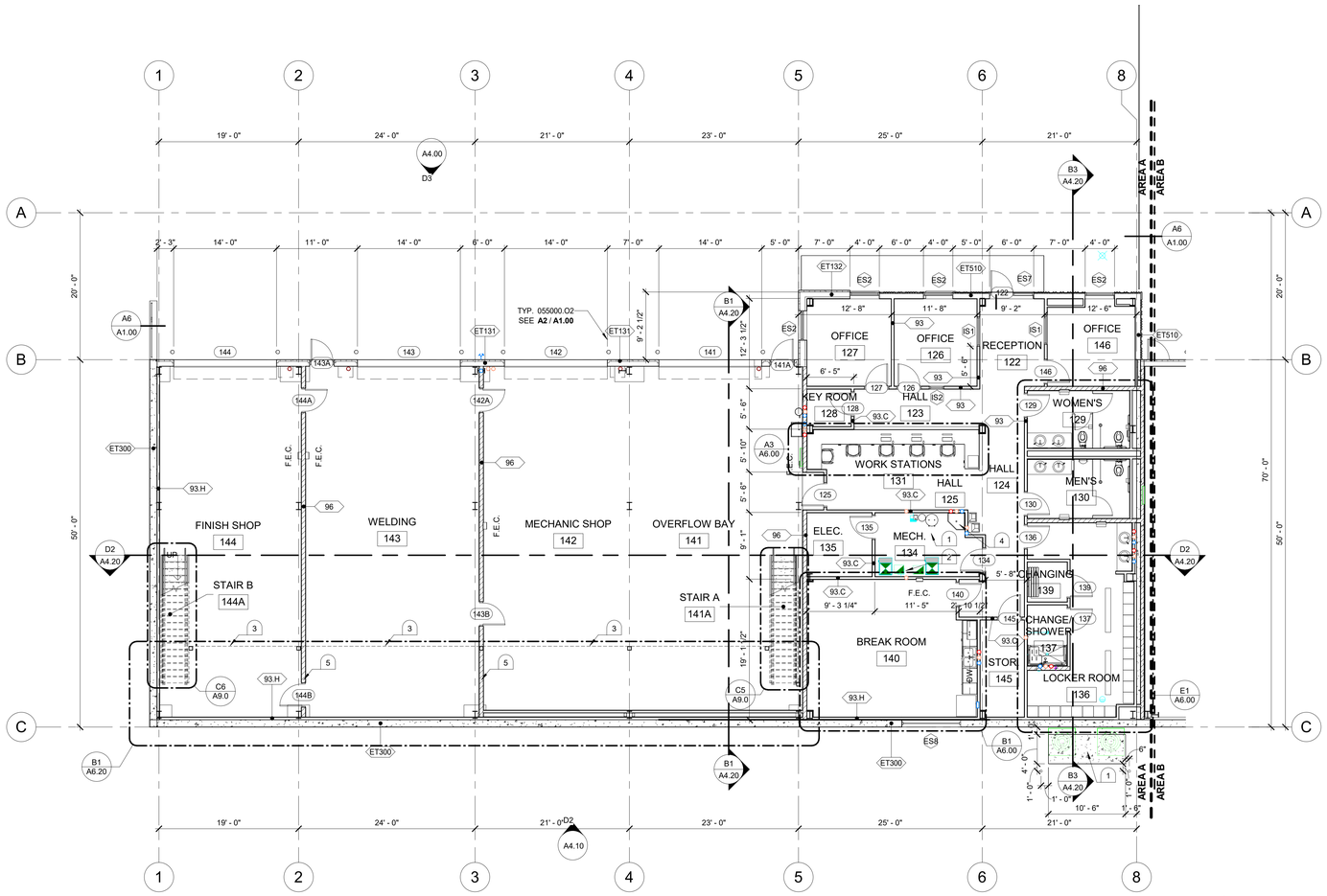
055000.O2 6:: DIAMETER METAL BOLLARD.

KEYNOTES

1. MECHANICAL EQUIPMENT. SEE MECHANICAL HVAC PLANS.
2. PLUMBING EQUIPMENT. SEE PLUMBING PLANS.
3. EDGE OF AREA OF MEZZANINE ABOVE.
4. JANITORS SINK AND MOP SHELF. SEE DETAIL **E5/A8.00**.
5. INSTALL WALL TO UNDERSIDE OF DECK AT MEZZANINE.

LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**



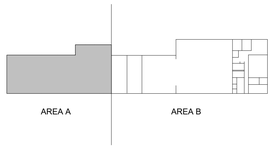
E2 FLOOR PLAN - AREA A
1/8" = 1'-0"

FLOOR PLAN - AREA A

GENERAL NOTES

1. EXTERIOR DIMENSIONS ARE TO ROUGH OPENING, CENTERLINE OF COLUMN OR FACE OF FOUNDATION UNLESS OTHERWISE NOTED. SEE WALL SECTION FOR RELATIONSHIP OF FRAMING/FINISHED TO FACE OF FOUNDATION.
2. INTERIOR DIMENSIONS ARE TO CENTERLINE OF COLUMN OR GRIDLINE, OR FACE OF STUD AT FRAMED WALLS UNLESS OTHERWISE NOTED.
3. ALL INTERIOR WALLS SHALL EXTEND FROM FINSIH FLOOR TO BOTTOM OF STRUCTURE UNLESS OTHERWISE NOTED.
4. SEE FINISH PLANS FOR ROOM FINISH SCHEDULES AND FLOOR FINISH INFORMATION.
5. SEE CIVIL DRAWINGS SHEET **C2** FOR RELATIONSHIP OF SITE WORK TO BUILDING.
6. SEE WALL SECTIONS SHEET **A5.00 & A5.10** FOR EXTERIOR WALL REQUIREMENTS.
7. SEE EQUIPMENT PLANS SHEET **A2.50** FOR LOCATION OF SPECIALITY EQUIPMENT.

KEY PLAN



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DATE:	**07/24/2024**
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FIRST FLOOR - AREA A

SHEET NO.
A2.11

7/29/2024 11:46:16 AM C:\Users\rylwrb\Documents\24000-01 Moscow City Shop_Central_V23_RylwrBelmap.rvt

CONDOC

055000.O2	6□ DIAMETER METAL BOLLARD.
104400.A	RAPID ENTRY KEY LOCK BOX.

KEYNOTES

1. MECHANICAL EQUIPMENT. SEE MECHANICAL HVAC PLANS.
2. PLUMBING EQUIPMENT. SEE PLUMBING PLANS.
3. EDGE OF AREA OF MEZZANINE ABOVE.
4. JANITORS SINK AND MOP SHELF. SEE PLUMBING **E5/A8.00**.

LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**

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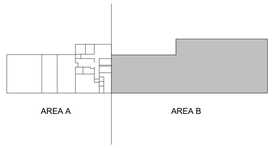
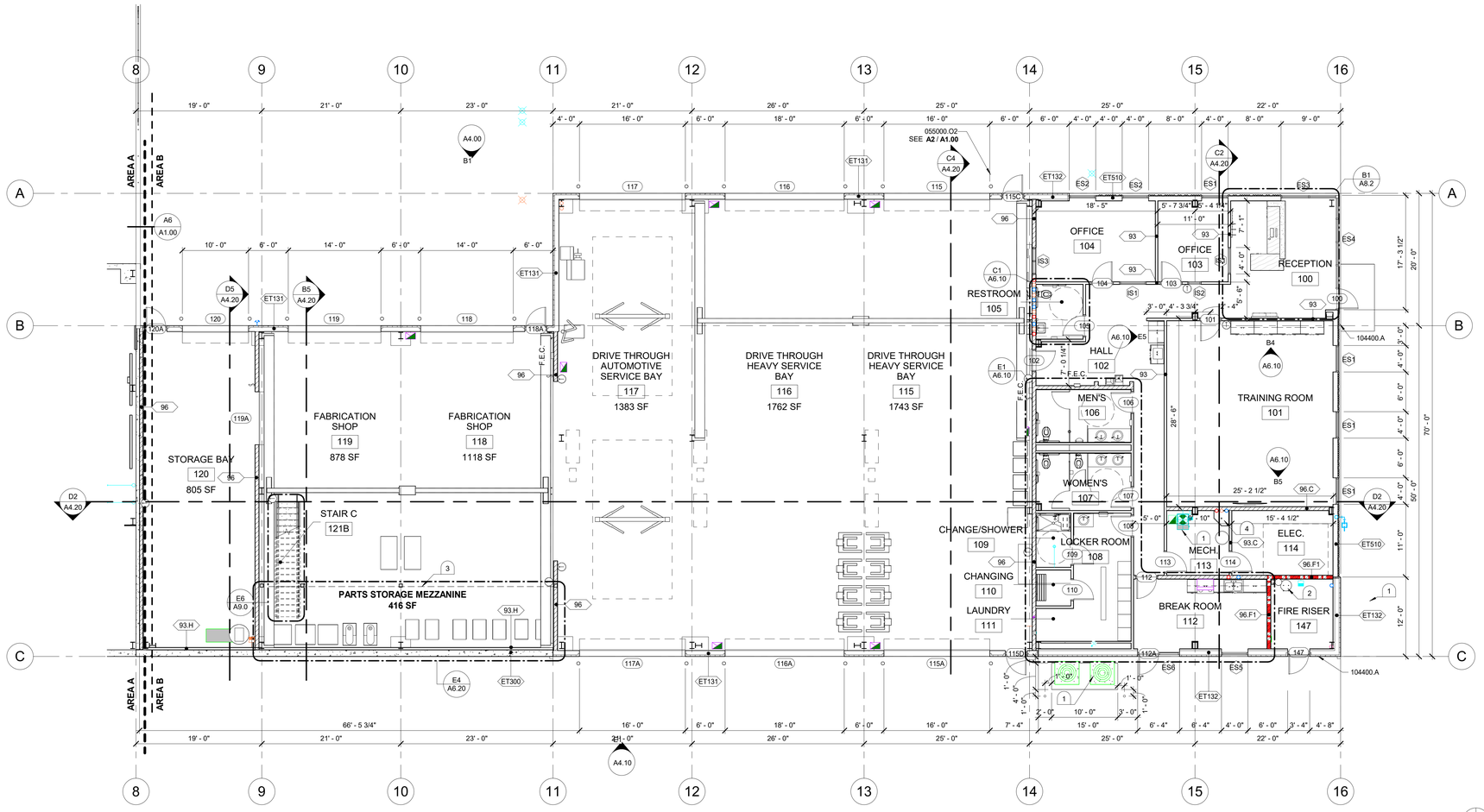
KEY PLAN





E1 FLOOR PLAN - AREA B
1/8" = 1'-0"

FLOOR PLAN - AREA B

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JOB NO.:	**24000.01**
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FIRST FLOOR - AREA B

SHEET NO.
A2.12

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ROOM FINISH SCHEDULE AREA A

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS N	WALLS E	WALLS S	WALLS W	CEILING MAT.	CEILING FIN.	REMARKS
122	RECEPTION	EM1/CONC-P	RB1	P1	P1	P1	P1	ACP	FF	
123	HALL	CONC-P	RB1	P1	P1	--	P1	ACP	FF	
124	HALL	CONC-P	RB1	P1/P2/CT2	--	P1	P1	ACP/GYP	FF/P2	1, 2
125	HALL	EM1/CONC-P	RB1	P1	P1	P1	P2	ACP	FF	
126	OFFICE	CPT	RB1	P2	P1	P1	P1	ACP	FF	
127	OFFICE	CPT	RB1	P1	P1	P2	P1	ACP	FF	
128	KEY ROOM	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	
129	WOMEN'S	CT1	CTB	EP1	EP1	EP1	CT2	GYP	EP1	1
130	MEN'S	CT1	CTB	EP1	CT2	EP1	EP1	GYP	EP1	1
131	WORK STATIONS	CONC-P	RB1	P1	P1	P1	--	ACP	FF	
134	MECH.	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	3
135	ELEC.	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	4
136	LOCKER ROOM	RTF	RB2	EP1/WP	EP1	CT2/EP1	EP1	GYP	EP1	
137	CHANGE/ SHOWER	CT1	CTB	EP1	EP1	EP1	EP1	GYP	EP1	
139	CHANGING	RTF	RB2	EP1	EP1	EP1	EP1	GYP	EP1	
140	BREAK ROOM	RTF	RB1	P1	P1	P2	P1	ACP	FF	
141	OVERFLOW BAY	CONC-S/EM2	RB1	P1	P1	P1	P1	OTS	FF	4
142	MECHANIC SHOP	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	4
143	WELDING	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	4
144	FINISH SHOP	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	4
145	STOR.	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	
146	OFFICE	CPT	RB1	P1	P1	P1	P2	ACP	FF	

ROOM FINISH REMARKS

1. MULTIPLE WALL FINISHES THIS ROOM; SEE FINISH PLAN FOR LOCATION AND EXTENTS.
2. GYPSUM BOARD SOFFIT IN THIS ROOM. SEE REFLECTED CEILING PLANS.
3. FRP **(066400)** AT MOP SINK. SEE DETAIL **E5/A8.0** FOR EXTENTS.
4. REPLACE GYPSUM BOARD WITH PLYWOOD **(PLYWD.)** FROM FLOOR TO 10' A.F.F. CONTINUE GYPSUM BOARD FROM 10' A.F.F. TO DECK. PRIME AND PAINT BOTH SURFACES AS ONE.

MATERIAL LEGEND

SYMBOL	DESCRIPTION
ACP	SUSPENDED ACOUSTICAL CEILING PANEL (095113)
C	CORNER GUARD (102600)
CONC-P	CONCRETE - POLISHED (033543)
CONC-S	CONCRETE - SEALED (033000)
CPT	CARPET TILE (096813)
CT/CTB	CERAMIC TILE / CERAMIC TILE BASE (093013)
EB	EDGE BANDING (123623.13)
EM	ENTRY MAT (124813)
EP	EPOXY PAINT (099123)
FRP	FIBERGLASS REINFORCED WALL PANEL (066400)
G	GROUT (093013)
GL	CUSTOM GLAZING (088000)
GYP	GYPSUM BOARD (092900)
HPC	HIGH PERFORMANCE COATING (099600)
L	LOCKERS (105113) (105123) (105143)
NF	NO FINISH
OTS	OPEN TO STRUCTURE
P	PAINT (099123)
PL	PLASTIC LAMINATE (123623.13)
PLYWD.	PLYWOOD WALL SHEATHING (061600.A1)
RB	RUBBER BASE (096513)
RTF	RESILIENT TILE FLOORING (096519)
SAP	SOUND ABSORBING PANEL (098433) (098436)
SF	SPECIALTY FLOORING
SSM	SIMULATED STONE MATERIAL (123661)
WF	WINDOW FILM (088000)
WS	WORKSTATION (127000)

KEYNOTES

1. FURNITURE, OWNER PROVIDED AND INSTALLED. SHOWN FOR COORDINATION PURPOSES.
2. WINDOW COVERING **(WT)**, FULL EXTENT OF WINDOW. POSITION CHAIN ON SIDE INDICATED BY ARROW.

FINISH LEGEND

CONC-S - CONCRETE (SEALED) (**033000**).

CONC-P - CONCRETE (POLISHED) (**033543**).

CPT1 - CARPET TILE (**096813**).

CPT2 - CARPET TILE ACCENT (**096813**).

EM1 - ENTRY MAT OVER CONCRETE (**124813**).

EM2 - ENTRY GRATE OVER DEPRESSED SLAB (**124813**).

CT1 - CERAMIC TILE (**093013**).

CT2 - CERAMIC TILE ACCENT (**093013**).

RTF1 - RESILIENT TILE FLOORING (**096516**).

C CORNER GUARD (**102600**).

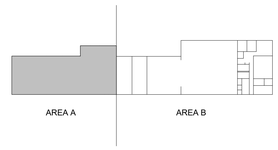
P# ACCENT PAINT (**099123**).

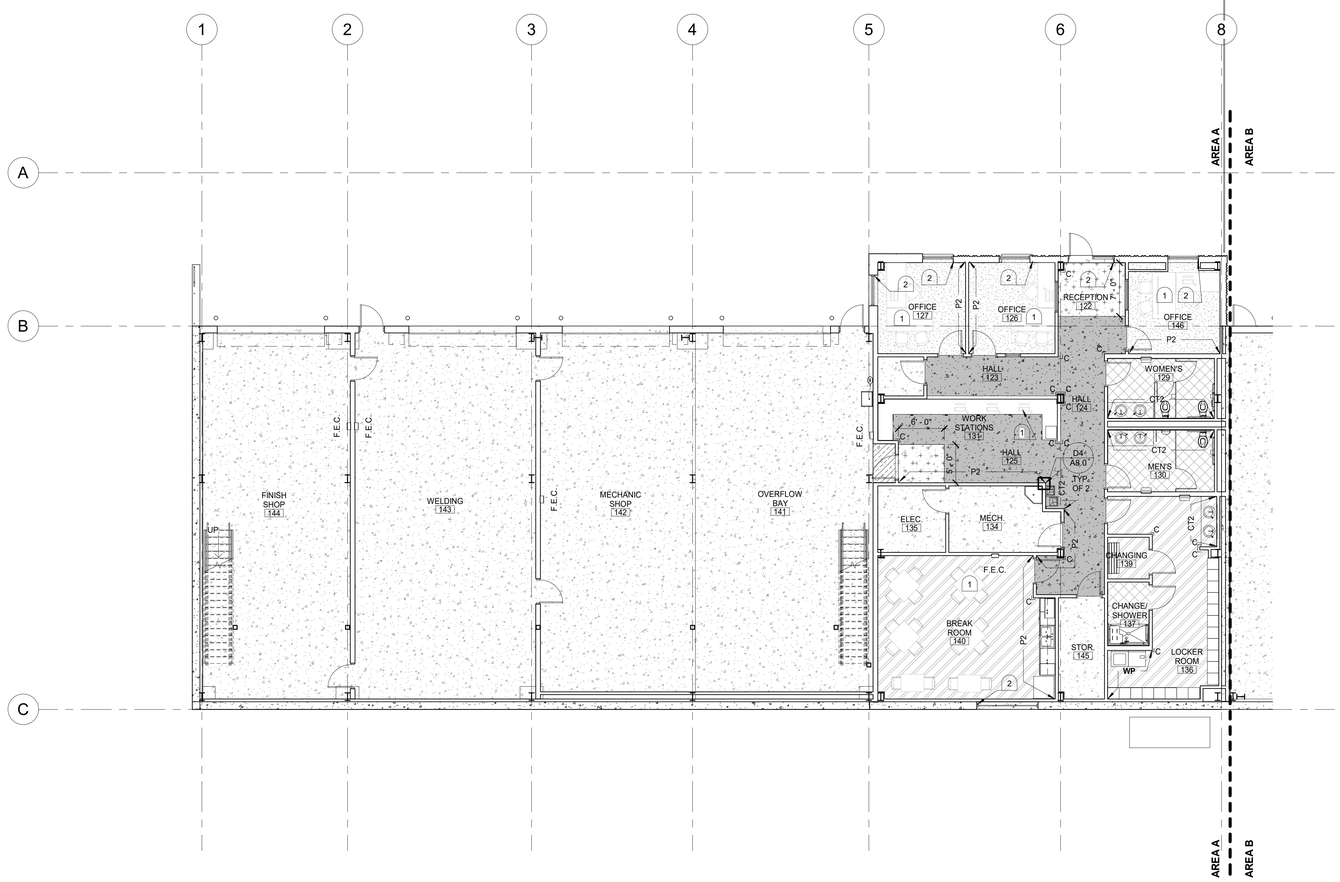
WP# WALL PROTECTION (**102600**).

GENERAL FINISH NOTES

1. PAINT ALL SURFACES OF H.M. FRAMES, H.M. DOORS, LOUVERS AND GRILLS U.N.O. COLORS AS SPECIFIED (**099123**).
2. PROVIDE SEALANT AT ALL GYP. BOARD TO DISSIMILAR MATERIALS.
3. ALL GYPSUM BOARD ON RESTROOM AND JANITOR ROOM WALLS SHALL BE MOISTURE RESISTANT.
4. SEE DETAIL **B5/A8.0** FOR TYPICAL FLOOR TRANSITIONS.
5. THRESHOLDS TO OCCUR AT CENTERLINE OF DOOR UNLESS NOTED OTHERWISE.
6. SEE REFLECTED CEILING PLAN SHEET **A2.41** FOR SOFFIT AND FURR-DOWNS AND OTHER CEILING FEATURES.
7. NUMBERS AFTER SYMBOLS REPRESENT DIFFERENT STYLES AND COLORS AS DEFINED IN SPECIFICATIONS.
8. SEE DETAIL **B1/A8.0** FOR TYPICAL WALL MOUNTED ACCESSORIES.
9. ALL EXPOSED INTERIOR CONCRETE WALL SURFACES TO BE PAINTED.
10. TERMINATE DISSIMILAR COLORS AND FINISHES WITH CLEAN, CRISP, STRAIGHT LINE.
11. SEE DETAIL **C5/A8.0** FOR TYPICAL ADA SIGNAGE MOUNTING, SEE SPECIFICATION SECTION (**101423**).
12. PAINT ALL EXPOSED STEEL STRUCTURE.

KEY PLAN





E2 FLOOR 1 FINISH PLAN - AREA A
1/8" = 1'-0"

FLOOR 1 FINISH PLAN - AREA A

LOMBARD CONRAD ARCHITECTS

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INTERIOR DESIGN

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STATE OF IDAHO

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CITY OF MOSCOW

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FINISH FLOOR PLAN - AREA A

SHEET NO.
A2.31

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ROOM FINISH SCHEDULE AREA B

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS N	WALLS E	WALLS S	WALLS W	CEILING MAT.	CEILING FIN.	REMARKS
100	RECEPTION	CPT	RB1	P1/P2	P1	P1	P2	ACP	FF	1, 4
101	TRAINING ROOM	CPT	RB1	P2	P2	P2	P2	ACP	FF	
102	HALL	EM1/CONC-P	RB1	P1	P2	P1/P2	P1/CT2	ACP/GYP	FF/P1	1, 2
103	OFFICE	CPT	RB1	P2	P1	P1	P1	ACP	FF	
104	OFFICE	CPT	RB1	P1	P1	P2	P1	ACP	FF	
105	RESTROOM	CT1	CTB	CT2	EP1	EP1	EP1	GYP	EP1	1
106	MEN'S	CT1	CTB	EP1	EP1	EP1	CT2	GYP	EP1	1
107	WOMEN'S	CT1	CTB	EP1	CT2	EP1	EP1	GYP	EP1	1
108	LOCKER ROOM	RTF	RB2	CT2/EP1	CT2/EP1	EP1	EP1	GYP	EP1	1, 4
109	CHANGE/SHOWER	CT1	CTB	EP1	EP1	EP1	EP1	GYP	EP1	
110	CHANGING	RTF	RB2	EP1	EP1	EP1	EP1	GYP	EP1	
111	LAUNDRY	RTF	RB2	WP/EP1	WP/EP1	--	WP/EP1	GYP	EP1	1, 5
112	BREAK ROOM	RTF/EM1	RB1	P1	P2	P1	P1	ACP	FF	
113	MECH.	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	3
114	ELEC.	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	6
115	DRIVE THROUGH HEAVY SERVICE BAY	CONC-S/EM2	RB1	P1	P1	P1	P1	OTS	FF	6
116	DRIVE THROUGH HEAVY SERVICE BAY	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	6
117	DRIVE THROUGH AUTOMOTIVE SERVICE BAY	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	6
118	FABRICATION SHOP	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	6
119	FABRICATION SHOP	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	6
120	STORAGE BAY	CONC-S	RB1	P1	P1	P1	P1	OTS	FF	6
147	FIRE RISER	CONC-S	RB1	P1	P1	P1	P1	GYP	P1	

ROOM FINISH REMARKS

1. MULTIPLE WALL FINISHES THIS ROOM; SEE FINISH PLAN FOR LOCATION AND EXTENTS.
2. GYPSUM BOARD SOFFIT IN THIS ROOM. SEE REFLECTED CEILING PLANS.
3. FRP **(066400)** AT MOP SINK. SEE DETAIL **E5/A8.0** FOR EXTENTS.
4. MULTIPLE WALL FINISHES THIS ROOM. SEE INTERIOR ELEVATIONS FOR LOCATIONS AND EXTENTS.
5. WALL PROTECTION PANEL **(WP)** TO CEILING IN THIS LOCATION. LAP BEHIND RUBBER BASE.
6. REPLACE GYPSUM BOARD WITH PLYWOOD (**PLYWD.**) FROM FLOOR TO 10' A.F.F. CONTINUE GYPSUM BOARD FROM 10' A.F.F. TO DECK. PRIME AND PAINT BOTH SURFACES AS ONE.

MATERIAL LEGEND

SYMBOL	DESCRIPTION
ACP	SUSPENDED ACOUSTICAL CEILING PANEL (095113)
C	CORNER GUARD (102600)
CONC-P	CONCRETE - POLISHED (033543)
CONC-S	CONCRETE - SEALED (033000)
CPT	CARPET TILE (096813)
CT/CTB	CERAMIC TILE / CERAMIC TILE BASE (093013)
EB	EDGE BANDING (123623.13)
EM	ENTRY MAT (124813)
EP	EPOXY PAINT (099123)
FRP	FIBERGLASS REINFORCED WALL PANEL (066400)
G	GROUT (093013)
GL	CUSTOM GLAZING (088000)
GYP	GYPSUM BOARD (092900)
HPC	HIGH PERFORMANCE COATING (099600)
L	LOCKERS (105113) (105123) (105143)
NF	NO FINISH
OTS	OPEN TO STRUCTURE
P	PAINT (099123)
PL	PLASTIC LAMINATE (123623.13)
PLYWD.	PLYWOOD WALL SHEATHING (061600.A1)
RB	RUBBER BASE (096513)
RTF	RESILIENT TILE FLOORING (096519)
SAP	SOUND ABSORBING PANEL (098433) (098436)
SF	SPECIALTY FLOORING
SSM	SIMULATED STONE MATERIAL (123661)
WF	WINDOW FILM (088000)
WS	WORKSTATION (127000)

KEYNOTES

1. FURNITURE, OWNER PROVIDED AND INSTALLED. SHOWN FOR COORDINATION PURPOSES.
2. WINDOW COVERING **(WT)**, FULL EXTENT OF WINDOW. POSITION CHAIN ON SIDE INDICATED BY ARROW.

FINISH LEGEND

CONC-S - CONCRETE (SEALED) (**033000**).

CONC-P - CONCRETE (POLISHED) (**033543**).

CPT1 - CARPET TILE (**096813**).

CPT2 - CARPET TILE ACCENT (**096813**).

EM1 - ENTRY MAT OVER CONCRETE (**124813**).

EM2 - ENTRY GRATE OVER DEPRESSED SLAB (**124813**).

CT1 - CERAMIC TILE (**093013**).

CT2 - CERAMIC TILE ACCENT (**093013**).

RTF1 - RESILIENT TILE FLOORING (**096516**).

C CORNER GUARD (**102600**).

P# ACCENT PAINT (**099123**).

WP# WALL PROTECTION (**102600**).

GRAPHIC FLOOR STRIPING ON CONCRETE OWNER PROVIDED AND INSTALLED

GENERAL FINISH NOTES

1. PAINT ALL SURFACES OF H.M. FRAMES, H.M. DOORS, LOUVERS AND GRILLS U.N.O. COLORS AS SPECIFIED (**099123**).
2. PROVIDE SEALANT AT ALL GYP. BOARD TO DISSIMILAR MATERIALS.
3. ALL GYPSUM BOARD ON RESTROOM AND JANITOR ROOM WALLS SHALL BE MOISTURE RESISTANT.
4. SEE DETAIL **B5/A8.0** FOR TYPICAL FLOOR TRANSITIONS.
5. THRESHOLDS TO OCCUR AT CENTERLINE OF DOOR UNLESS NOTED OTHERWISE.
6. SEE REFLECTED CEILING PLAN SHEET **A2.41** FOR SOFFIT AND FURR-DOWNS AND OTHER CEILING FEATURES.
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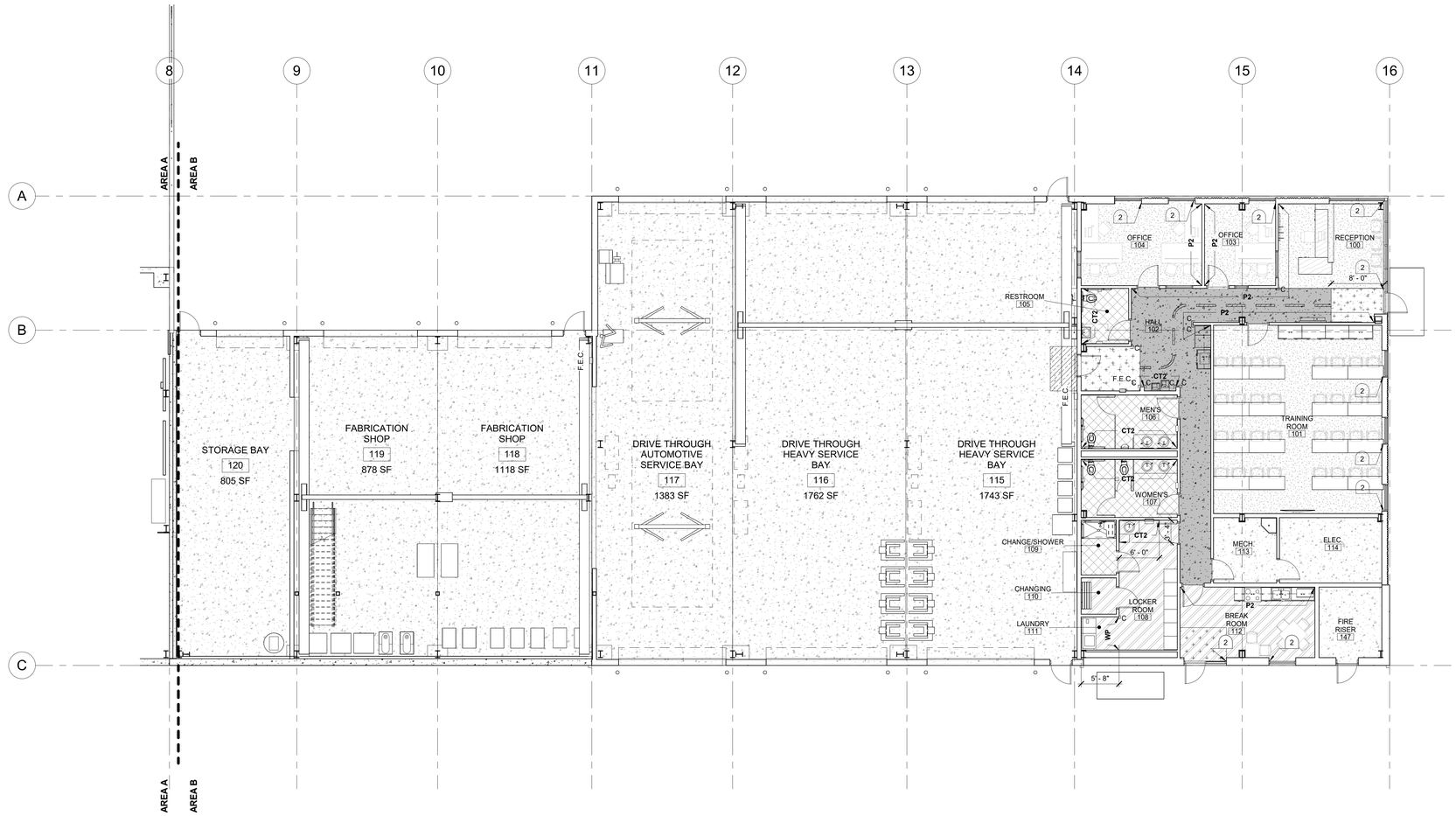
12. PAINT ALL EXPOSED STEEL STRUCTURE.

KEY PLAN



E1 FLOOR 1 FINISH PLAN - AREA B
1/8" = 1'-0"

LOMBARD CONRAD ARCHITECTS

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FINISH FLOOR PLAN - AREA B

SHEET NO.
A2.32

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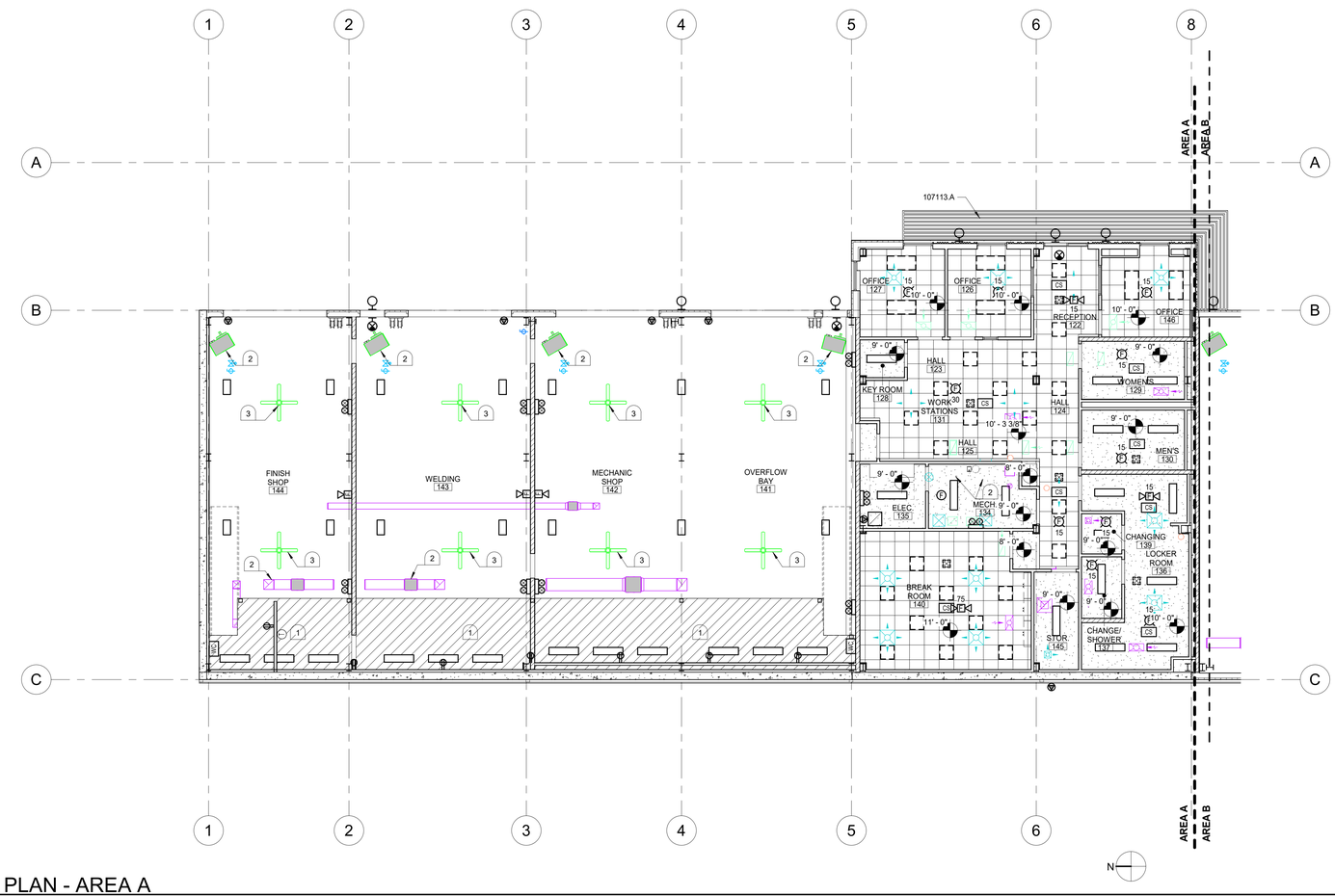


E2 CEILING PLAN - AREA A
1/8" = 1'-0"

CONDOC

107113.A EXTERIOR SUN CONTROL DEVICE

KEYNOTES

1. MEZZANINE ABOVE. SEE MEZZANINE PLANS **A6.20.**
2. MECHANICAL EQUIPMENT, SEE MECHANICAL HVAC PLANS.
3. SHOP FAN, SEE MECHANICAL HVAC PLANS.

CEILING LEGEND

CT01: 2X2 LAY-IN ACOUSTICAL CEILING **(ACP)** - 095113
SEE DETAILS **C6/A8.1**

CT02: GYPSUM BOARD CEILING OR SOFFIT - BOTTOM FACE PAINTED (**P1**). (SOFFIT SIDES PAINT TO MATCH ADJACENT WALL.) SEE **D6/A8.1**

CT03: 1-HR RATED GYPSUM BOARD CEILING OR SOFFIT - PAINTED (**P1**). SEE **D6/A8.1**

MEZZANINE; SEE PLANS SHEET **A6.20**

WALL MOUNTED LIGHT FIXTURES

GRID MOUNTED LIGHT FIXTURES

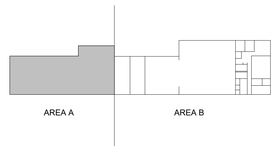
SURFACE MOUNTED LIGHT FIXTURE

HVAC MECHANICAL GRILLES

GENERAL CEILING NOTES

1. SEE ROOM FINISH SCHEDULE SHEET **A2.31 & A2.32** FOR ADDITIONAL FINISH INFORMATION.
2. PAINT ALL DUCT WORK, CONDUIT, AND PIPING EXPOSED TO VIEW.
3. SEE **A5/A8.1** FOR TYPICAL CEILING LAYOUT.

KEY PLAN



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REFLECTED CEILING PLAN - AREA A

SHEET NO.
A2.41

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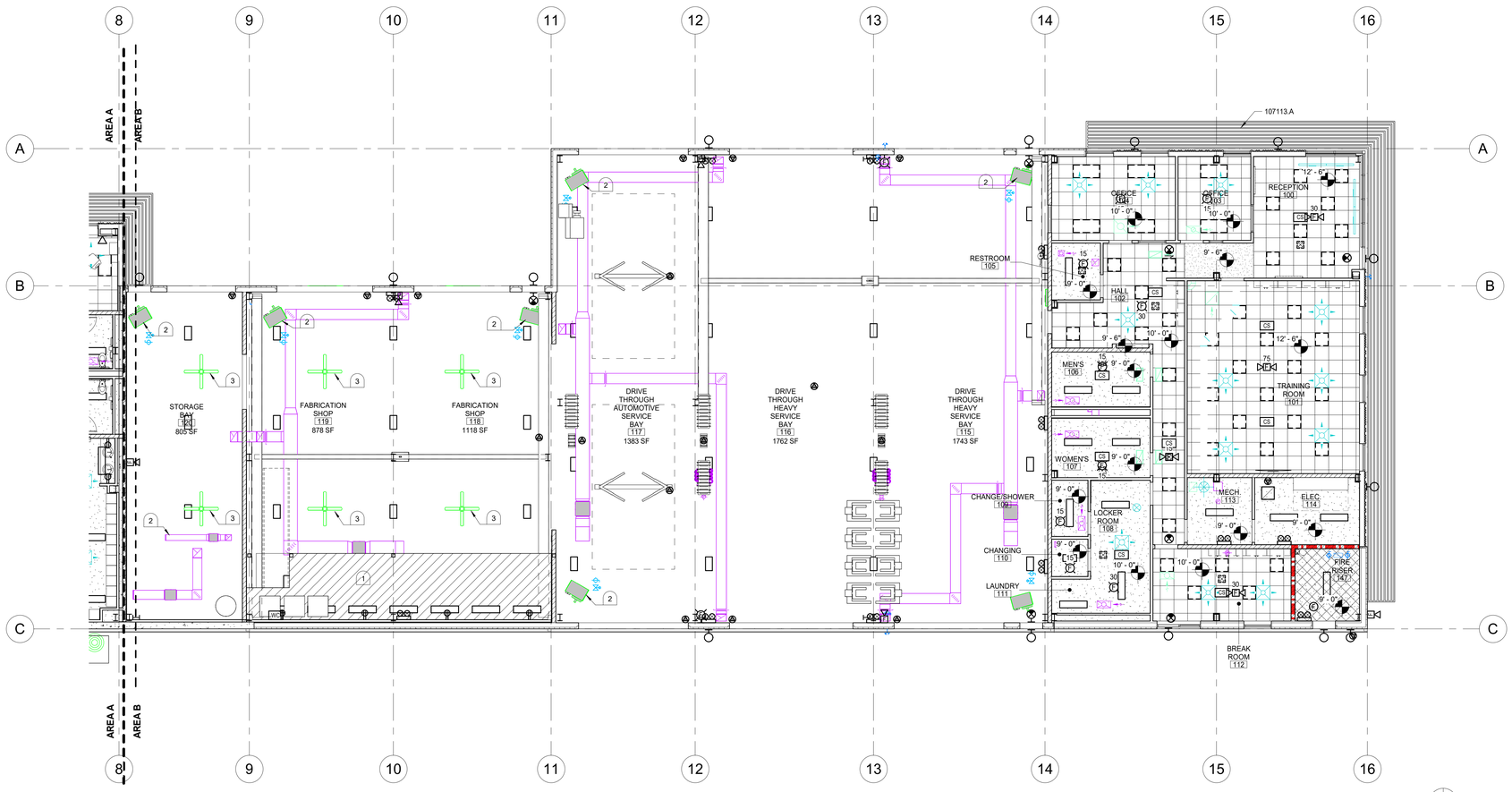

E1 CEILING PLAN - AREA B
1/8" = 1'-0"

CONDOC

107113.A EXTERIOR SUN CONTROL DEVICE

KEYNOTES

1. MEZZANINE, SEE MEZZANINE PLANS **A6.20.**
2. MECHANICAL EQUIPMENT, SEE MECHANICAL HVAC PLANS.
3. SHOP FAN, SEE MECHANICAL HVAC PLANS.

CEILING LEGEND

CT01: 2X2 LAY-IN ACOUSTICAL CEILING **(ACP)** - 095113
SEE DETAILS **C6/A8.1**

CT02: GYPSUM BOARD CEILING OR SOFFIT - BOTTOM FACE PAINTED **(P1)**. (SOFFIT SIDES PAINT TO MATCH ADJACENT WALL.) SEE **D6/A8.1**

CT03: 1-HR RATED GYPSUM BOARD CEILING OR SOFFIT - PAINTED **(P1)**. SEE **D6/A8.1**

MEZZANINE; SEE PLANS SHEET **A6.20**

WALL MOUNTED LIGHT FIXTURES

GRID MOUNTED LIGHT FIXTURES

SURFACE MOUNTED LIGHT FIXTURE

HVAC MECHANICAL GRILLES

GENERAL CEILING NOTES

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2. PAINT ALL DUCT WORK, CONDUIT, AND PIPING EXPOSED TO VIEW.
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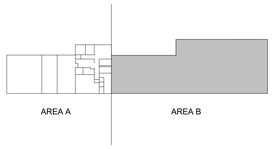

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REFLECTED CEILING PLAN - AREA B

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A2.42

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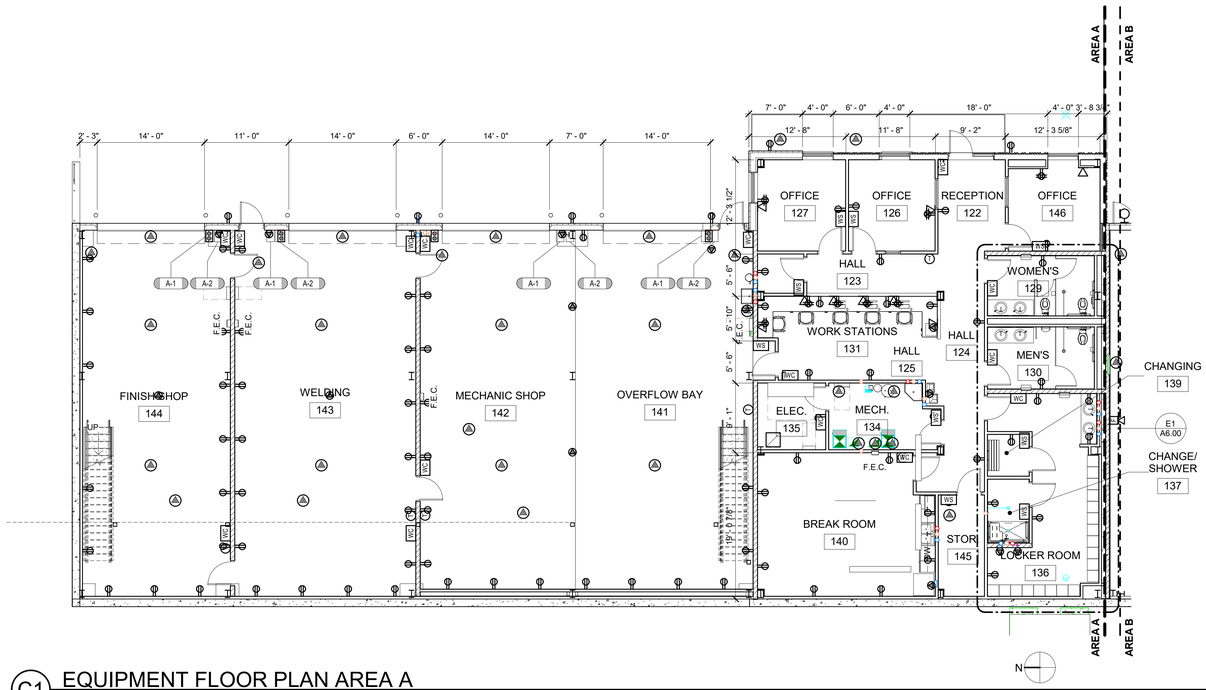


C1 EQUIPMENT FLOOR PLAN AREA A
1/8" = 1'-0"

Area A Equipment Schedule

Type Mark	Count	Description	Manufacturer	Model	New/Existing	Install	Power Required?	Air Required?	Comments
A-1	4	AIR WALL MOUNT HOSE REEL	SEE MECH	SEE MECH	NEW	CFCI	NO	YES	1
A-2	4	POWER WALL MOUNT HOSE REEL	SEE ELEC	SEE ELEC	NEW	CFCI	YES	NO	1

EQUIPMENT REMARKS

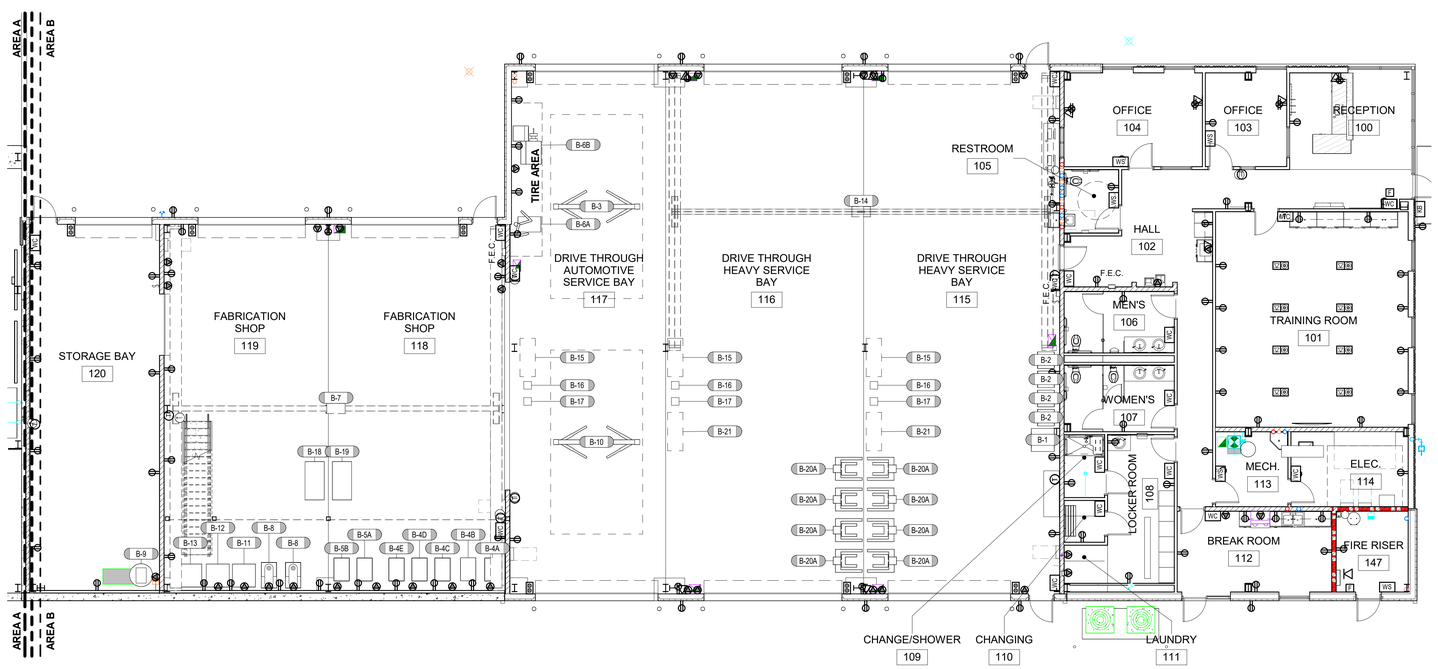
1. EQUIPMENT MOUNTED OVERHEAD.
2. EQUIPMENT PLANNED FOR FUTURE INCLUSION. PROVIDE STRUCTURAL AND POWER CONNECTIONS FOR FUTURE INSTALLATION.
3. SEE SPEC SECTION **146000.**
4. COORDINATE INSTALLATION WITH OWNER. EQUIPMENT PROVIDED BY NORTHWEST PUMP.

Area B Equipment Schedule

Type Mark	Count	Description	Manufacturer	Model	New/Existing	Install	Power Required?	Air Required?	Comments
B-1	1	300 GALLON WASTE OIL TANK	N/A	N/A	NEW	OFCI	YES	YES	4
B-2	4	150 GALLON FRESH OIL TANK	N/A	N/A	NEW	OFCI	YES	YES	4
B-3	1	2-POST LIFT - 12'X24'	STERTIL KONI	SK-2.20 33	EXISTING	OFCI	YES	NO	
B-4A	1	WELDER 1	EDWARDS		EXISTING	OFOI	YES	NO	
B-4B	1	WELDER 2	WORLDWIDE	MT-200	EXISTING	OFOI	YES	NO	
B-4C	1	WELDER 3	HOBART	TR-300	EXISTING	OFOI	YES	NO	
B-4D	1	WELDER 4	MILLERMATIC	212	EXISTING	OFOI	YES	NO	
B-4E	1	WELDER 5	MILLERMATIC	250	EXISTING	OFOI	YES	NO	
B-5A	1	PLASMA CUTTER 1	HYPERTHERM	POWERMAX 600	EXISTING	OFOI	YES	NO	
B-5B	1	PLASMA CUTTER 2	HYPERTHERM	POWERAX 85	EXISTING	OFOI	YES	NO	
B-6A	1	TIRE STATION 1	COATS		EXISTING	OFOI	YES	YES	
B-6B	1	TIRE STATION 2	COATS	1055	EXISTING	OFOI	YES	YES	
B-7	1	OVERHEAD HOIST - 5 TON	KONECRANES	5T CXTS	NEW	CFCI	YES	NO	3
B-8	2	STANDING DRILL PRESS			EXISTING	OFOI	YES	NO	
B-9	1	AIR COMPRESSOR	INGERSOLL RAND	7100E15-P-23 0/3	NEW	OFCI	YES	NO	
B-10	1	2-POST LIFT - 12'X24' - FUTURE	N/A	N/A	FUTURE		YES	NO	2
B-11	1	GRINDER			EXISTING	OFOI	YES	NO	
B-12	1	40-TON SHOP PRESS	EDWARDS		EXISTING	OFOI	YES	NO	
B-13	1	PRESS BRAKE / IRON WORKER			EXIST/NEW	OFOI	YES	NO	
B-14	1	OVERHEAD HOIST - 10 TON	KONECRANES	10T CXTS	NEW	CFCI	YES	NO	3
B-15	3	OIL OVERHEAD HOSE REEL	REELCRAFT		NEW	OFCI	NO	NO	1
B-16	3	AIR OVERHEAD HOSE REEL	SEE MECH	SEE MECH	NEW	CFCI	NO	YES	1
B-17	3	POWER OVERHEAD HOSE REEL	SEE ELEC	SEE ELEC	NEW	CFCI	YES	NO	1
B-18	1	MITRE BAND SAW	ELLIS	1600	EXISTING	OFOI	YES	NO	
B-19	1	BEAD BLASTER			EXISTING	OFOI	YES	YES	
B-20A	8	PORTABLE LIFT	STERTIL KONI		EXISTING	OFOI	YES	NO	
B-21	2	EXHAUST OVERHEAD REEL			NEW	CFCI	YES	NO	

GENERAL EQUIPMENT NOTES

1. REFER TO PLUMBING FOR EQUIPMENT PRESSURIZED AIR CONNECTIONS.
2. REFER TO ELECTRICAL FOR EQUIPMENT POWER CONNECTION REQUIREMENTS.



E1 EQUIPMENT FLOOR PLAN AREA B
1/8" = 1'-0"

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MOSCOW CITY SHOP

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EQUIPMENT PLANS

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A2.50

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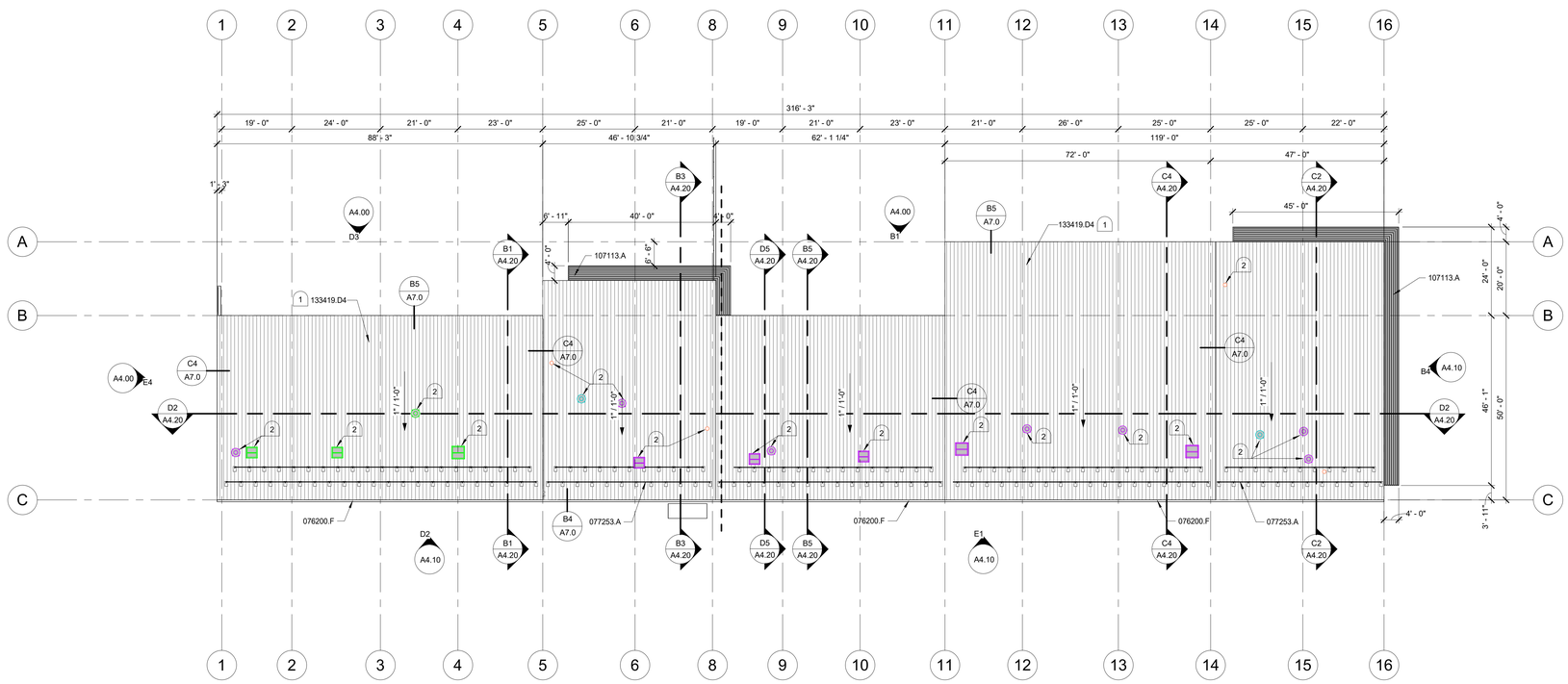
CONDOC

076200.F	GUTTER.
077253.A	SNOW GUARD.
107113.A	EXTERIOR SUN CONTROL DEVICE
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.



KEYNOTES

1. SEE DETAIL **B2/A7.1** FOR STANDING SEAM PANEL JOINT.
2. MECHANICAL ROOFTOP EQUIPMENT. SEE MECHANICAL HVAC OVERALL ROOF PLAN.

GENERAL NOTES

1. PROVIDE WATER TIGHT SEAL AROUND ALL ROOFTOP EQUIPMENT AND PENETRATIONS. INCLUDING THOSE NOT SHOWN HERE. REFER TO MECHANICAL DRAWINGS SHEET **M1.13** FOR EQUIPMENT NOT SHOWN HERE.

E2 ROOF PLAN
1/16" = 1'-0"

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OVERALL ROOF PLAN

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A2.60

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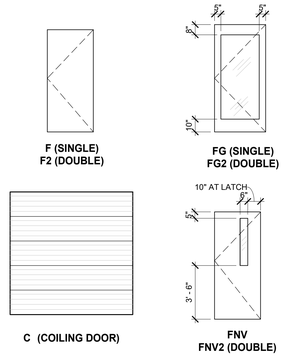
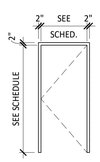
DOOR SCHEDULE

MARK	1. DOOR OPENING WIDTH	1. DOOR OPENING HEIGHT	2. DOOR TYPE	3. DOOR CONST.	4. FACING FINISH	5. GLASS	6. FIRE RATING	7. FRAME TYPE	8. FRAME CONST.	DETAILS - SEE THIS SHEET U.O.N. HEAD	JAMB	SILL	9. REMARKS
100	3' - 0"	8' - 0"	FG	AL	FF	CT	-	ES4	AL	A3/A8.1 SIM	A3/A8.1	C3/A8.1	-
101	3' - 0"	7' - 0"	FNV	SC	PL	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
102	3' - 0"	7' - 0"	FNV	HM	MP	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
103	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM				-
104	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
105	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
106	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
107	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
108	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
109	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
110	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
112	3' - 0"	7' - 0"	FNV	SC	PL	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
112A	3' - 0"	8' - 0"	FG	AL	FF	CT	-	ES6	AL	A3/A8.1 SIM	A3/A8.1	C3/A8.1	-
113	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
114	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
115	16' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
115A	16' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
115C	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
115D	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
116	18' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
116A	18' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
117	16' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
117A	16' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
118	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
118A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
119	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
119A	8' - 0"	10' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
120	10' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
120A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
122	3' - 0"	8' - 0"	FG	AL	FF	CT	-	ES7	AL	A3/A8.1 SIM	A3/A8.1	C3/A8.1	-
125	3' - 0"	7' - 0"	FNV	HM	MP	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	C4/A8.1	-
126	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
127	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
128	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
129	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
130	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
134	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
135	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
136	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
137	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
139	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
140	3' - 0"	7' - 0"	FNV	SC	PL	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
141	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
141A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
142	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
142A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
143	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
143A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A2/A7.0	B2/A7.0	C4/A8.1	-
143B	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
144	14' - 0"	16' - 0"	C	OH	FF	-	-	OH	-	D5/A7.1	C5/A7.1	-	-
144A	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
144B	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
144C	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
145	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
146	3' - 0"	7' - 0"	F	SC	PL	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
147	3' - 0"	7' - 0"	F	HM	MP	-	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-
149	6' - 0"	7' - 0"	FNV2	HM	MP	CT	-	1	HM	A4/A8.1 SIM	A4/A8.1	-	-

DOOR TYPES



DOOR FRAME TYPES



DOOR LEGEND

1. DOOR OPENING.
2. SEE DOOR TYPES THIS SHEET.
3. DOOR CONSTRUCTION:
   AL = ALUMINUM
   HM = HOLLOW METAL
   SC = SOLID CORE WOOD
4. FACING AND FINISH:
   FF = FACTORY FINISH
   MP = METAL PAINTED
   PL = PLASTIC LAMINATE
5. GLASS: SEE GLAZING TYPES BELOW.
6. FIRE RATING IN MINUTES
7. SEE WINDOW FRAME TYPES FOR DOORS IN WINDOW FRAME ASSEMBLIES SHEET A3.10.
8. FRAME CONSTRUCTION:
   AL = ALUMINUM
   HM = HOLLOW METAL, PAINT P4 **(099123)**
9. REMARKS:

GLAZING TYPES

TYPE 1: 1" INSULATED - TINTED EXTERIOR PANE, CLEAR INTERIOR PANE. TEMPERED WHERE INDICATED OR REQUIRED **(088000)**

TYPE 2: 1/4" CLEAR GLASS **(088000)**

GENERAL DOOR NOTES

1. ALL DOORS AND WINDOWS SHALL BE CONSTRUCTED AS DETAILED TO ACTUAL OPENING DIMENSIONS, FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
2. ALL RATED DOORS SHALL BEAR APPROVAL AGENCY RATING LABLES.
3. DOOR FRAMES AND HARDWARE ON RATED DOORS SHALL BE LISTED FOR THOSE RATINGS.
4. ALL RATED DOORS ASSEMBLIES TO HAVE CLOSERS (SPRING HINGES NOT ALLOWED) AND BE SELF LATCHING OR AUTOMATIC CLOSING.
5. DOORS IN 6'-0" WIDE OPENINGS ARE TYPICALLY PAIRS OF 3'-0" DOORS. REFER TO DOOR TYPES (THIS SHEET) AND PLANS FOR FURTHER CLARIFICATION.
6. REFER TO SPEC SECTION **087100** FOR COMPLETE HARDWARE REQUIREMENTS AT EACH GROUP/OPENING.
7. REFER TO DETAIL **A4/A8.00** FOR DOOR SIGNAGE PARAMETERS.
8. SEE SHEETS **A3.10** FOR DOORS OCCURRING IN WINDOW FRAME TYPES.
9. PROVIDE TEMPERED GLASS IN DOORS, WINDOW LIGHTS, AND ADJACENT TO DOOR AND GLAZING WITHIN 36" FROM WALKING SURFACE AND TO MEET ALL OTHER REQUIRMENTS OF IBC SECTION 2406.

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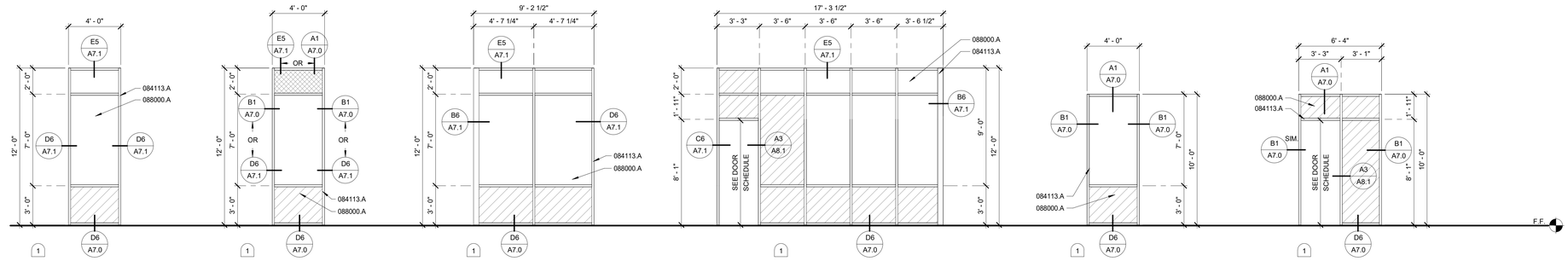
EXTERIOR FRAME TYPES



ES1 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

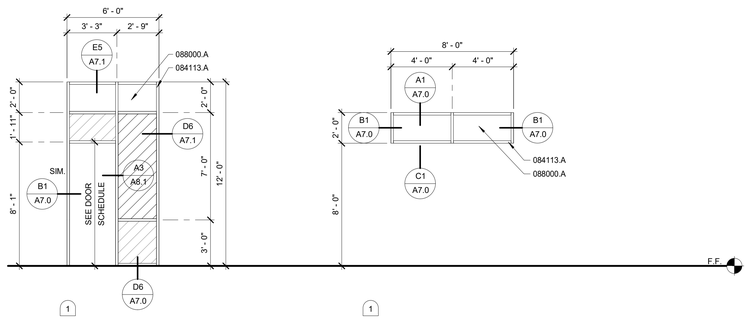
ES2 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

ES3 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

ES4 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

ES5 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

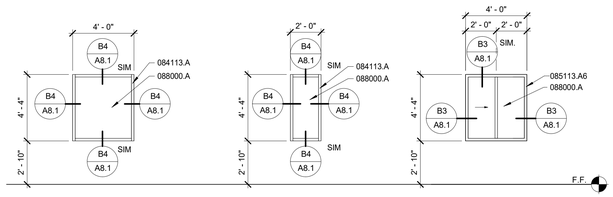
ES6 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT



ES7 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

ES8 ALUMINUM FRAME
TYPE 1 GLAZING
EXTERIOR 4 1/2" STOREFRONT

INTERIOR FRAME TYPES



IS1 ALUMINUM FRAME
TYPE 2 GLAZING
4 1/2" STOREFRONT

IS2 ALUMINUM FRAME
TYPE 2 GLAZING
4 1/2" STOREFRONT

IS3 ALUMINUM FRAME SLIDING WINDOW
TYPE 2 GLAZING
4" FRAME

CONDOC

084113.A	ALUMINUM STOREFRONT FRAMING.
085113.A6	ALUMINUM HORIZONTAL SLIDING WINDOW.
088000.A	GLASS, SEE LEGEND FOR TYPE.

KEYNOTES

1. INSTALL ROLLER SHADES (**122413**) FROM WINDOW HEAD TO WINDOW SILL AT THIS WINDOW TYPE. INSTALL ROLLER SHADE CHAINS AT OPENING JAMBS.

GLAZING TYPES

TYPE 1:1" INSULATED - TINTED EXTERIOR PANE CLEAR INTERIOR PANE, TEMPERED WHERE INDICATED OR REQUIRED **(088000)**

TYPE 2:1/4" CLEAR FLOAT GLASS, FULLY TEMPERED WHERE REQUIRED **(088000)**

INDICATES TEMPERED GLASS, SEE SPECIFICATION SECTION **(088000)** (BOTH PANES WHERE APPLICABLE)

INDICATES SPANDREL GLASS, SEE SPECIFICATION SECTION **(088000)**

GENERAL NOTES

1. SEE SPEC SECTION **(087100)** FOR STANDARD HARDWARE.
2. ALL DOORS AND WINDOWS SHALL BE CONSTRUCTED AS DETAILED TO ACTUAL OPENING DIMENSIONS, VERIFY.
3. SEE SPECIFICATION FOR DOOR AND FRAME ASSEMBLIES SCHEDULED TO RECEIVE CONDUIT FOR LATCH MECHANISMS AND POSITION INDICATORS.
4. INSTALL SEALANT BETWEEN DISSIMILAR MATERIALS.
5. ALL GLASS WITHIN A RATED ASSEMBLY SHALL MEET OR EXCEED REQUIRED FIRE RATINGS AND SAFETY GLASS STANDARDS. GLASS SHALL BE LABELED AS SUCH OR PROVIED WITH A CERTIFICATE FROM THE MANUFACTURER STATING THAT EACH INDIVIDUAL PIECE OF GLASS MEETS FIRE AND SAFETY GLASS STANDARDS.

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FRAME TYPES

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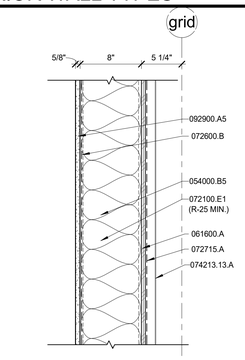
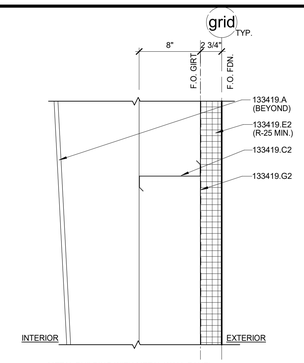
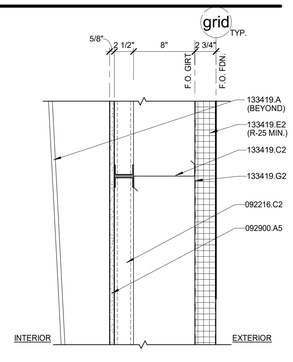
EXTERIOR WALL TYPES



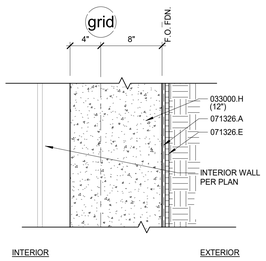
ET510 LAP-SEAM METAL WALL PANEL



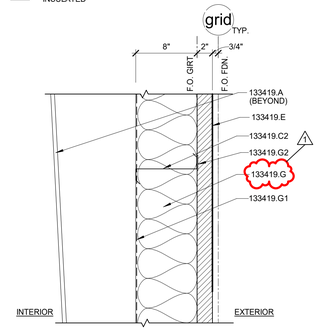
ET131 METAL BUILDING WITH METAL WALL PANEL INSULATED



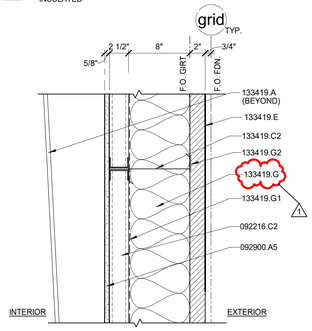
ET132 METAL BUILDING WITH METAL WALL PANEL INSULATED



ET300 CONCRETE STRUCTURAL/RETAINING WALL

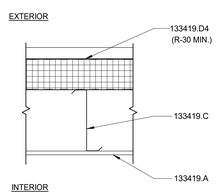


ET131 **ALTERNATE #1**
METAL BUILDING WITH METAL WALL PANEL
BATT-INSULATION



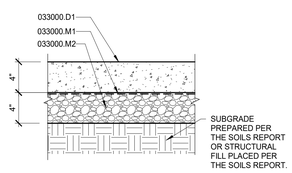
ET132 **ALTERNATE #1**
METAL BUILDING WITH METAL WALL PANEL
BATT-INSULATED

ROOF TYPES

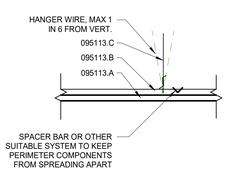


RT131 METAL BUILDING WITH METAL WALL PANEL INSULATED

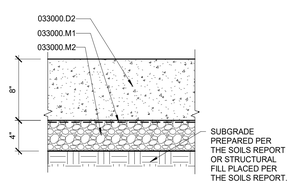
FLOOR / CEILING TYPES



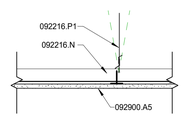
FT01 **FLOOR**
SLAB ON GRADE
1 HOUR RATED
UL: D902



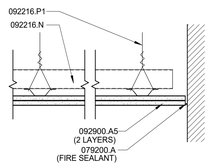
CT01 **ACOUSTICAL CEILING PANEL**



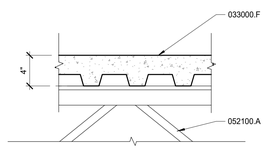
FT02 **FLOOR**
SLAB ON GRADE
1 HOUR RATED
UL: D902



CT02 **GYPSUM BOARD CEILING**



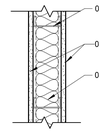
CT03 **CEILING**
1 HOUR RATED
UL DES P201



FT03 **FLOOR**
SLAB ON DECK
1 HOUR RATED
UL: D902

INTERIOR WALL TYPES

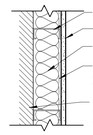
9 SERIES



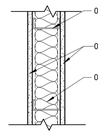
92 **STANDARD WALL**
93 WALL TO BOTTOM OF DECK ABOVE.
96 SEE DETAILS **D6**, **E6**.
98 STEEL STUDS AT 24" O.C.
REFER TO FINISH SCHEDULE WHERE PLYWOOD REPLACES GYPSUM BOARD.

93.C **CEILING HEIGHT WALL**
96.C WALLS TO 8" ABOVE CEILING.
98.C SEE DETAILS **C6**, **E6**.
STEEL STUDS AT 24" O.C.

93.P **PARTIAL HEIGHT WALL**
96.P WALL TO HEIGHT INDICATED ON PLANS.
98.P STEEL STUDS AT 24" O.C.



90.H **FURRING / CHASE WALL**
91.H CONDITION AT WALL FURRING AND/OR CHASE WALLS TO BE SAME WALL CONSTRUCTION AS INDICATED BY TAG.
92.H
93.H
EXCEPTION: GYPSUM BOARD LOCATED AT FINISH SIDE ONLY.



96.F1 **FIRE RATED WALL**
1-HOUR RATED.
WALL TO BOTTOM OF DECK ABOVE.
SEE DETAILS **D6**, **E6**.
STEEL STUDS AT 24" O.C.
UL: U419
STC: 49 | SA-870717

WALL TYPES LEGEND

INTERIOR

XX.x

WALL MATERIAL
3 - CONCRETE - SPEC. SECTION **033000**
4 - MASONRY - SPEC. SECTION **042000**
5 - LOAD-BEARING METAL STUD - SPEC. SECTION **054000**
6 - WOOD STUD - SPEC. SECTION **061000**
9 - NON-LOAD BEARING METAL STUD - SPEC. SECTION **092216**

NOMINAL WALL WIDTH:

0 = 7/8" FURRING	5 = C-H SHAFT WALL STUD
1 = 1 5/8"	6 = 6" (5 1/2" WOOD)
2 = 2 1/2"	8 = 8" (7 1/4" WOOD)
3 = 3 5/8"	10 = 10"
4 = 4" (3 1/2" WOOD)	12 = 12"

WALL PROPERTIES:
C = CEILING HEIGHT WALL
F# = FIRE RATED WALL
REPRESENTS RATING IN HOURS (ie; 93.F1, 93.F2)
P = PARTIAL HEIGHT WALL
S = SOUND WALL
T# = SHAFT WALL
REPRESENTS RATING IN HOURS (ie; 94.T1, 94.T2)
X = SPECIAL WALL
H = FURRING / CHASE WALL

EXTERIOR

ET000
(6")

EXTERIOR WALL (ET)

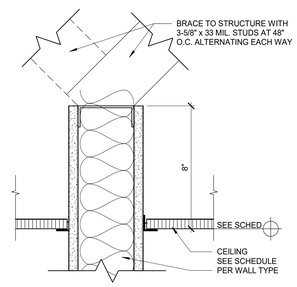
WALL MATERIAL - SUPPORTING STRUCTURE
1 - METAL BUILDING - SPEC SECTION **133419**
3 - CONCRETE - SPEC. SECTION **033000**
5 - LOAD BEARING METAL STUD - SPEC SECTION **054000**
4 - MASONRY - SPEC. SECTION **042000**
9 - NON-LOAD BEARING METAL STUD - SPEC. SECTION **092216**

SUB CATEGORY (FINISH MATERIAL) SERIES #
0 - CONCRETE WALL - SPEC. SECTION **033000**
3 - INSULATED METAL PANELS - SPEC. SECTION **133419.E2**
5 - ROOFING - SPEC. SECTION **133419.D4**

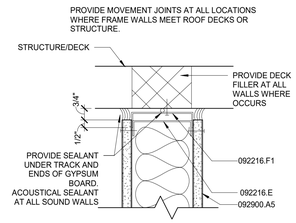
DELINIATION # IN SERIES

VARYING STUD SIZE WHERE INDICATED

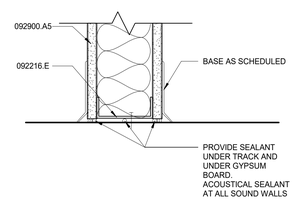
NOTES:
1. REFER TO INDIVIDUAL WALL TYPES FOR ALL INFORMATION:
2. WALL DESIGNATIONS MAY INCLUDE MULTIPLE WALL PROPERTY CHARACTERS.
3. ALL INTERIOR PARTITIONS HAVE GYPSUM BOARD BOTH SIDES TO HEIGHT INDICATED UNLESS NOTED OTHERWISE.
4. ALL INTERIOR WALLS TO HAVE SOUND ATTENUATION BLANKETS.
5. ALL FURRED OUT WALLS HAVE GYPSUM BOARD ON FINISHED FACE ONLY INDICATED UNLESS NOTED OTHERWISE.
6. REFER TO LIFE SAFETY PLAN ON SHEET **0.10** FOR DESIGNATIONS AND LOCATIONS OF FIRE RATED WALLS.
7. REFER TO SHEET **0.20** FOR ASSOCIATED UL ASSEMBLIES.



C6 WALL BRACING
3" = 1'-0"
wall bracing



D6 MOVEMENT JOINT
3" = 1'-0"
MOVEMENT JOINT



E6 WALL BASE
3" = 1'-0"
WALL BASE

CONDOC

033000.D1	4" CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.D2	6" CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.F	CONCRETE SLAB ON METAL DECK, SEE STRUCTURAL.
033000.H	CONCRETE WALL, SEE STRUCTURAL.
033000.M1	VAPOR RETARDER.
033000.M2	GRANULAR FILL.
052100.A	OPEN WEB STEEL JOIST, SEE STRUCTURAL.
054000.B5	8" (800S) NON-LOAD BEARING STEEL STUD.
061600.A	WALL SHEATHING.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
071326.E	MOLDED-SHEET DRAINAGE PANEL.
072100.E1	UNFACED, GLASS-FIBER BLANKET INSULATION.
072600.A	POLYETHYLENE VAPOR RETARDER.
072600.B	REINFORCED-POLYETHYLENE VAPOR RETARDER
072715.A	NONBITUMINOUS SHEET AIR BARRIER
074213.13.A	LAP-SEAM METAL WALL PANEL.
079200.A	JOINT SEALANT.
092216.A	STEEL STUD FRAMING.
092216.C2	2-1/2" X 33-MIL STEEL STUDS AT 24" O.C.
092216.E	STEEL STUD TRACK / RUNNER.
092216.F1	DEFLECTION TRACK.
092216.N	GRID SUSPENSION SYSTEM
092216.P1	WIRE HANGER.
092900.A5	5/8" TYPE X GYPSUM BOARD.
092900.N	SOUND ATTENUATION BLANKETS.
095113.A	SUSPENDED ACOUSTICAL PANEL CEILING.
095113.B	METAL SUSPENSION SYSTEM.
095113.C	WIRE HANGER.
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C	PURLIN.
133419.C2	WALL GIRTS.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E	METAL WALL PANEL.
133419.E2	INSULATED METAL WALL PANEL.
133419.G	METAL BUILDING INSULATION.
133419.G1	VAPOR RETARDER.
133419.G2	THERMAL BLOCK.

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INTERIOR DESIGN
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ARCHITECT
AR-985148
07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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(208) 345-7127

MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW COMMENTS

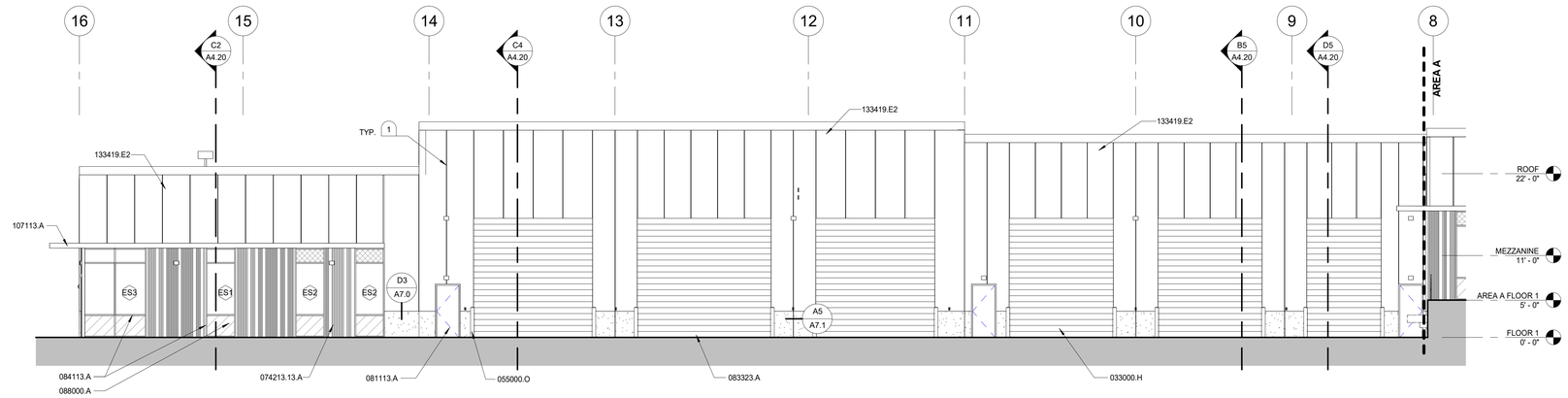
JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **RB/BC/SB**
CHECKED BY: **MG**

PHASE: **PERMIT SET**

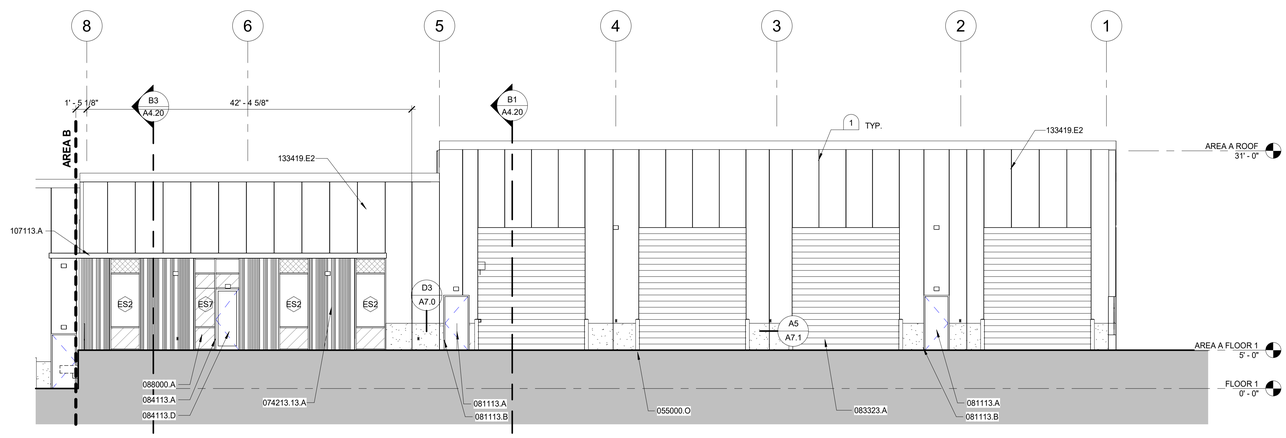
ASSEMBLY TYPES

SHEET NO.
A3.20

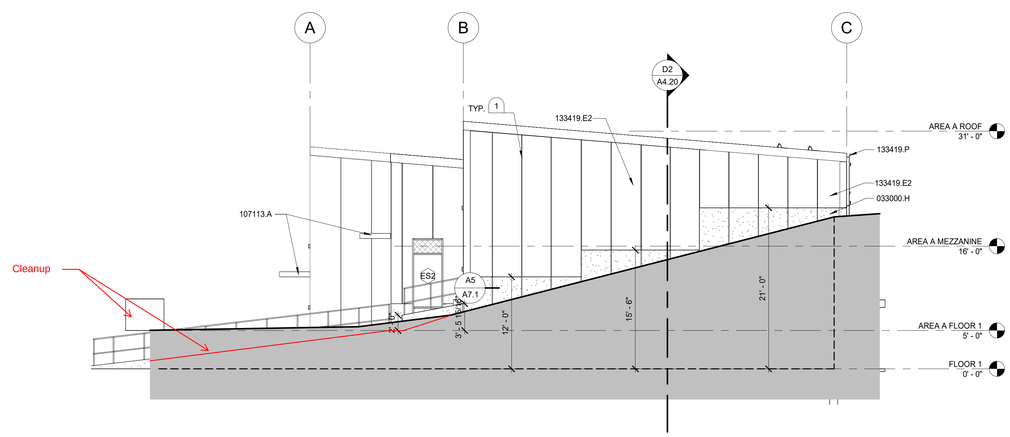
9/26/2024 3:09:35 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V22_bchurchHDWZ7.rvt



B1 EAST - AREA B
1/8" = 1'-0"



D3 EAST - AREA A
1/8" = 1'-0"



E4 NORTH ELEVATION
1/8" = 1'-0"

CONDOC

033000.H	CONCRETE WALL, SEE STRUCTURAL.
055000.O	METAL BOLLARD.
074213.13.A	LAP-SEAM METAL WALL PANEL.
081113.A	HOLLOW-METAL DOOR.
081113.B	HOLLOW-METAL FRAME.
083323.A	OVERHEAD COILING DOOR.
084113.A	ALUMINUM STOREFRONT FRAMING.
084113.D	ENTRANCE DOOR.
088000.A	GLASS, SEE LEGEND FOR TYPE.
107113.A	EXTERIOR SUN CONTROL DEVICE
133419.E2	INSULATED METAL WALL PANEL.
133419.P	GUTTER.

KEYNOTES

1. INSULATED METAL PANEL JOINT PER MANUFACTURERS STANDARD DETAIL.

GENERAL NOTES

1. ALL SURFACES OF EXPOSED STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINISHED OR PAINTED U.O.N.
2. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN WALL FRAMING SHALL BE PRE-FINISHED TO MATCH STOREFRONT FRAMING. **(084413)**
3. SEE SHEET **A3.10** FOR EXTERIOR WINDOW ELEVATIONS.
4. ALIGN CLADDING JOINTS AND/OR REVEALS WITH WINDOW MULLIONS AND OTHER BUILDING ELEMENTS AS INDICATED. PROVIDE BLOCKING OR STRAPPING BEHIND CLADDING JOINTS AS REQUIRED BY MANUFACTURER.
5. INSTALL SEALANT BETWEEN ALL DISSIMILAR MATERIALS IN COLORS THAT APPROXIMATRE COLORS OF ADJACENT FINISHES U.O.N. **(079200)** (COLOR SELECTIONS SHALL BE CONFIRMED BY ARCHITECT)
6. SEE CIVIL DRAWINGS SHEET **C2** FOR SITE IMPROVEMENTS INCLUDING GRADING, PAVING, AND FLATWORK.
7. SEE STRUCTURAL DRAWINGS **S1/A1.01A** FOR RETAINING WALL INFORMATION.

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MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
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DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

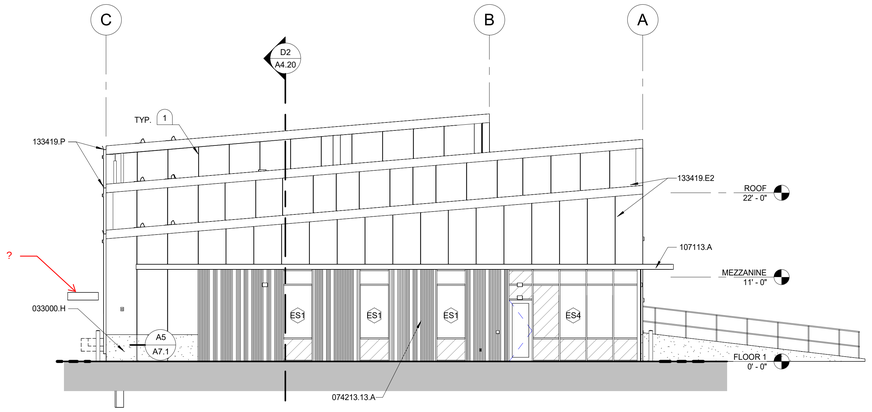
EXTERIOR ELEVATIONS

SHEET NO.
A4.00

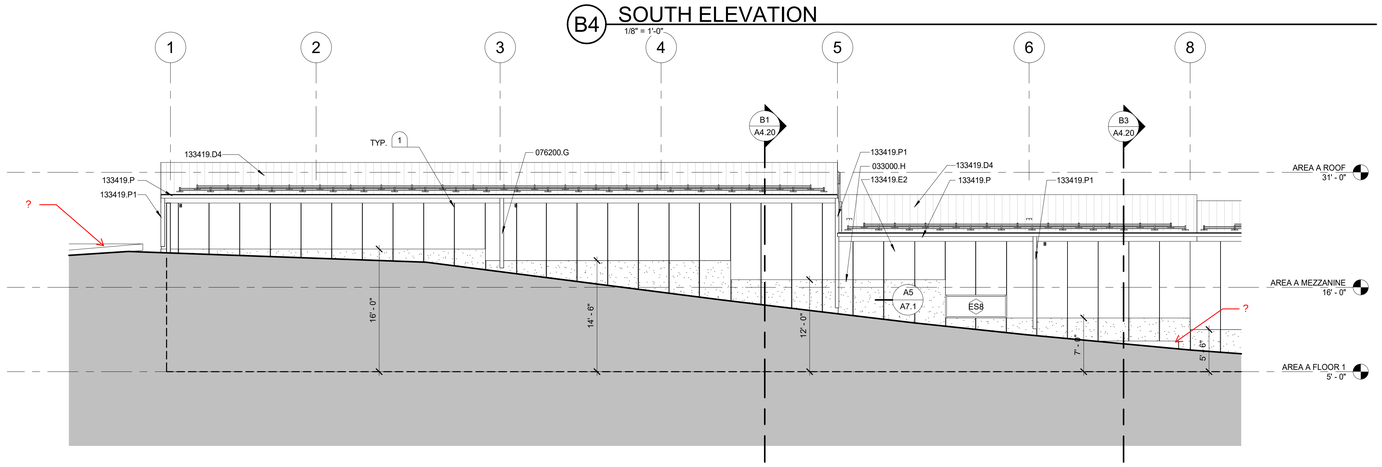
7/29/2024 11:48:41 AM C:\Users\rylerb\Documents\24000.01 Moscow City Shop_Central_V23_RylerBehalp.rvt

CONDOC

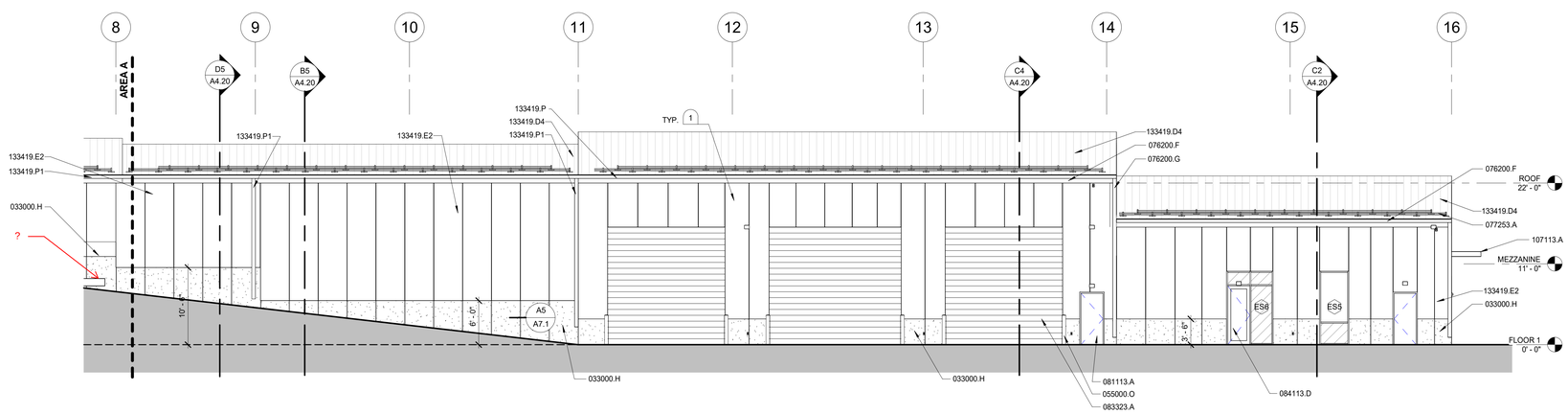
033000.H	CONCRETE WALL, SEE STRUCTURAL.
055000.O	METAL BOLLARD.
074213.13.A	LAP-SEAM METAL WALL PANEL.
076200.F	GUTTER.
076200.G	DOWNSPOUT.
077253.A	SNOW GUARD.
081113.A	HOLLOW-METAL DOOR
083323.A	OVERHEAD COILING DOOR.
084113.D	ENTRANCE DOOR.
107113.A	EXTERIOR SUN CONTROL DEVICE
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.P	GUTTER.
133419.P1	DOWNSPOUT.



B4 SOUTH ELEVATION
1/8" = 1'-0"



D2 WEST - AREA A
1/8" = 1'-0"



E1 WEST - AREA B
1/8" = 1'-0"

KEYNOTES

1. INSULATED METAL PANEL JOINT PER MANUFACTURERS STANDARD DETAIL.

GENERAL NOTES

1. ALL SURFACES OF EXPOSED STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINISHED OR PAINTED U.O.N.
2. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN WALL FRAMING SHALL BE PRE-FINISHED TO MATCH STOREFRONT FRAMING. **(084413)**
3. SEE SHEET **A3.10** FOR EXTERIOR WINDOW ELEVATIONS.
4. ALIGN CLADDING JOINTS AND/OR REVEALS WITH WINDOW MULLIONS AND OTHER BUILDING ELEMENTS AS INDICATED. PROVIDE BLOCKING OR STRAPPING BEHIND CLADDING JOINTS AS REQUIRED BY MANUFACTURER.
5. INSTALL SEALANT BETWEEN ALL DISSIMILAR MATERIALS IN COLORS THAT APPROXIMATRE COLORS OF ADJACENT FINISHES U.O.N. **(079200)** (COLOR SELECTIONS SHALL BE CONFIRMED BY ARCHITECT)
6. SEE CIVIL DRAWINGS SHEET **C2** FOR SITE IMPROVEMENTS INCLUDING GRADING, PAVING, AND FLATWORK.
7. SEE STRUCTURAL DRAWINGS **S1/A1.01A** FOR RETAINING WALL INFORMATION.

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LICENSED ARCHITECT AR-985148
07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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MRK	DATE	DESCRIPTION

JOB N0.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

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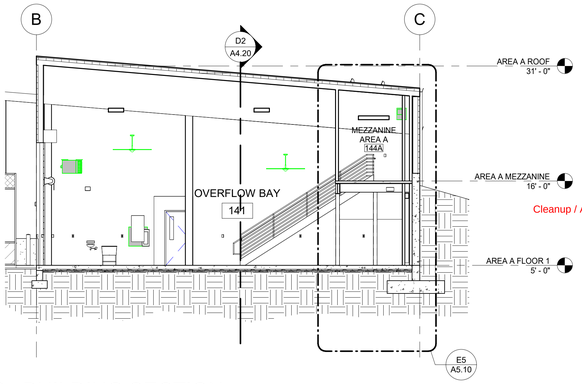
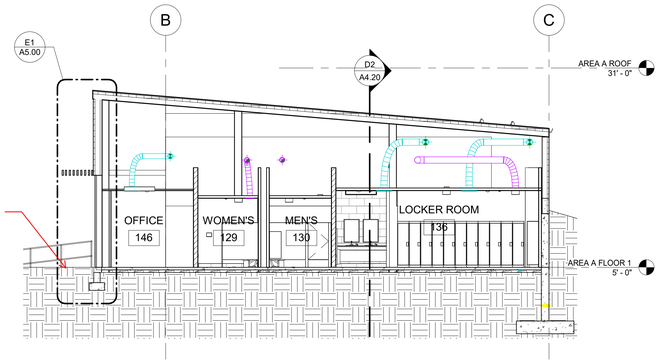
EXTERIOR ELEVATIONS

SHEET NO.
A4.10

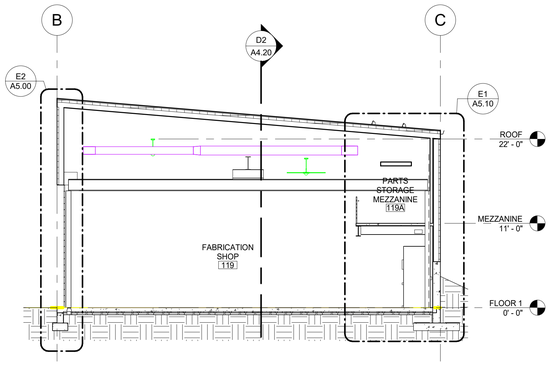
7/29/2024 11:48:44 AM C:\Users\ryken\Documents\24000-01 Moscow City Shop_Central_V23_RykenBelnap.rvt



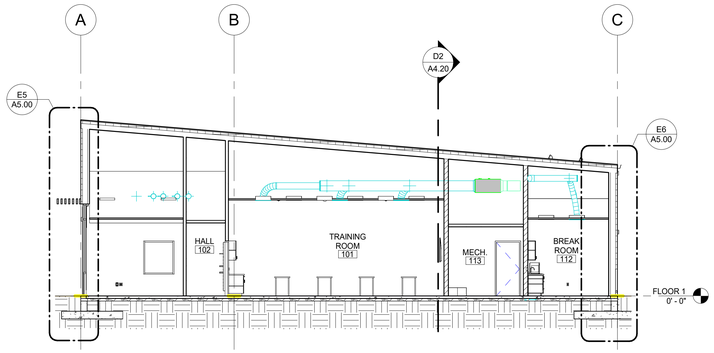
B1 BUILDING SECTION
1/8" = 1'-0"



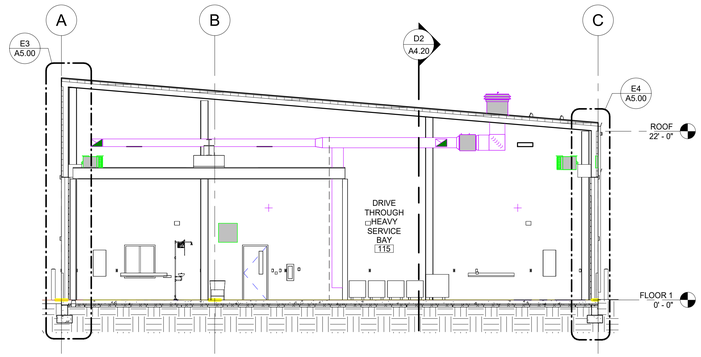
B3 BUILDING SECTION
1/8" = 1'-0"



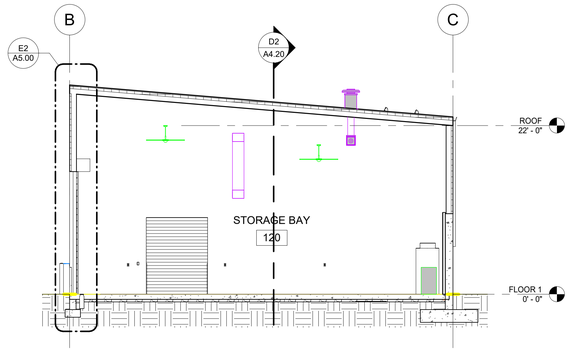
B5 BUILDING SECTION
1/8" = 1'-0"



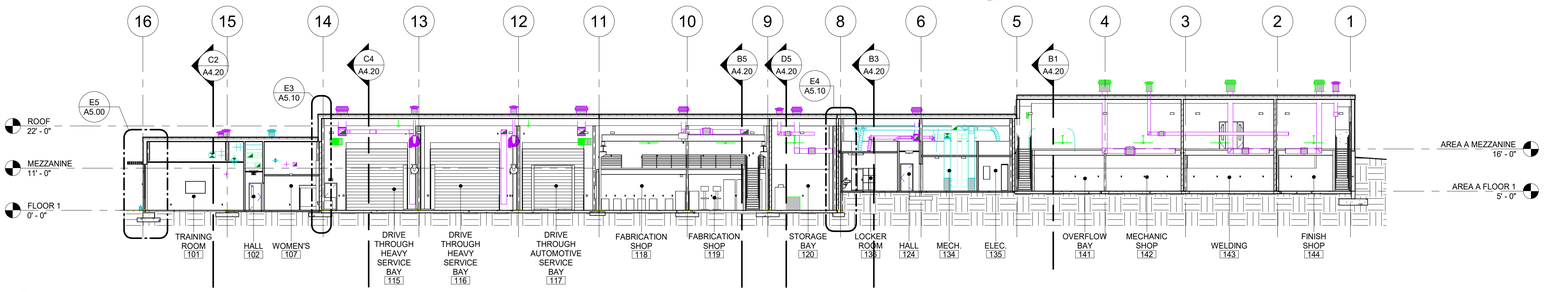
C2 BUILDING SECTION
1/8" = 1'-0"



C4 BUILDING SECTION
1/8" = 1'-0"



D5 BUILDING SECTION
1/8" = 1'-0"



D2 BUILDING SECTION
1/16" = 1'-0"

CONDOC

KEYNOTES

1. ....

GENERAL NOTES

1. SEE ROOM FINISH SCHEDULE, INTERIOR ELEVATIONS, AND REFLECTED CEILING PLANS FOR ROOM FINISH, CEILING FINISHES, AND CEILING HEIGHTS.
2. SEE STRUCTURAL DRAWINGS SHEETS **S1.01A & S1.01B** FOR FOOTINGS, GRADE BEAMS, FOUNDATION DIMENSIONS AND DETAILS, AND BEARING HEIGHTS AT EACH CONDITION.
3. REFER TO SHEETS **0.30** FOR WALL RATINGS AND RATINGS FOR PENETRATIONS AND THEIR REQUIREMENTS. PROVIDE EQUIVALENT RATINGS FOR TOP OF WALL TERMINATION AT FLOORS, ROOFS, AND INTERSECTIONS BY APPROVED RATED ASSEMBLY.
4. ALL CEMENT CONCRETE PAVEMENT AND/OR HARDSCAPE SHALL SLOPE AWAY FROM BUILDING AT MINIMUM 2 PERCENT SLOPE. SEE LANDSCAPE.
5. ALL EXPOSED METAL FABRICATIONS SHALL BE PAINTED.
6. PROVIDE FIRE RETARDANT TREATED NAILERS FOR ROOFING ASSEMBLY AS REQUIRED BY MANUFACTURER.
7. ALL INTERIOR WALLS SHALL EXTEND TO STRUCTURE DECK ABOVE AND RECEIVE SOUND ATTENUATION INSULATION AND GYPSUM BOARD ON BOTH FACES U.O.N. **(092900)**
8. SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE IBC SECTIONS. THE CEILING INSTALLER SHALL INSTALL INDEPENDENT WIRES FOR LIGHT FIXTURE SUPPORT PER IBC. COORDINATE WITH ELECTRICAL.
9. MILLWORK NOT SHOWN IN WALL SECTIONS. SEE FLOOR, FINISH AND EQUIPMENT PLANS FOR MILLWORK EXTENTS, DETAILS, AND ELEVATIO REFERENCES.
10. PROVIDE BITUMINOUS DAMPPROOFING BELOW GRADE AT EXTERIOR FACES OF ALL FOUNDATION WALLS. **(071113)**
11. REFER TO CIVIL DRAWINGS SHEET **C2** FOR ALL SITE IMPROVEMENTS, INCLUDING FLATWORK, PLANTER BEDS, AND RETAINING WALLS.
12. SEE SHEETS **A3.10** FOR EXTERIOR WINDOW ELEVATIONS.

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MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
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BUILDING SECTIONS

SHEET NO.
A4.20

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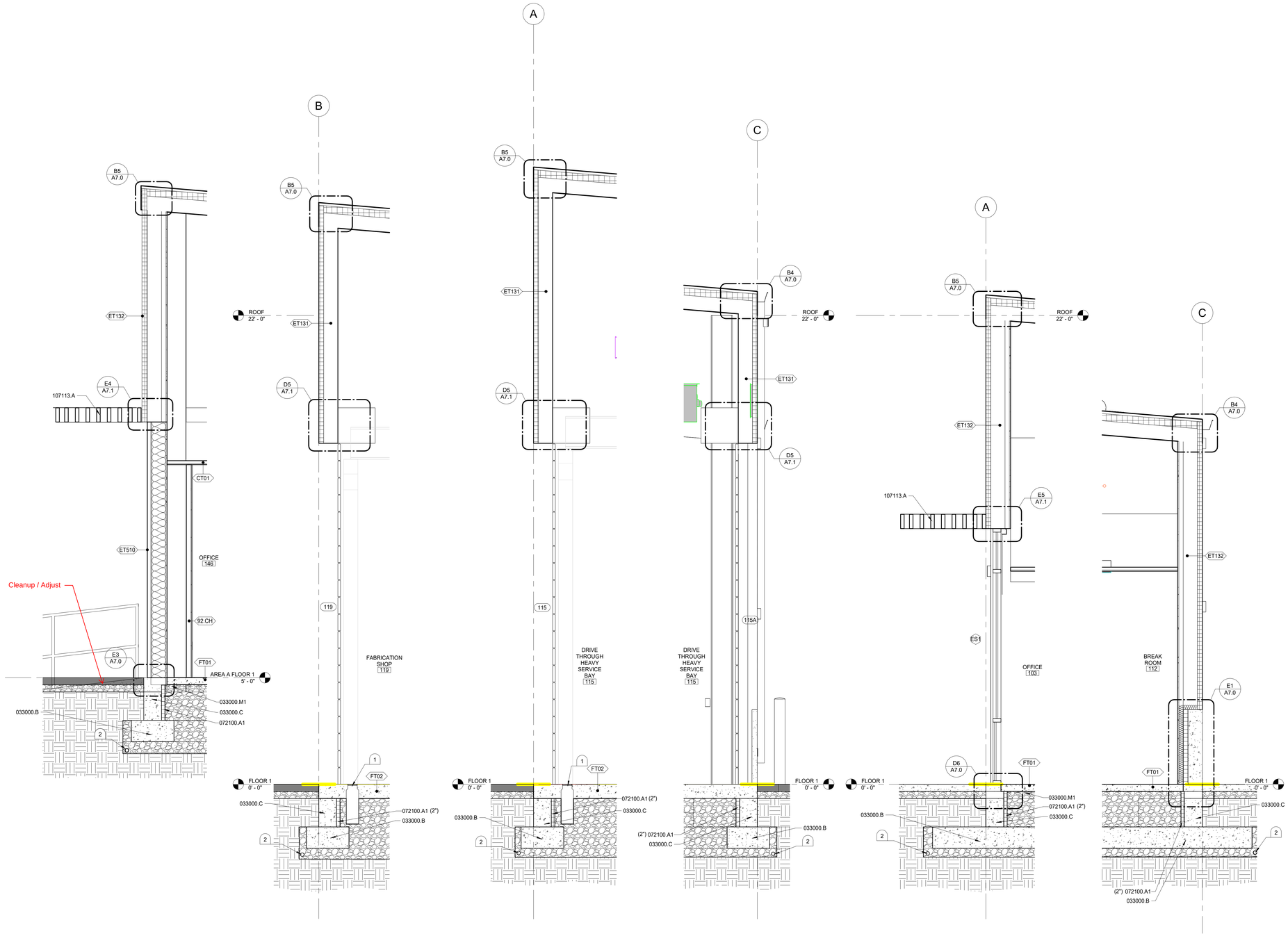

E1 WALL SECTION 1/2" = 1'-0"

E2 WALL SECTION 1/2" = 1'-0"

E3 WALL SECTION 1/2" = 1'-0"

E4 WALL SECTION 1/2" = 1'-0"

E5 WALL SECTION 1/2" = 1'-0"

E6 WALL SECTION 1/2" = 1'-0"

CONDOC

033000.B	CONCRETE FOOTING, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
033000.M1	VAPOR RETARDER.
072100.A1	EXTRUDED POLYSTYRENE BOARD INSULATION.
107113.A	EXTERIOR SUN CONTROL DEVICE

KEYNOTES

1. TRENCH DRAIN: SEE MECHANICAL.
2. FOUNDATION DRAIN. SEE CIVIL DRAWINGS.

ASSEMBLY TYPE LEGEND

#.x	INTERIOR WALL CONSTRUCTION TYPES - SEE **A3.10**.
ETxxx	EXTERIOR WALL CONSTRUCTION TYPES - SEE **A3.10**.
FTxx	FLOOR CONSTRUCTION TYPES - SEE **A3.10**.
CTxx	CEILING CONSTRUCTION TYPES - SEE **A3.10**.
RTxx	ROOF CONSTRUCTION TYPES - SEE **A3.10**.

GENERAL NOTES

1. SEE ROOM FINISH SCHEDULE, INTERIOR ELEVATIONS, AND REFLECTED CEILING PLANS FOR ROOM FINISH, CEILING FINISHES, AND CEILING HEIGHTS.
2. SEE STRUCTURAL DRAWINGS FOR FOOTINGS, GRADE BEAMS, FOUNDATION DIMENSIONS AND DETAILS, AND BEARING HEIGHTS AT EACH CONDITION.
3. REFER TO SHEETS **(0.10 AND 0.20)** FOR WALL RATINGS, RATED ASSEMBLIES, AND RATINGS FOR PENETRATIONS AND THEIR REQUIREMENTS. PROVIDE EQUIVALENT RATINGS FOR TOP OF WALL TERMINATION AT FLOORS AND ROOFS AND INTERSECTIONS BY APPROVED RATED ASSEMBLY.
4. ALL CONCRETE PAVEMENT AT BUILDING PERIMETER SHALL SLOPE AWAY FROM BUILDING AT MINIMUM 2 PERCENT SLOPE. SEE LANDSCAPE.
5. ALL EXPOSED METAL FABRICATIONS SHALL BE PAINTED.
6. PROVIDE ALL NAILERS NECESSARY FOR ROOFING ASSEMBLY. ALL NAILERS SHALL BE FIRE TREATED AND SHALL BE PROVIDED BY THE ROOFING INSTALLER.
7. ALL INTERIOR WALLS SHALL EXTEND TO DECK ABOVE AND RECEIVE SOUND ATTENUATION INSULATION AND GYPSUM BOARD ON BOTH FACES U.O.N. **(092216 / 092900)**.
8. SEE STRUCTURAL FOR ADDITIONAL CMU/LINTEL INFORMATION, INCLUDING SIZE AND REINFORCING INFORMATION.
9. PROVIDE POSITIVE ATTACHMENT TO STRUCTURE AT ALL METAL PANEL JOINTS PER MANUFACTURER REQUIREMENTS.
10. MILLWORK NOT SHOWN IN WALL SECTIONS. SEE FINISH AND EQUIPMENT PLANS FOR MILLWORK EXTENTS, DETAILS, AND ELEVATION REFERENCES.
11. PAINT ALL EXPOSED STEEL ROOF DECKING UNLESS NOTED OTHERWISE, INCLUDING AREAS ABOVE DUCTWORK AND OTHER SUSPENDED ITEMS.
12. MECHANICAL AND ELECTRICAL ITEMS SHOWN ON WALL SECTIONS ARE FOR REFERENCE ONLY AND MAY NOT REFLECT EXACT LOCATIONS, HEIGHTS, ETC. REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR LAYOUT.
13. VAPOR BARRIER AT FLOOR SLAB SHALL BE INSTALLED DIRECTLY BELOW SLAB AND ABOVE GRANULAR FILL. INSTALL PER ALL APPLICABLE REQUIREMENTS OF **033000**.

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CHECKED BY:	**MG**

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WALL SECTIONS

SHEET NO.
A5.00

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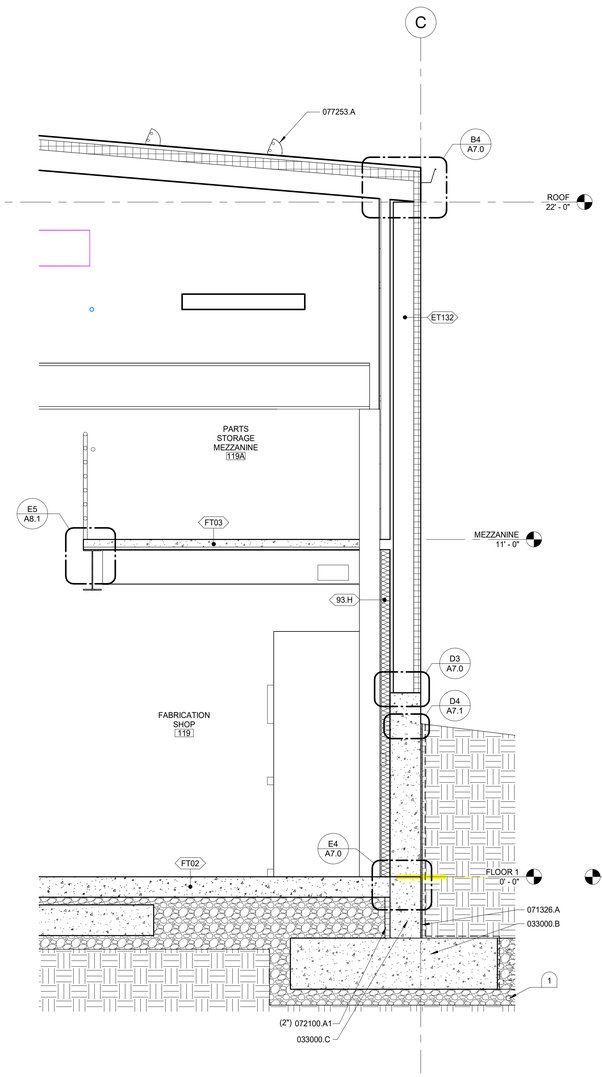
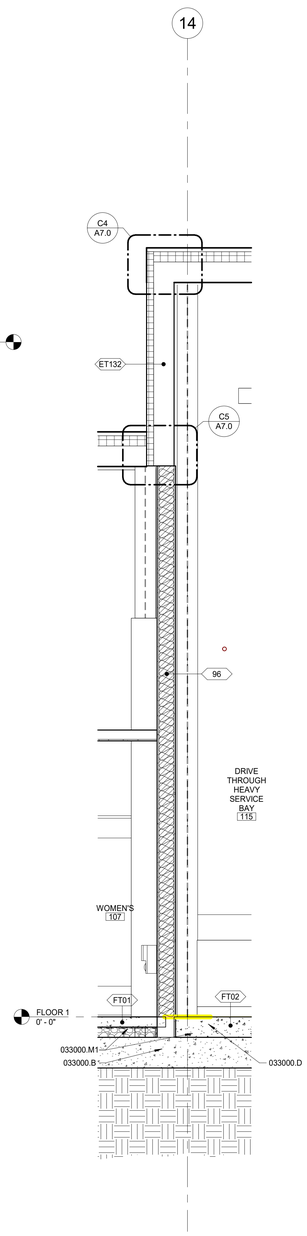
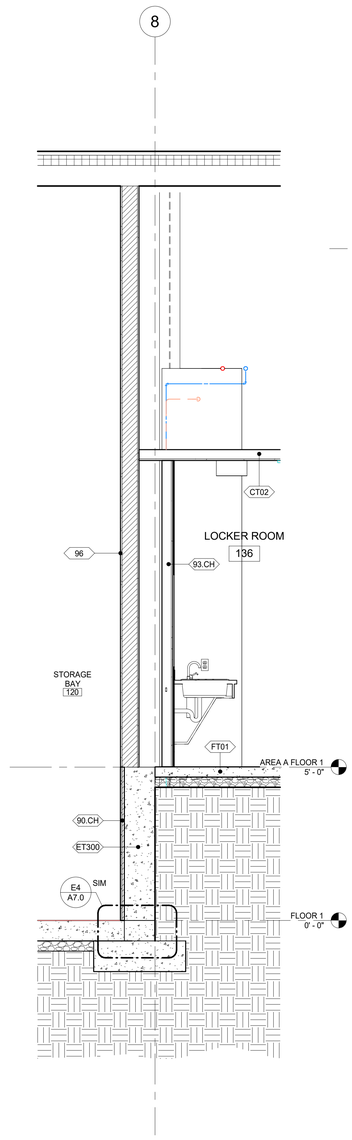


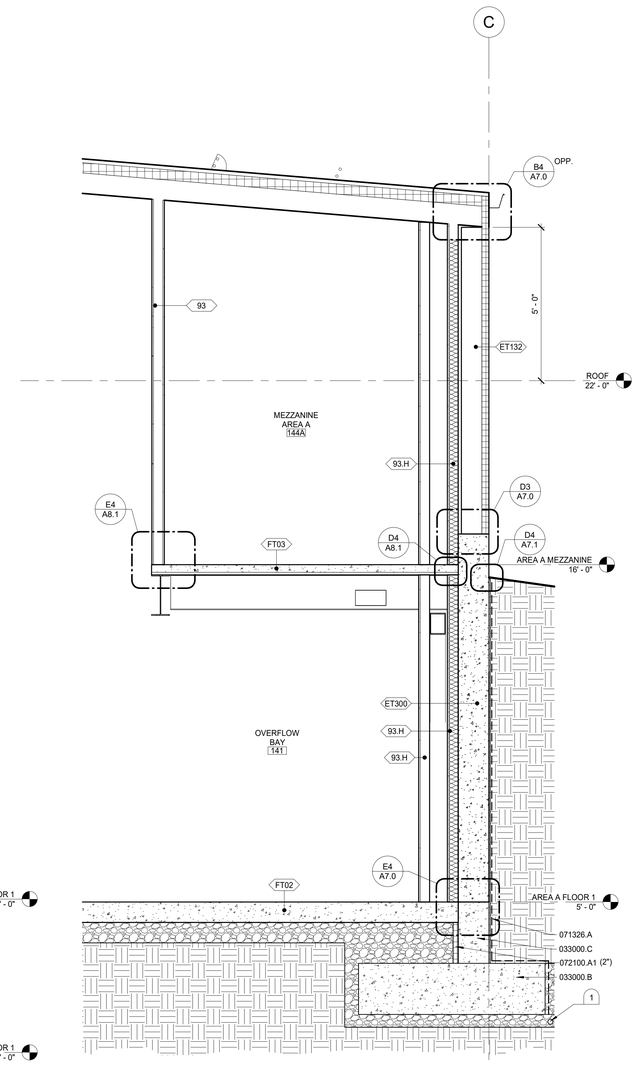
E1 WALL SECTION
1/2" = 1'-0"



E3 WALL SECTION
1/2" = 1'-0"



E4 WALL SECTION
1/2" = 1'-0"



E5 WALL SECTION
1/2" = 1'-0"

CONDOC

033000.B	CONCRETE FOOTING, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
033000.D	CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.M1	VAPOR RETARDER.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
072100.A1	EXTRUDED POLYSTYRENE BOARD INSULATION.
077253.A	SNOW GUARD.

KEYNOTES

1. FOUNDATION DRAIN. SEE CIVIL DRAWINGS.

ASSEMBLY TYPE LEGEND

- #.x — INTERIOR WALL CONSTRUCTION TYPES - SEE **A3.10**.
- ETxxx — EXTERIOR WALL CONSTRUCTION TYPES - SEE **A3.10**.
- FTxx — FLOOR CONSTRUCTION TYPES - SEE **A3.10**.
- CTxx — CEILING CONSTRUCTION TYPES - SEE **A3.10**.
- RTxx — ROOF CONSTRUCTION TYPES - SEE **A3.10**.

GENERAL NOTES

1. SEE ROOM FINISH SCHEDULE, INTERIOR ELEVATIONS, AND REFLECTED CEILING PLANS FOR ROOM FINISH, CEILING FINISHES, AND CEILING HEIGHTS.
2. SEE STRUCTURAL DRAWINGS FOR FOOTINGS, GRADE BEAMS, FOUNDATION DIMENSIONS AND DETAILS, AND BEARING HEIGHTS AT EACH CONDITION.
3. REFER TO SHEETS **(0.10 AND 0.20)** FOR WALL RATINGS, RATED ASSEMBLIES, AND RATINGS FOR PENETRATIONS AND THEIR REQUIREMENTS. PROVIDE EQUIVALENT RATINGS FOR TOP OF WALL TERMINATION AT FLOORS AND ROOFS AND INTERSECTIONS BY APPROVED RATED ASSEMBLY.
4. ALL CONCRETE PAVEMENT AT BUILDING PERIMETER SHALL SLOPE AWAY FROM BUILDING AT MINIMUM 2 PERCENT SLOPE. SEE LANDSCAPE.
5. ALL EXPOSED METAL FABRICATIONS SHALL BE PAINTED.
6. PROVIDE ALL NAILERS NECESSARY FOR ROOFING ASSEMBLY. ALL NAILERS SHALL BE FIRE TREATED AND SHALL BE PROVIDED BY THE ROOFING INSTALLER.
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8. SEE STRUCTURAL FOR ADDITIONAL CMU/LINTEL INFORMATION, INCLUDING SIZE AND REINFORCING INFORMATION.
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10. MILLWORK NOT SHOWN IN WALL SECTIONS. SEE FINISH AND EQUIPMENT PLANS FOR MILLWORK EXTENTS, DETAILS, AND ELEVATION REFERENCES.
11. PAINT ALL EXPOSED STEEL ROOF DECKING UNLESS NOTED OTHERWISE, INCLUDING AREAS ABOVE DUCTWORK AND OTHER SUSPENDED ITEMS.
12. MECHANICAL AND ELECTRICAL ITEMS SHOWN ON WALL SECTIONS ARE FOR REFERENCE ONLY AND MAY NOT REFLECT EXACT LOCATIONS, HEIGHTS, ETC. REFER TO MECHANICAL AND ELECTRICAL SHEETS FOR LAYOUT.
13. VAPOR BARRIER AT FLOOR SLAB SHALL BE INSTALLED DIRECTLY BELOW SLAB AND ABOVE GRANULAR FILL. INSTALL PER ALL APPLICABLE REQUIREMENTS OF **033000**.

LOMBARD CONRAD ARCHITECTS

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MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
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DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

WALL SECTIONS

SHEET NO.
A5.10

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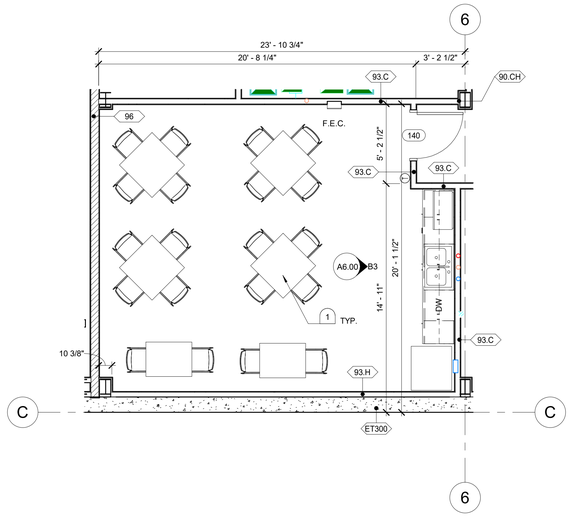
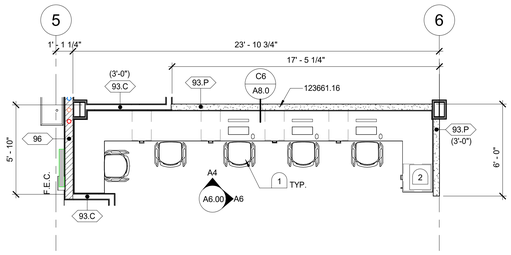
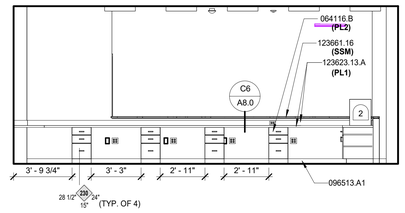


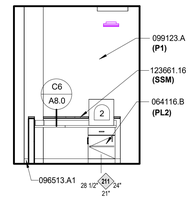
B1 BREAK ROOM 140
1/4" = 1'-0"



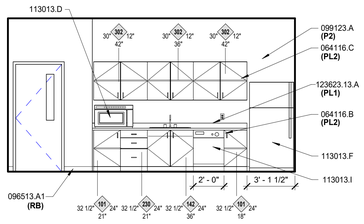
A3 WORK STATIONS 131
1/4" = 1'-0"



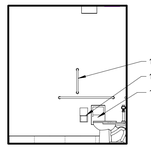
A4 WORKSTATIONS 131 - E
1/4" = 1'-0"



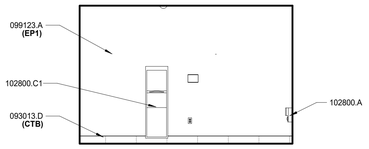
A6 WORK 131 - S
1/4" = 1'-0"



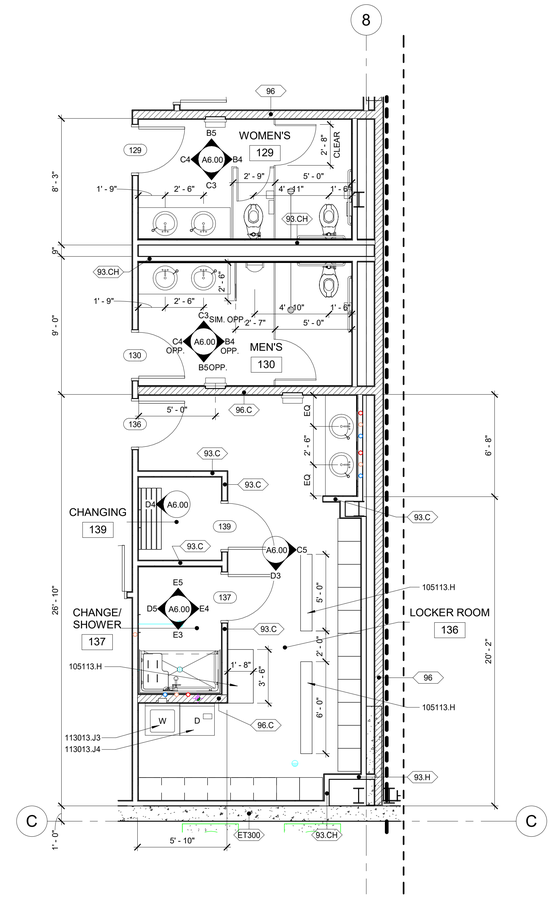
B3 BREAK ROOM 140 - E
1/4" = 1'-0"



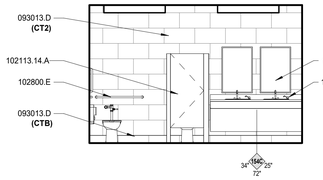
B4 RESTROOM 129 - E
1/4" = 1'-0"



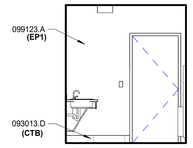
B5 RESTROOM 129 - N
1/4" = 1'-0"



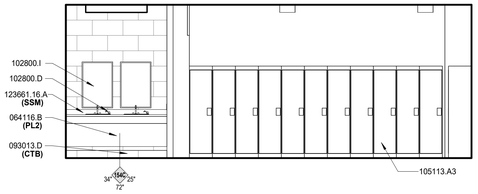
E1 LOCKER ROOM 136
1/4" = 1'-0"



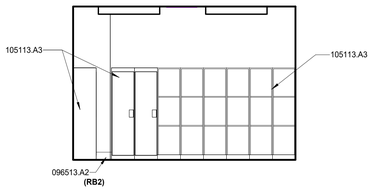
C3 RESTROOM 129 - S
1/4" = 1'-0"



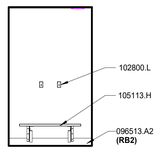
C4 RESTROOM 129 - W
1/4" = 1'-0"



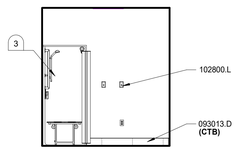
C5 LOCKER ROOM 136 - E
1/4" = 1'-0"



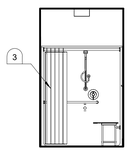
D3 LOCKER ROOM 136 - S
1/4" = 1'-0"



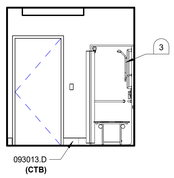
D4 CHANGING 139 - W
1/4" = 1'-0"



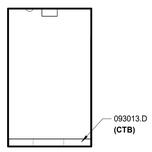
D5 CHANGE/SHOWER 137 - W
1/4" = 1'-0"



E3 CHANGE/SHOWER 137 - S
1/4" = 1'-0"



E4 CHANGE/SHOWER 137 - E
1/4" = 1'-0"



E5 CHANGE/SHOWER 137 - N
1/4" = 1'-0"

CONDOC

064116.B	PLASTIC-LAMINATE-FACED BASE CABINET.
064116.C	PLASTIC-LAMINATE-FACED UPPER CABINET.
093013.D	PORCELAIN TILE.
096513.A1	4" RESILIENT BASE.
096513.A2	6" RESILIENT BASE.
099123.A	INTERIOR PAINT.
102113.14.A	STAINLESS-STEEL TOILET COMPARTMENTS.
102800.A	TOILET TISSUE DISPENSER.
102800.C1	COMBINATION TOWEL DISPENSER/WASTE RECEPTACLE.
102800.D	SOAP DISPENSER.
102800.E	GRAB BAR.
102800.F	SANITARY-NAPKIN DISPOSAL UNIT.
102800.I	MIRROR.
102800.L	ROBE / COAT / TOWEL HOOK.
105113.A3	LOCKER.
105113.H	LOCKER ROOM BENCH.
113013.D	MICROWAVE OVEN.
113013.F	REFRIGERATOR.
113013.I	DISHWASHER.
113013.J3	CLOTHES WASHER (RESIDENTIAL)
113013.J4	CLOTHES DRYER (RESIDENTIAL)
123623.13.A	PLASTIC-LAMINATE COUNTERTOP.
123661.16	SOLID SURFACING COUNTERTOPS
123661.16.A	SOLID SURFACE COUNTERTOP

KEYNOTES

1. FURNITURE, OWNER PROVIDED AND INSTALLED. SHOWN FOR COORDINATION PURPOSES.
2. PRINTER, OPOI; SHOWN FOR REFERENCE.
3. SHOWER ENCLOSURE; SEE PLUMBING.

LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**

GENERAL NOTES

1. REFER TO GENERAL NOTES ON FLOOR PLAN SHEETS FOR GENERAL FLOOR PLAN NOTES WHICH APPLY HERE.
2. REFERENCE ROOM FINISH SCHEDULE AND FINISH LEGEND FOR ADDITIONAL MATERIALS AND FINISH INFORMATION.
3. FOR ACCESSORY, DEVICE LOCATIONS, MOUNTING HEIGHTS, AND CLEARANCES SEE SHEET **A8.00**
4. FOR SYMBOLS AND ABBREVIATIONS SEE COVER SHEET **0.00**.
5. ALL WALLS NOT INDICATED BY A HATCH PATTERN ARE PAINTED GYPSUM WALL BOARD U.O.N.
6. PROVIDE (1) 2 1/2" DIAMETER PLASTIC GROMMET IN REAR AND OFF TO ONE SIDE OVER KNEE SPACE AT ALL COUNTER TOPS TO ALLOW ROOM FOR COMPUTER AND MONITOR CABLES.
7. PL# = PLASTIC LAMINATE. REFER TO SPECIFICATIONS FOR TYPE AND COLOR.
8. P# = PAINT. REFER TO SPECIFICATIONS FOR TYPES. SEE ROOM FINISH NOTES ON SHEET **A2.31 & A2.32** FOR COLOR INFORMATION.
9. PROVIDE SOLID FILLERS AT TOPS OF ALL UPPER CABINET CORNERS AND END.
10. PROVIDE PLASTIC LAMINATE ON ALL EXPOSED SURFACES OF CABINETS.
11. VERIFY ALL DIMENSIONS AT MILLWORK INSTALLATION LOCATIONS PRIOR TO FABRICATION.
12. CONTINUE BACKSPLASH ALONG BACK OF COUNTERTOP AND ALL SIDES ADJACENT TO WALLS, TYPICAL.
13. PROVIDE CONTINUOUS SOLID WOOD BLOCKING AT TOP OF ALL UPPER CASEWORK AND BASE CABINETS.
14. PROVIDE STIFFENERS, BRACING, BACK-UP PLATES, ETC. AS REQUIRED AT ALL STUD WALLS FOR SUPPORT OF TOILET ACCESSORIES, GRAB BARS, PARTITIONS, ETC.
15. PROVIDE WATER RESISTANT GYPSUM BOARD AT ALL WET-WALL LOCATIONS.
16. REFERENCE **NAAWS (NORTH AMERICAN ARCHITECTURAL WOODWORK STANDARDS, CDS VERSION 3.1**, 2017 OR LATER FOR CABINET TYPES AND DESIGNATIONS. NAAWS-CDS.COM

NAAWS TYPE: (101)
TYPES DENOTED (S); SEE BELOW FOR ADDITIONAL INFORMATION.
HEIGHT, WIDTH, DEPTH, RESPECTIVELY.

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
472 W. Washington St. | Boise, ID 83702
P 208.345.6677 | F 208.344.9002

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STAMP:

LICENSED ARCHITECT AR-985148
07-24-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
405 S WASHINGTON ST.
MOSCOW, ID 83843
(208) 882-3520

STRUCTURAL ENGINEER
LOCHSA ENGINEERING
201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
8727 W. ARDENE, SUITE 102
BOISE, IDAHO 83709
(208) 345-7127

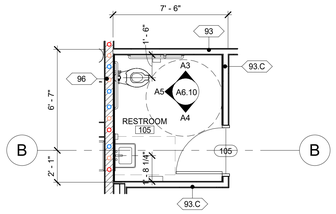
MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**
PHASE:	**PERMIT SET**

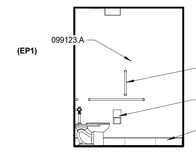
ENLARGED PLANS / INTERIOR ELEVATIONS

SHEET NO.
A6.00

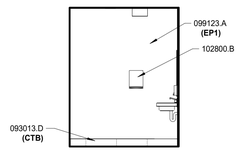
7/29/2024 11:49:01 AM C:\Users\ryker\Documents\24000-01 Moscow City Shop_Central_V23_RykerBelnap.rvt



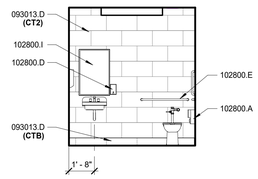
C1 RESTROOM 105
1/4" = 1'-0"



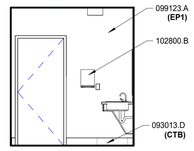
A3 RESTROOM 105 - N
1/4" = 1'-0"



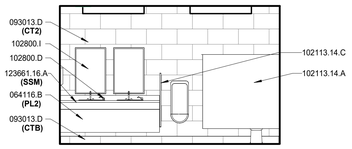
A4 RESTROOM 105 - S
1/4" = 1'-0"



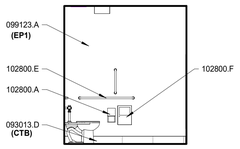
A5 RESTROOM 105 - W
1/4" = 1'-0"



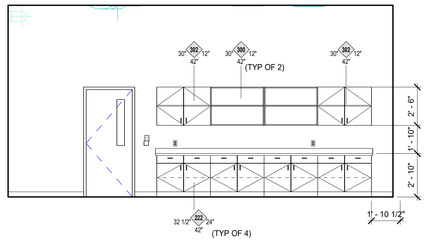
A6 RESTROOM 106 - E
1/4" = 1'-0"



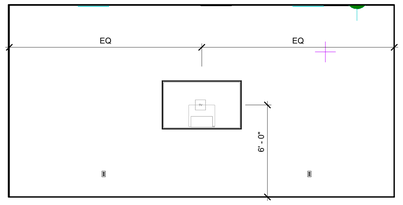
B2 RESTROOM 106 - S
1/4" = 1'-0"



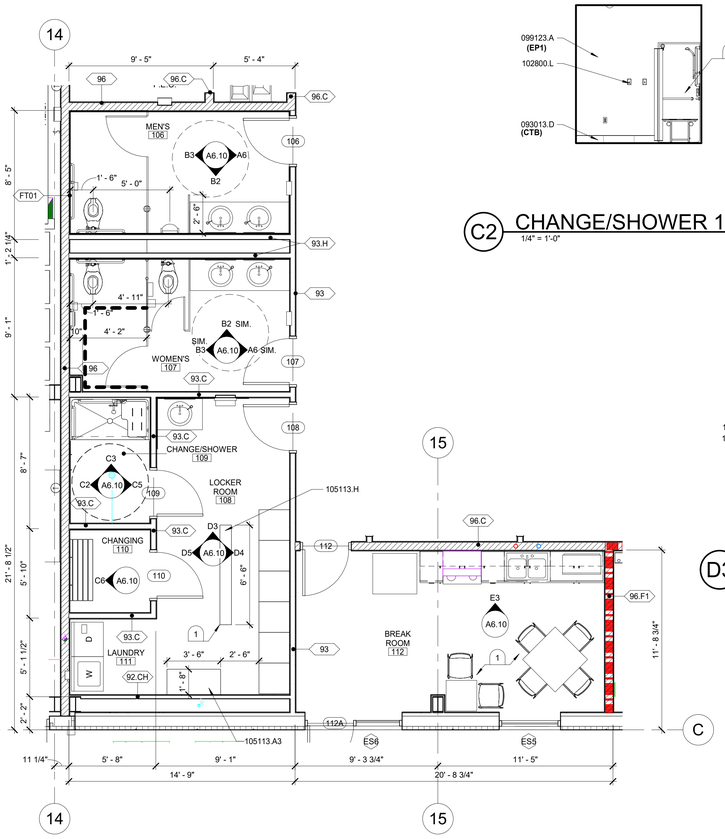
B3 RESTROOM 106 - W
1/4" = 1'-0"



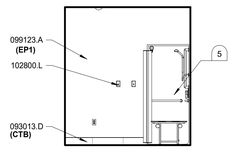
B4 TRAINING ROOM 101 E
1/4" = 1'-0"



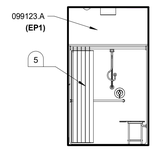
B5 TRAINING ROOM 101 W
1/4" = 1'-0"



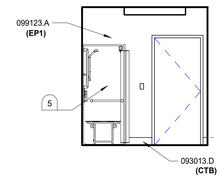
E1 RR 106 & 107, LOCKER ROOM 108, BREAK ROOM 112
1/4" = 1'-0"



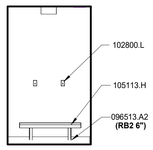
C2 CHANGE/SHOWER 109 - W
1/4" = 1'-0"



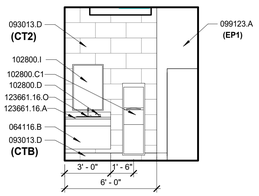
C3 CHANGE/SHOWER 109 - N
1/4" = 1'-0"



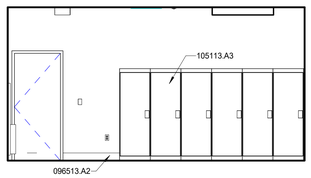
C5 CHANGE/SHOWER 109 - E
1/4" = 1'-0"



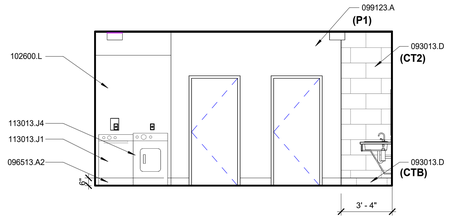
C6 CHANGING 110 - W
1/4" = 1'-0"



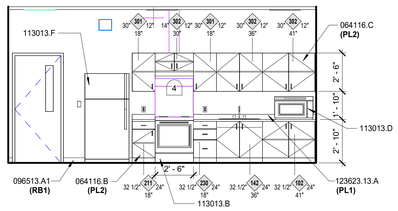
D3 LOCKER ROOM 108 - N
1/4" = 1'-0"



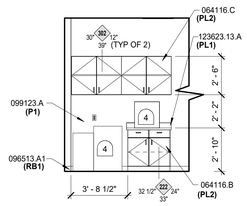
D4 LOCKER ROOM 108 - E
1/4" = 1'-0"



D5 LOCKER ROOM 108 - W
1/4" = 1'-0"



E3 BREAK ROOM 112 - N
1/4" = 1'-0"



E5 HALL 102 - S
1/4" = 1'-0"

CONDOC

064116.B	PLASTIC-LAMINATE-FACED BASE CABINET.
064116.C	PLASTIC-LAMINATE-FACED UPPER CABINET.
093013.D	PORCELAIN TILE.
096513.A1	4" RESILIENT BASE.
096513.A2	6" RESILIENT BASE.
099123.A	INTERIOR PAINT.
102113.14.A	STAINLESS-STEEL TOILET COMPARTMENTS.
102113.14.C	STAINLESS-STEEL URINAL-SCREEN.
102600.L	IMPACT-RESISTANT WALL COVERING.
102800.A	TOILET TISSUE DISPENSER.
102800.B	PAPER TOWEL DISPENSER.
102800.C1	COMBINATION TOWEL DISPENSER/WASTE RECEPTACLE.
102800.D	SOAP DISPENSER.
102800.E	GRAB BAR.
102800.F	SANITARY-NAPKIN DISPOSAL UNIT.
102800.I	MIRROR.
102800.L	ROBE / COAT / TOWEL HOOK.
105113.A3	LOCKER.
105113.H	LOCKER ROOM BENCH.
113013.B	RANGE.
113013.D	MICROWAVE OVEN.
113013.F	REFRIGERATOR.
113013.J1	CLOTHES WASHER. (COMMERCIAL)
113013.J4	CLOTHES DRYER (RESIDENTIAL)
123623.13.A	PLASTIC-LAMINATE COUNTERTOP.
123661.16.A	SOLID SURFACE COUNTERTOP
123661.16.O	SOLID SURFACE INTEGRAL SINK

KEYNOTES

1. FURNITURE, OWNER PROVIDED AND INSTALLED. SHOWN FOR COORDINATION PURPOSES.
2. PC OWNER PROVIDED, OWNER INSTALLED. ELECTRICAL TO COORDINATE LOCATION OF OUTLETS.
3. PRINTER, OPOI; SHOWN FOR REFERENCE.
4. COORDINATE MILLWORK WITH DUCTING AND VENT HOOD.
5. SHOWER ENCLOSURE; SEE PLUMBING.

LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**

GENERAL NOTES

1. REFER TO GENERAL NOTES ON FLOOR PLAN SHEETS FOR GENERAL FLOOR PLAN NOTES WHICH APPLY HERE.
2. REFERENCE ROOM FINISH SCHEDULE AND FINISH LEGEND FOR ADDITIONAL MATERIALS AND FINISH INFORMATION.
3. FOR ACCESSORY, DEVICE LOCATIONS, MOUNTING HEIGHTS, AND CLEARANCES SEE SHEET **A8.00**
4. FOR SYMBOLS AND ABBREVIATIONS SEE COVER SHEET **0.00**.
5. ALL WALLS NOT INDICATED BY A HATCH PATTERN ARE PAINTED GYPSUM WALL BOARD U.O.N.
6. PROVIDE (1) 2 1/2" DIAMETER PLASTIC GROMMET IN REAR AND OFF TO ONE SIDE OVER KNEE SPACE AT ALL COUNTER TOPS TO ALLOW ROOM FOR COMPUTER AND MONITOR CABLES.
7. PL# = PLASTIC LAMINATE. REFER TO SPECIFICATIONS FOR TYPE AND COLOR.
8. P# = PAINT. REFER TO SPECIFICATIONS FOR TYPES. SEE ROOM FINISH NOTES ON SHEET **A2.31 & A2.32** FOR COLOR INFORMATION.
9. PROVIDE SOLID FILLERS AT TOPS OF ALL UPPER CABINET CORNERS AND END.
10. PROVIDE PLASTIC LAMINATE ON ALL EXPOSED SURFACES OF CABINETS.
11. VERIFY ALL DIMENSIONS AT MILLWORK INSTALLATION LOCATIONS PRIOR TO FABRICATION.
12. CONTINUE BACKSPLASH ALONG BACK OF COUNTERTOP AND ALL SIDES ADJACENT TO WALLS, TYPICAL.
13. PROVIDE CONTINUOUS SOLID WOOD BLOCKING AT TOP OF ALL UPPER CASEWORK AND BASE CABINETS.
14. PROVIDE STIFFENERS, BRACING, BACK-UP PLATES, ETC. AS REQUIRED AT ALL STUD WALLS FOR SUPPORT OF TOILET ACCESSORIES, GRAB BARS, PARTITIONS, ETC.
15. PROVIDE WATER RESISTANT GYPSUM BOARD AT ALL WET-WALL LOCATIONS.
16. REFERENCE **NAAWS (NORTH AMERICAN ARCHITECTURAL WOODWORK STANDARDS, CDS VERSION 3.1**, 2017 OR LATER FOR CABINET TYPES AND DESIGNATIONS. NAAWS-CDS.COM

NAAWS TYPE: (101)
TYPES DENOTED (S): SEE BELOW FOR ADDITIONAL INFORMATION.
HEIGHT, WIDTH, DEPTH, RESPECTIVELY.

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
472 W. Washington St. | Boise, ID 83702
P 208.345.6671 | F 208.344.9002

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STAMP:

LICENSED ARCHITECT AR-985148
07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
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MUSGROVE ENGINEERING P.A.
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BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
8727 W. ARDENE, SUITE 102
BOISE, IDAHO 83709
(208) 345-7127

MRK	DATE	DESCRIPTION

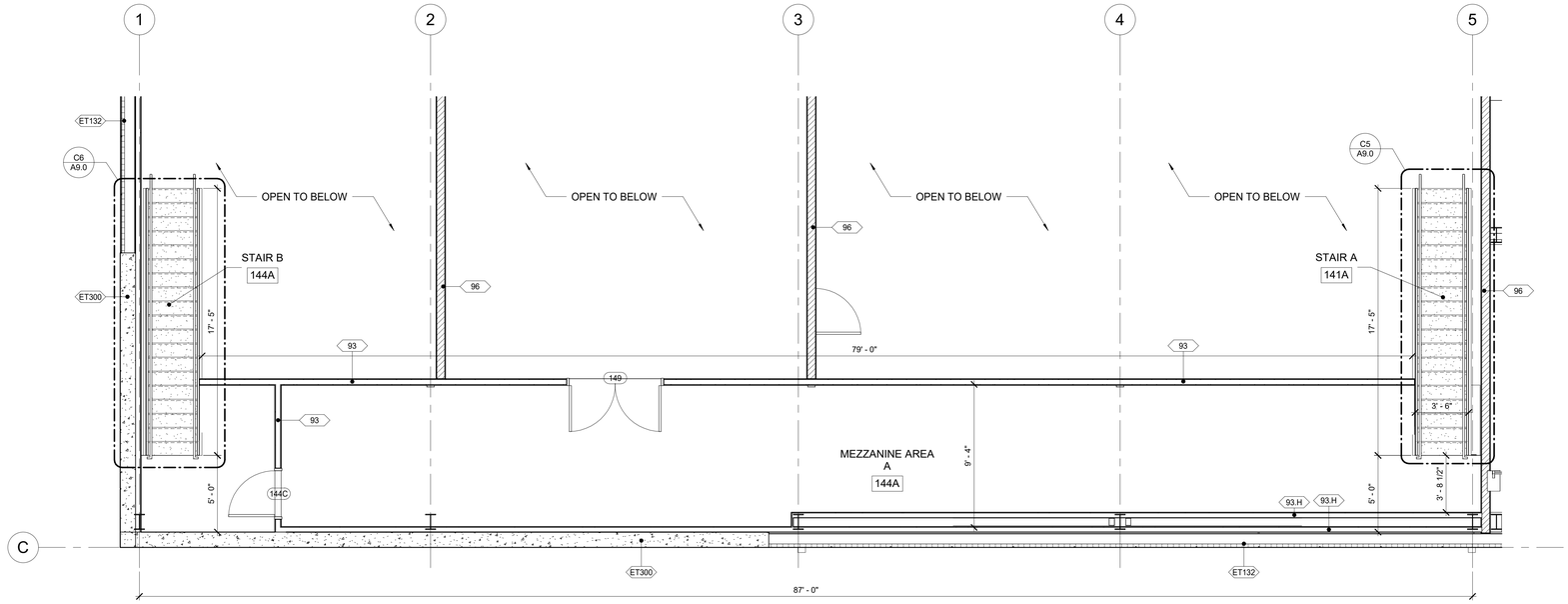
JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **RB/BC/SB**
CHECKED BY: **MG**

PHASE: **PERMIT SET**

ENLARGED PLANS / INTERIOR ELEVATIONS

SHEET NO.
A6.10

7/29/2024 11:49:07 AM C:\Users\rylerb\Documents\24000-01 Moscow City Shop_Central_V23_RylerBelnap.rvt

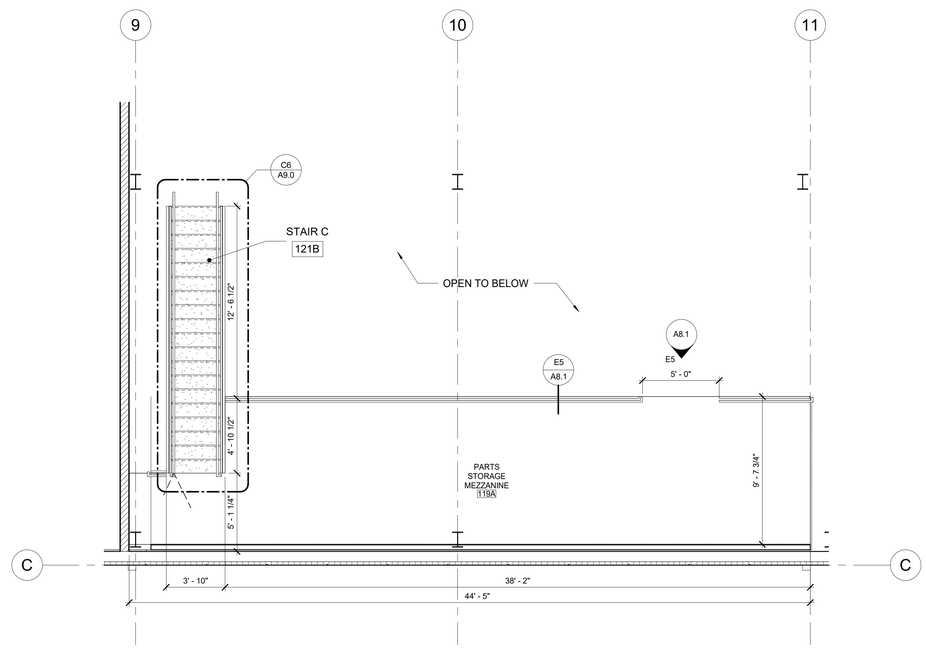


B1 ENLARGED MEZZANINE PLAN - AREA A

1/4" = 1'-0"

LEGEND

- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**



E4 ENLARGED MEZZANINE PLAN - AREA B

1/4" = 1'-0"

LOMBARD CONRAD ARCHITECTS

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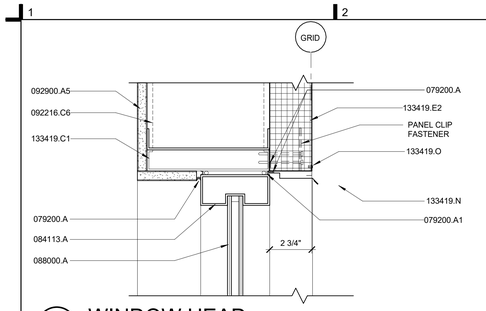
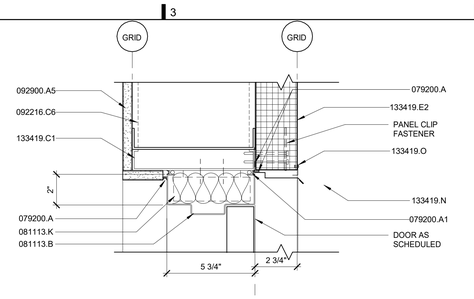
ENLARGED PLANS - MEZZANINE

SHEET NO.
A6.20

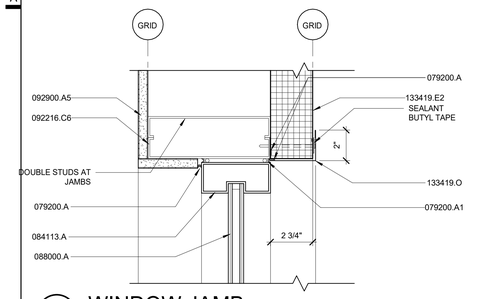
7/29/2024 11:49:07 AM C:\Users\rylerb\Documents\24000-01 Moscow City Shop_Central_V23_RylerBelinap.rvt



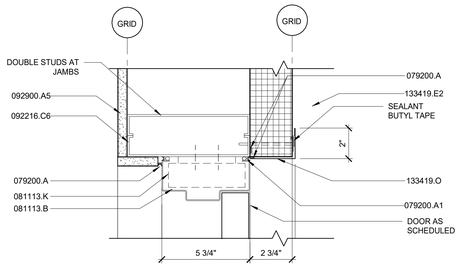
A1 WINDOW HEAD
3" = 1'-0"
EXT04



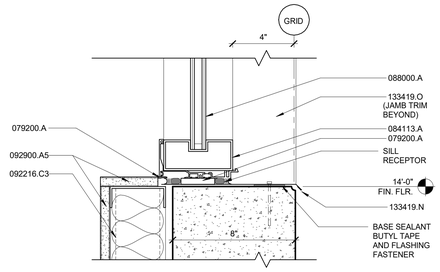
A2 DOOR HEAD
3" = 1'-0"
EXT21



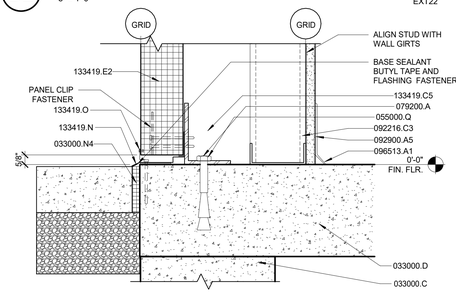
B1 WINDOW JAMB
3" = 1'-0"
EXT05



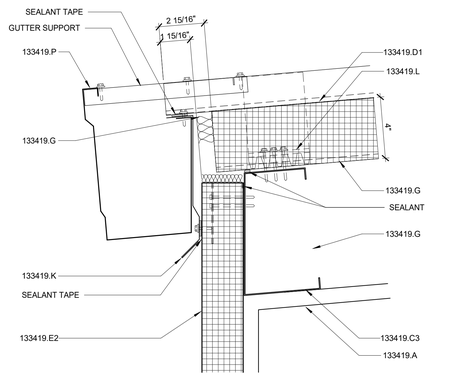
B2 DOOR JAMB
3" = 1'-0"
EXT22



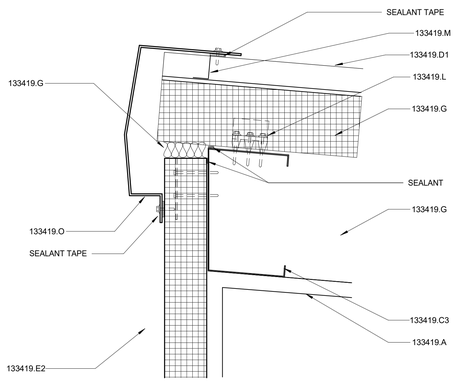
C1 WINDOW SILL
3" = 1'-0"
EXT03



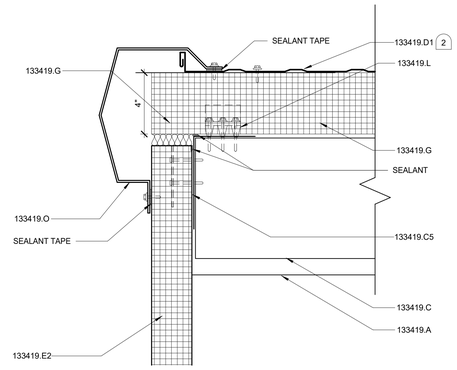
C2 WALL PANEL SILL
3" = 1'-0"
EXT06



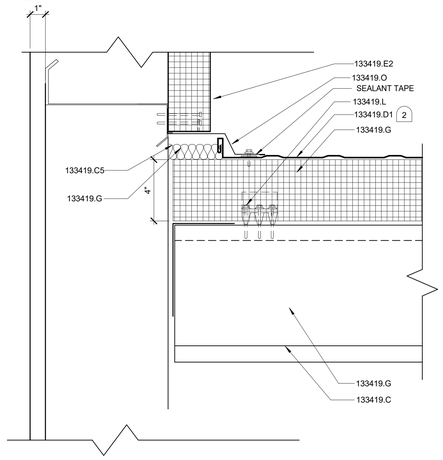
B4 EAVE GUTTER
3" = 1'-0"
EXT09



B5 HIGH EAVE CLOSURE
3" = 1'-0"
EXT17



C4 RAKE TRIM
3" = 1'-0"
EXT19



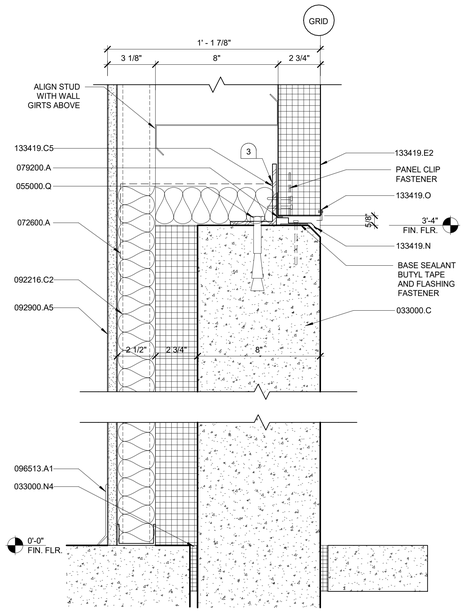
C5 RAKE WALL TRIM
3" = 1'-0"
EXT20

CONDOC

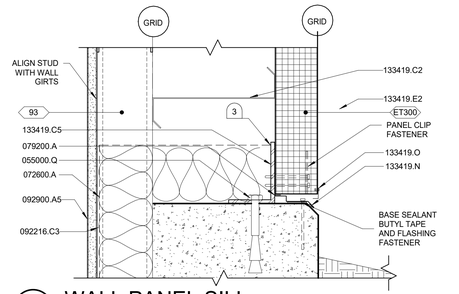
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
033000.D	CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.H	CONCRETE WALL, SEE STRUCTURAL.
033000.M1	VAPOR RETARDER.
033000.N4	JOINT FILLER.
055000.Q	ANCHOR BOLT.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
071416.A	COLD FLUID-APPLIED WATERPROOFING.
072100.A1	EXTRUDED POLYSTYRENE BOARD INSULATION.
072600.A	POLYETHYLENE VAPOR RETARDER.
076200.A	SHEET METAL FLASHING.
079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
081113.B	HOLLOW-METAL FRAME.
081113.K	FRAME ANCHOR.
084113.A	ALUMINUM STOREFRONT FRAMING.
088000.A	GLASS, SEE LEGEND FOR TYPE.
092216.C2	2-1/2" X 33-MIL STEEL STUDS AT 24" O.C.
092216.C3	3-5/8" X 33-MIL STEEL STUDS AT 24" O.C.
092216.C6	6" X 33-MIL STUDS AT 24" O.C.
092900.A5	5/8" TYPE X GYPSUM BOARD.
096513.A1	4" RESILIENT BASE.
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C	PURLIN.
133419.C1	SUB PURLINS / JOIST.
133419.C2	WALL GIRTS.
133419.C3	EAVE STRUT.
133419.C5	WALL / BASE ANGLE.
133419.D1	METAL ROOF PANEL - STANDING SEAM
133419.E2	INSULATED METAL WALL PANEL.
133419.G	METAL BUILDING INSULATION.
133419.K	EAVE CLOSURE.
133419.L	METAL ROOF CLIPS.
133419.M	CLOSURE STRIP.
133419.N	METAL FLASHING.
133419.O	METAL TRIM.
133419.P	GUTTER.

KEYNOTES

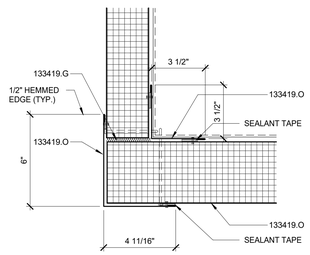
1. EXTEND UNDER SLAB VAPOR BARRIER OVER RIGID INSULATION AND UP TO THE TOP OF THE SLAB. SEAL VAPOR BARRIER AT FLOOR SLAB OR ANGLE.
2. SEE DETAIL **B2/A7.1** FOR STANDING SEAM PANEL JOINT.
3. SEAL VAPOR BARRIER AT INSIDE FACE OF METAL PANEL.



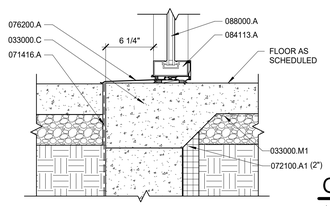
E1 WALL PANEL SILL AT CONC. FACE
3" = 1'-0"
EXT02



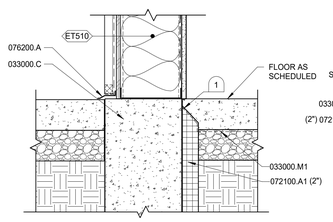
D3 WALL PANEL SILL
3" = 1'-0"
EXT11



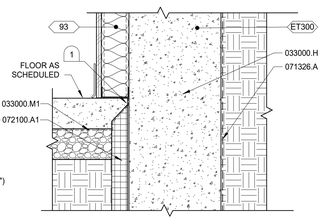
D5 OUTSIDE CORNER TRIM
3" = 1'-0"



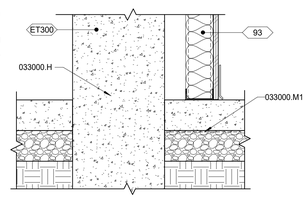
D6 WALL BASE
1 1/2" = 1'-0"
FD04



E3 WALL BASE
1 1/2" = 1'-0"
FD05



E4 WALL BASE
1 1/2" = 1'-0"
FD03



E5 WALL BASE
1 1/2" = 1'-0"
FD02

GENERAL NOTES

1. SEE SHEET **A3.20** FOR ASSEMBLY TYPES.
2. ALL SURFACES OF EXPOSED STRUCTURAL STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINSIHED OR PAINTED U.O.N.
3. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN STOREFRONT FRAMING SHALL BE PREFINISHED TO MATCH STOREFRONT FRAMING. **(84113)**
4. PERIMETER OF ALL ALUMINUM FRAMES SHALL BE LOCATED IN ROUGH OPENINGS AS REQUIRED TO INSTALL MINIMUM 1/4" BACKER ROD AND SEALANT.
5. SEE SHEET **A3.10** FOR EXTERIOR FRAME TYPE ELEVATIONS.
6. ALL EXTERIOR WALL MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURERS RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.
7. SEE STRUCTURAL DRAWINGS SHEETS **S1.01A & S1.01B** FOR FOOTINGS, FOOTING DIMENSIONS, FOUNDATION DETAILS.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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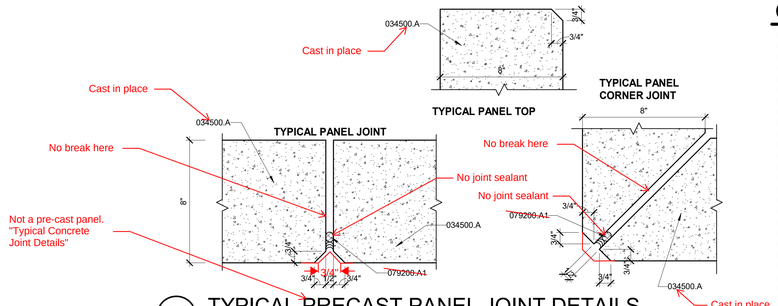
PHASE: **PERMIT SET**

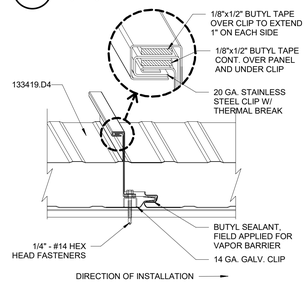
EXTERIOR DETAILS

SHEET NO.
A7.0

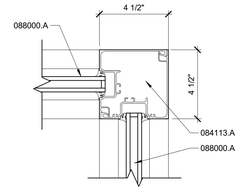
7/29/2024 11:49:10 AM C:\Users\ryler\Documents\24000.01 Moscow City Shop_Central_V23_RylerBehlap.rvt



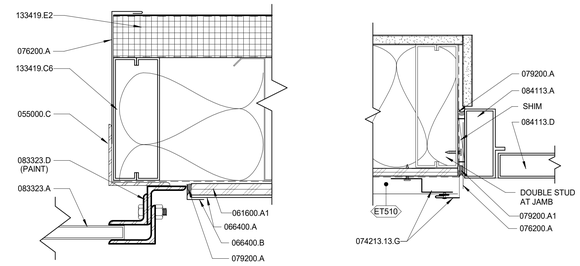
A5 TYPICAL PRECAST PANEL JOINT DETAILS
3" = 1'-0"



B5 PANEL JOINT
3" = 1'-0" RD5

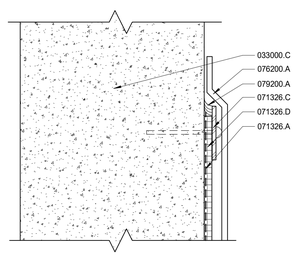


B6 JAMB DETAIL
3" = 1'-0" EDW1

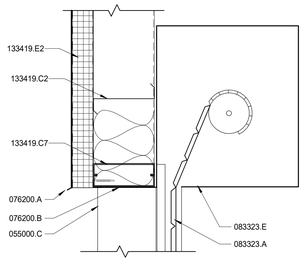


C5 JAMB DETAIL
3" = 1'-0" EDW15

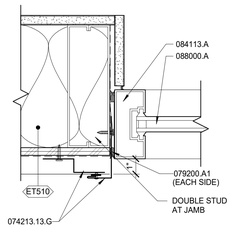
C6 JAMB DETAIL
3" = 1'-0" EDW312



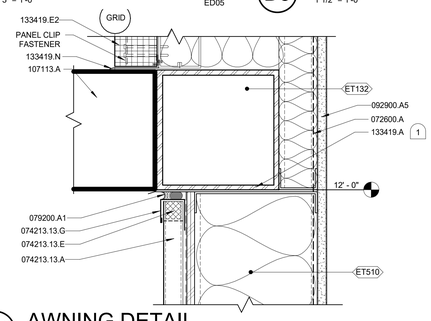
D4 TERMINATION DETAIL
3" = 1'-0" ED05



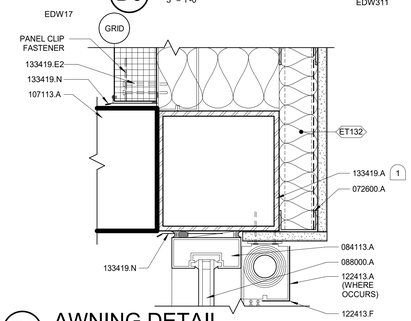
D5 HEAD DETAIL
1 1/2" = 1'-0"



D6 JAMB DETAIL
3" = 1'-0" EDW311



E4 AWNING DETAIL
3" = 1'-0" EXT24



E5 AWNING DETAIL
3" = 1'-0" EXT23

CONDOC

033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
034500.A	PRECAST ARCHITECTURAL PANEL, SEE STRUCTURAL
055000.C	METAL ANGLE.
061600.A1	PLYWOOD WALL SHEATHING.
066400.A	PLASTIC SHEET PANELING.
066400.B	TRIM.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
071326.C	METAL TERMINATION BAR.
071326.D	PROTECTION COURSE.
072600.A	POLYETHYLENE VAPOR RETARDER.
074213.13.A	LAP-SEAM METAL WALL PANEL.
074213.13.E	CLOSURE STRIP.
074213.13.G	METAL TRIM.
076200.A	SHEET METAL FLASHING.
076200.B	SHEET METAL TRIM.
079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
083323.A	OVERHEAD COILING DOOR.
083323.D	CURTAIN JAMB GUIDES.
083323.E	HOOD.
084113.A	ALUMINUM STOREFRONT FRAMING.
084113.D	ENTRANCE DOOR.
088000.A	GLASS, SEE LEGEND FOR TYPE.
092900.A5	5/8" TYPE X GYPSUM BOARD.
107113.A	EXTERIOR SUN CONTROL DEVICE
122413.A	WINDOW ROLLER SHADE.
122413.F	FRONT FASCIA.
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C2	WALL GIRTS.
133419.C6	JAMB / SILL FRAMING.
133419.C7	HEADER FRAMING.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.N	METAL FLASHING.

KEYNOTES

1. HSS EXTERIOR SUN CONTROL DEVICE SUPPORT WELDED TO PRIMARY STRUCTRUAL STEEL COLUMNS.

GENERAL NOTES

1. SEE SHEET **A3.20** FOR ASSEMBLY TYPES.
2. ALL SURFACES OF EXPOSED STRUCTURAL STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINSIHED OR PAINTED U.O.N.
3. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN STOREFRONT FRAMING SHALL BE PREFINISHED TO MATCH STOREFRONT FRAMING. **(84113)**
4. PERIMETER OF ALL ALUMINUM FRAMES SHALL BE LOCATED IN ROUGH OPENINGS AS REQUIRED TO INSTALL MINIMUM 1/4" BACKER ROD AND SEALANT.
5. SEE SHEET **A3.10** FOR EXTERIOR FRAME TYPE ELEVATIONS.
6. ALL EXTERIOR WALL MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURERS RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.
7. SEE STRUCTURAL DRAWINGS SHEETS **S1.01A & S1.01B** FOR FOOTINGS, FOOTING DIMENSIONS, FOUNDATION DETAILS.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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LICENSED ARCHITECT AR-985148
07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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DATE:	**07/24/2024**
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CHECKED BY:	**MG**

PHASE: **PERMIT SET**

EXTERIOR DETAILS

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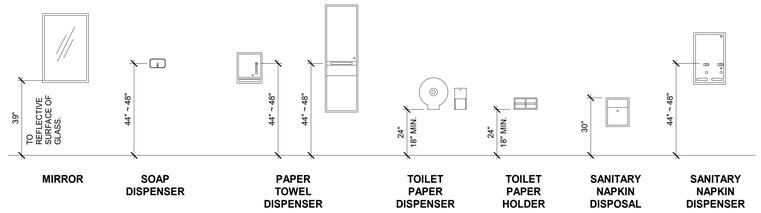
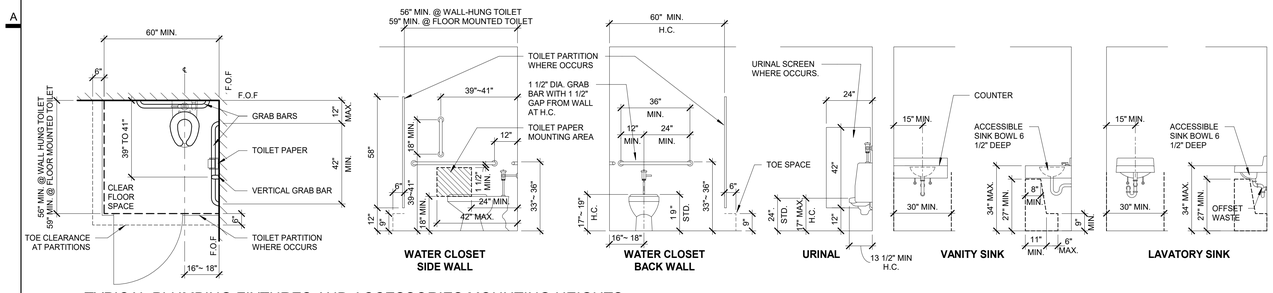


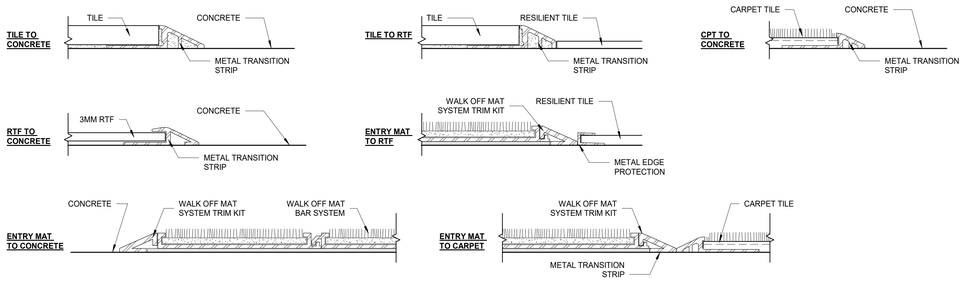
TYPICAL TOILET ACCESSORIES MOUNTING HEIGHTS



TYPICAL PLUMBING FIXTURES AND ACCESSORIES MOUNTING HEIGHTS

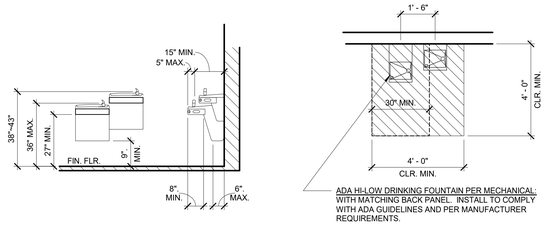
B1 TYPICAL ACCESSORIES HEIGHTS

3/8" = 1'-0"



C1 FLOOR TRANSITIONS

12" = 1'-0"



A5 ACCESSIBLE DRINKING FOUNTAIN

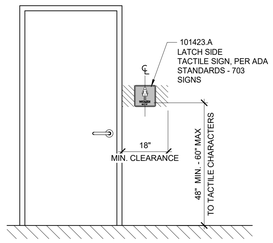
3/8" = 1'-0"

CONDOC

066400.A	PLASTIC SHEET PANELING.
092900.A4	5/8" GYPSUM BOARD.
092900.M	TRIM.
093013.B	GLAZED CERAMIC WALL TILE
093013.D	PORCELAIN TILE.
093013.I2	THINSET MORTAR.
093013.P	METAL EDGE STRIP.
096513.A1	4" RESILIENT BASE.
099123.A	INTERIOR PAINT.
101423.A	PANEL SIGNS.
102800.X	MOP AND BROOM HOLDER.
123623.13	PLASTIC-LAMINATE-CLAD COUNTERTOPS
123623.13.C	PLASTIC-LAMINATE BACKSPLASH.
123661.16	SOLID SURFACING COUNTERTOPS

KEYNOTES

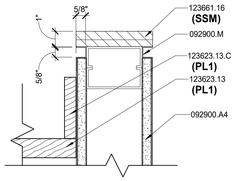
1. JANITOR SINK. SEE MECHANICAL **P4.00** FOR PLUMBING SCHEDULE.



C5 SIGNAGE

1/2" = 1'-0"

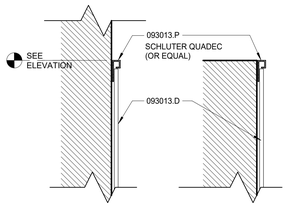
SIGNAGE



NOTE: EASE ALL EXPOSED SOLID SURFACE EDGES.

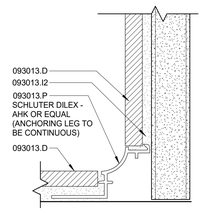
C6 HALF WALL CAP

3" = 1'-0"



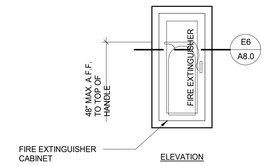
D4 TILE EDGE TRIM

6" = 1'-0"



D5 TILE COVE TRIM

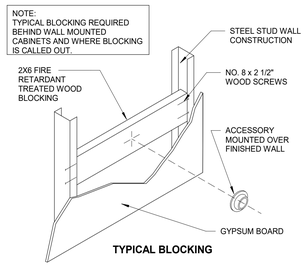
12" = 1'-0"



1. FINISH: ALUMINUM. CLEAR ANODIZED WITH ACRYLIC INSERT
2. LATCH: PRESSURE OR MAGNETIC
3. LETTERING: RED LETTERS SPELLING "FIRE EXTINGUISHER" APPLIED TO DOOR VERTICALLY.

D6 FIRE CABINET ELEVATION

1/8" = 1'-0"



TYPICAL BLOCKING

THE FOLLOWING IS A GENERAL STATEMENT REGARDING BLOCKING:

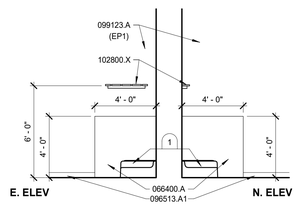
THE REQUIREMENT FOR BLOCKING AT WALL MOUNTED ITEMS IS REFERENCED IN SEVERAL LOCATIONS THROUGHOUT THE CONSTRUCTION DOCUMENTS.

ALL BLOCKING SHALL BE AS DESCRIBED BELOW

SPECIFICATION SECTION **064023** REFERENCES WOOD BLOCKING IN (PROJECT CONDITIONS), (COORDINATION), AND (INSTALLATION OF MATERIALS). THIS SPECIFICATION SECTION ALSO REQUIRES THAT ALL LOCATIONS AND SIZES OF WOOD BLOCKING BE SHOWN ON THE INTERIOR ARCHITECTURAL WOODWORK SHOP DRAWINGS, WHICH WOULD REQUIRE BOTH THE DRAWINGS AND INSTALLER TO BE ON-SITE PRIOR TO ANY OF THE WALLS BEING ENCLOSED.

E3 ACCESSORY WALL BACKING STEEL STUD

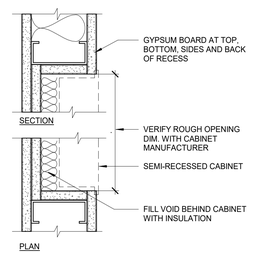
1/8" = 1'-0"



E5 JANITOR SINK

1/4" = 1'-0"

janitor sink



E6 FIRE CABINET PLAN/SECTION

3" = 1'-0"

LOMBARD CONRAD ARCHITECTS

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INTERIOR DETAILS

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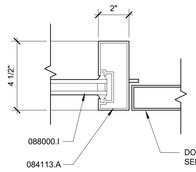
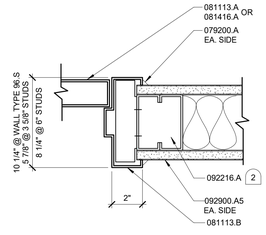
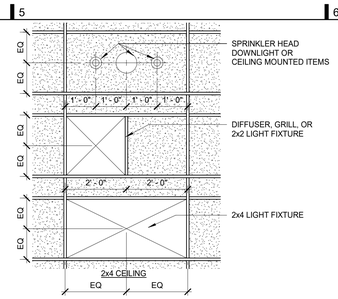


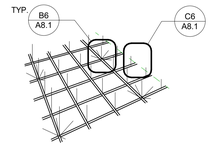
A3 DOOR JAMB (HEAD SIM.)
3" = 1'-0" DW26



A4 JAMB DETAIL (HEAD SIM.)
3" = 1'-0" DW24

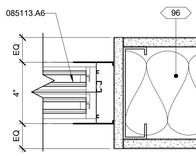


A5 TYP CEILING LAYOUT
1/2" = 1'-0"

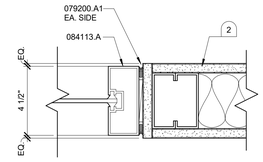


NOTE:
SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C635 AND ASTM C636 FOR CEILINGS INSTALLED IN SEISMIC ZONES 0-2

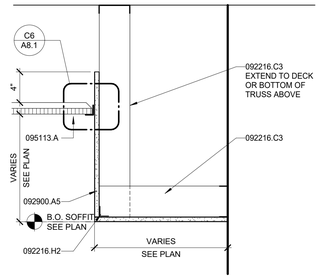
A6 SEISMIC BRACING
3" = 1'-0" CD001-ABC



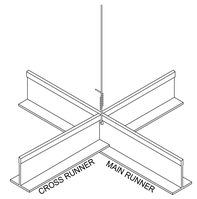
B3 JAMB DETAIL (HEAD SIM.)
3" = 1'-0" DW30



B4 JAMB DETAIL (HEAD SIM.)
3" = 1'-0" DW27

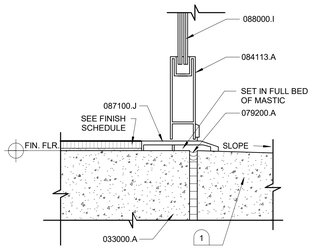


B5 SOFFIT DETAIL
1 1/2" = 1'-0"

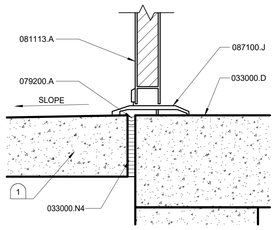


NOTE:
SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C635 AND ASTM C636 FOR CEILINGS INSTALLED IN SEISMIC ZONES 0-2

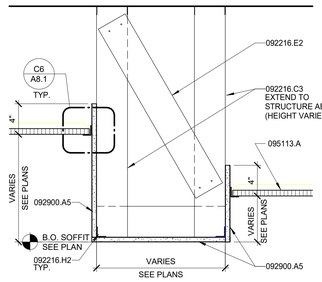
B6 BRACING DETAIL
1/8" = 1'-0" CD002-ABC



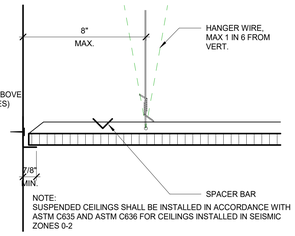
C3 THRESHOLD DETAIL
3" = 1'-0" DW67



C4 DOOR SILL DETAIL
3" = 1'-0" DW66

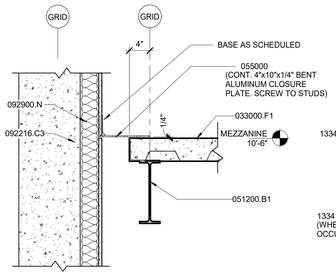


C5 SOFFIT DETAIL
1 1/2" = 1'-0"

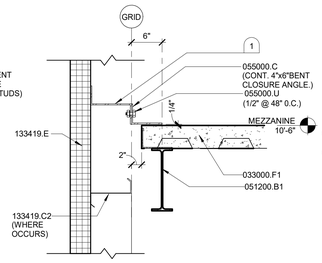


NOTE:
SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C635 AND ASTM C636 FOR CEILINGS INSTALLED IN SEISMIC ZONES 0-2

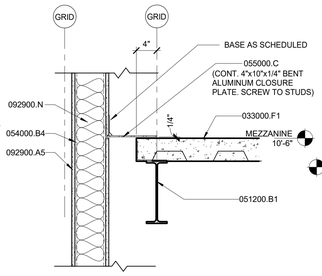
C6 ACOUSTICAL CEILING
3" = 1'-0" CD003-ABC



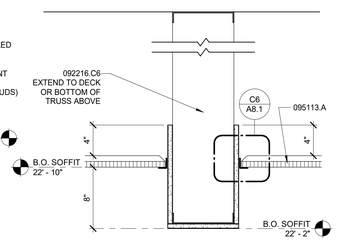
D2 SLAB EDGE
1" = 1'-0" INT21



D3 SLAB EDGE
1" = 1'-0" INT18

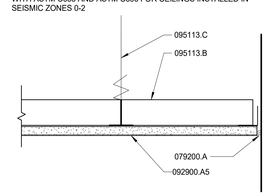


D4 SLAB EDGE
1" = 1'-0" INT21

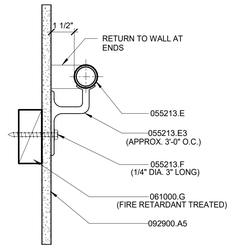


D5 SOFFIT DETAIL
1 1/2" = 1'-0"

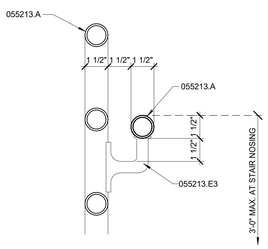
NOTE:
SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C635 AND ASTM C636 FOR CEILINGS INSTALLED IN SEISMIC ZONES 0-2



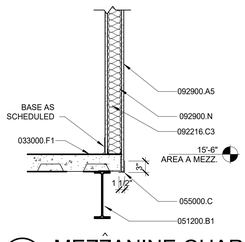
D6 GYP. BRD. CEILING
3" = 1'-0" CD004-ABC



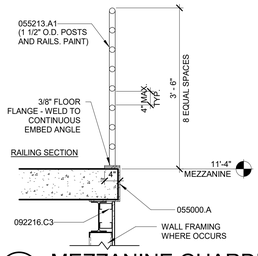
E2 HANDRAIL @ WALL
3" = 1'-0" INT12



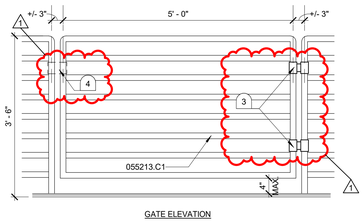
E3 HANDRAIL @ RAILING
3" = 1'-0" INT13



E4 MEZZANINE GUARDRAIL
3/4" = 1'-0" INT02



E5 MEZZANINE GUARDRAIL AND SWING GATE
3/4" = 1'-0" INT01



GATE ELEVATION

CONDOC

033000.A	CONCRETE, SEE STRUCTURAL.
033000.D	CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.F1	4-1/2" (TOTAL) CONCRETE SLAB ON METAL DECK, SEE STRUCTURAL.
033000.N4	JOINT FILLER.
051200.B1	STEEL BEAM (W-SHAPE), SEE STRUCTURAL.
054000.B4	6" (600S) NON-LOAD BEARING STEEL STUD.
055000	METAL FABRICATIONS
055000.A	METAL PLATE.
055000.C	METAL ANGLE.
055000.U	BOLTED CONNECTION.
055213.A	METAL PIPE RAILING.
055213.A1	METAL TUBE RAILING.
055213.C1	METAL TUBE
055213.E	METAL HANDRAIL.
055213.E3	HANDRAIL BRACKET.
055213.F	ANCHOR.
061000.G	WOOD BLOCKING.
079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
081113.A	HOLLOW-METAL DOOR.
081113.B	HOLLOW-METAL FRAME.
081416.A	FLUSH WOOD DOOR.
084113.A	ALUMINUM STOREFRONT FRAMING.
085113.A6	ALUMINUM HORIZONTAL SLIDING WINDOW.
087100.J	THRESHOLD.
088000.I	INSULATING-GLASS UNITS.
092216.A	STEEL STUD FRAMING.
092216.C3	3-5/8" X 33-MIL STEEL STUDS AT 24" O.C.
092216.C6	6" X 33-MIL STUDS AT 24" O.C.
092216.E2	STEEL STUD BRACING AT 48□ O.C.
092216.H2	STEEL CLIP ANGLE.
092900.A5	5/8" TYPE X GYPSUM BOARD.
092900.N	SOUND ATTENUATION BLANKETS.
095113.A	SUSPENDED ACOUSTICAL PANEL CEILING.
095113.B	METAL SUSPENSION SYSTEM.
095113.C	WIRE HANGER.
133419.C2	WALL GIRTS.
133419.E	METAL WALL PANEL.

KEYNOTES

1. SIDEWALK, SEE CIVIL DRAWINGS SHEET **C2**.
2. WALL TYPE PER FLOOR PLAN SHEETS **A2.10 & A2.11**.
3. INSTALL PAIR OF HEAVY DUTY PIPE HINGES AT TOP AND BOTTOM OF GATE. GATE IS TO SWING INTO MEZZANINE.
4. 3" X 5" X 1/4" STEEL PLATE. WELD TO GATE ON MEZZANINE LATCH TO PREVENT GATE FROM SWINGING OUT.

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MARK W. HEAZLE
STATE OF IDAHO

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

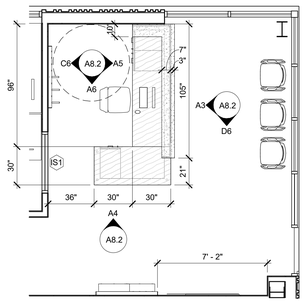
JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **RB/BC/SB**
CHECKED BY: **MG**

PHASE: **PERMIT SET**

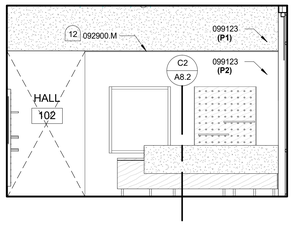
INTERIOR DETAILS

SHEET NO.
A8.1

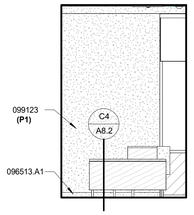
9/26/2024 3:09:36 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V23_bchurchHDWZ7.rvt



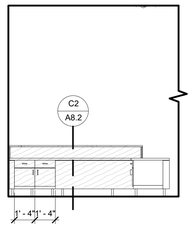
B1 RECEPTION DESK
1/4" = 1'-0"



A3 RECEPTION FACE - N
1/4" = 1'-0"



A4 RECEPTION FACE - E
1/4" = 1'-0"



A5 RECEPTION DESK - S
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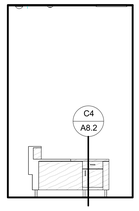

A6 RECEPTION DESK - W
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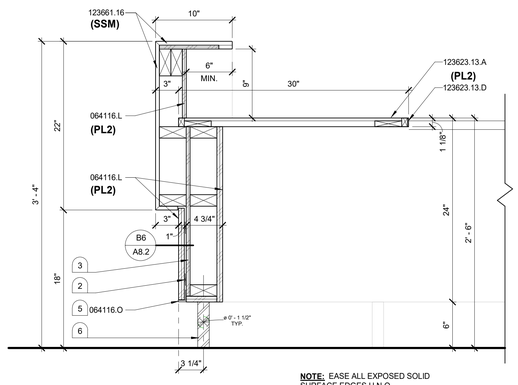
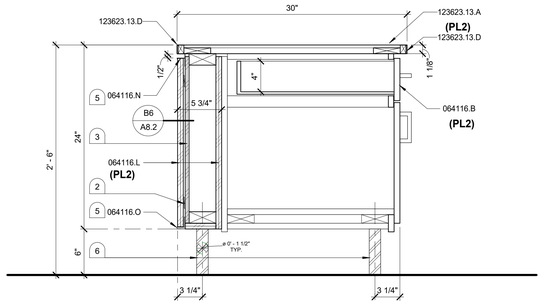
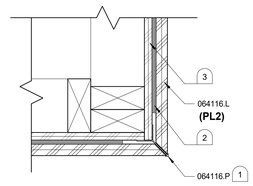


NOTE: EASE ALL EXPOSED SOLID SURFACE EDGES U.N.O.

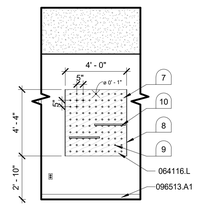
C2 RECEPTION DESK SECTION A
1 1/2" = 1'-0"



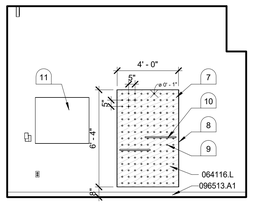
C4 RECEPTION DESK SECTION B
1 1/2" = 1'-0"



B6 LAMINATE CORNER
3" = 1'-0"



C6 PEG SHELVING - N
1/4" = 1'-0"



D6 PEG SHELVING - W
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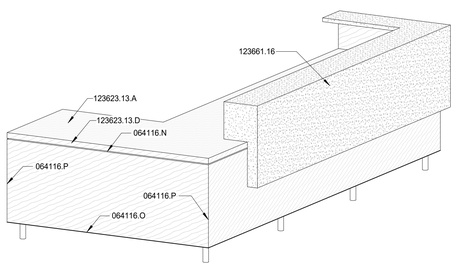
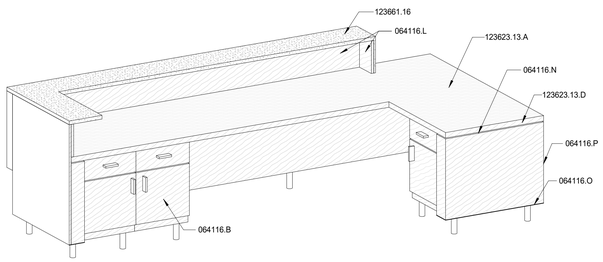


D2 RECEPTION DESK ISOMETRIC A



D4 RECEPTION DESK ISOMETRIC B

CONDOC

064116.B	PLASTIC-LAMINATE-FACED BASE CABINET.
064116.L	PLASTIC-LAMINATE.
064116.N	REVEAL TRIM.
064116.O	METAL ACCENT TRIM.
064116.P	TRANSITION / CORNER TRIM.
092900.M	TRIM.
096513.A1	4" RESILIENT BASE.
099123	INTERIOR PAINTING
123623.13.A	PLASTIC-LAMINATE COUNTERTOP.
123623.13.D	PVC EDGING.
123661.16	SOLID SURFACING COUNTERTOPS

KEYNOTES

1. TRIM PROFILE: FRY REGLET MILLWORK CORNER KEY
2. 1/4" CLEAT
3. 1/2" SUBSTRATE OVER FRAMING
4. TRIM PROFILE: FRY REGLET MILLWORK REVEAL F WITH RETURN KEY
5. TRIM PROFILE: FRY REGLET MILLWORK 1/4" POST TERMINATION
6. CLEAR ANODIZED ALUMINUM LEG
7. CUSTOM PEGBOARD DISPLAY CONSISTING OF (2) LAYERS 3/4 PLYWOOD, FACED WITH PLASTIC LAMINATE **(PL2)**, BACKED WITH 1/8 HIGH-DENSITY FIBERBOARD (HARDBOARD) BACK PANEL. MOUNT TO WALL WITH HEAVY DUTY CLEATS.
8. EXPOSED EDGES OF PEGBOARD ASSEMBLY TO RECEIVE PAINT **(P3)**. FILL GAPS AND SEAMS IN WOOD EDGES AND SAND SMOOTH PRIOR TO PAINTING.
9. PEG HOLES CUT AND SANDED SMOOTH. DO NOT ALLOW HOLES TO PENETRATE HARDBOARD BACK PANEL.
10. PROVIDE SOLID WOOD DOWELS TO FIT PEG HOLES. MIN. (20) DOWELS PER SHELVING UNIT.
11. ART; OWNER PROVIDED AND INSTALLED.
12. ALUMINUM DRYWALL REVEAL TRIM.

GENERAL NOTES

1. REFER TO GENERAL NOTES ON FLOOR PLAN SHEETS FOR GENERAL FLOOR PLAN NOTES WHICH APPLY HERE.
2. REFERENCE ROOM FINISH SCHEDULE AND FINISH LEGEND FOR ADDITIONAL MATERIALS AND FINISH INFORMATION.
3. FOR ACCESSORY, DEVICE LOCATIONS, MOUNTING HEIGHTS, AND CLEARANCES SEE SHEET **A8.00**
4. FOR SYMBOLS AND ABBREVIATIONS SEE COVER SHEET **0.00**.
5. ALL WALLS NOT INDICATED BY A HATCH PATTERN ARE PAINTED GYPSUM WALL BOARD U.O.N.
6. PROVIDE (1) 2 1/2" DIAMETER PLASTIC GROMMET IN REAR AND OFF TO ONE SIDE OVER KNEE SPACE AT ALL COUNTER TOPS TO ALLOW ROOM FOR COMPUTER AND MONITOR CABLES.
7. PL# = PLASTIC LAMINATE. REFER TO SPECIFICATIONS FOR TYPE AND COLOR.
8. P# = PAINT. REFER TO SPECIFICATIONS FOR TYPES. SEE ROOM FINISH NOTES ON SHEET **A2.31 & A2.32** FOR COLOR INFORMATION.
9. PROVIDE SOLID FILLERS AT TOPS OF ALL UPPER CABINET CORNERS AND END.
10. PROVIDE PLASTIC LAMINATE ON ALL EXPOSED SURFACES OF CABINETS.
11. VERIFY ALL DIMENSIONS AT MILLWORK INSTALLATION LOCATIONS PRIOR TO FABRICATION.
12. CONTINUE BACKSPLASH ALONG BACK OF COUNTERTOP AND ALL SIDES ADJACENT TO WALLS, TYPICAL.
13. PROVIDE CONTINUOUS SOLID WOOD BLOCKING AT TOP OF ALL UPPER CASEWORK AND BASE CABINETS.
14. PROVIDE STIFFENERS, BRACING, BACK-UP PLATES, ETC. AS REQUIRED AT ALL STUD WALLS FOR SUPPORT OF TOILET ACCESSORIES, GRAB BARS, PARTITIONS, ETC.
15. PROVIDE WATER RESISTANT GYPSUM BOARD AT ALL WET-WALL LOCATIONS.
16. REFERENCE **NAAWS (NORTH AMERICAN ARCHITECTURAL WOODWORK STANDARDS, CDS VERSION 3.1**, 2017 OR LATER FOR CABINET TYPES AND DESIGNATIONS. NAAWS-CDS.COM

NAAWS TYPE (101)
TYPES DENOTED (S): SEE BELOW FOR ADDITIONAL INFORMATION.
HEIGHT, WIDTH, DEPTH, RESPECTIVELY.

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CITY OF MOSCOW

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CABINET SECTIONS / ELEVATIONS

SHEET NO.

A8.2

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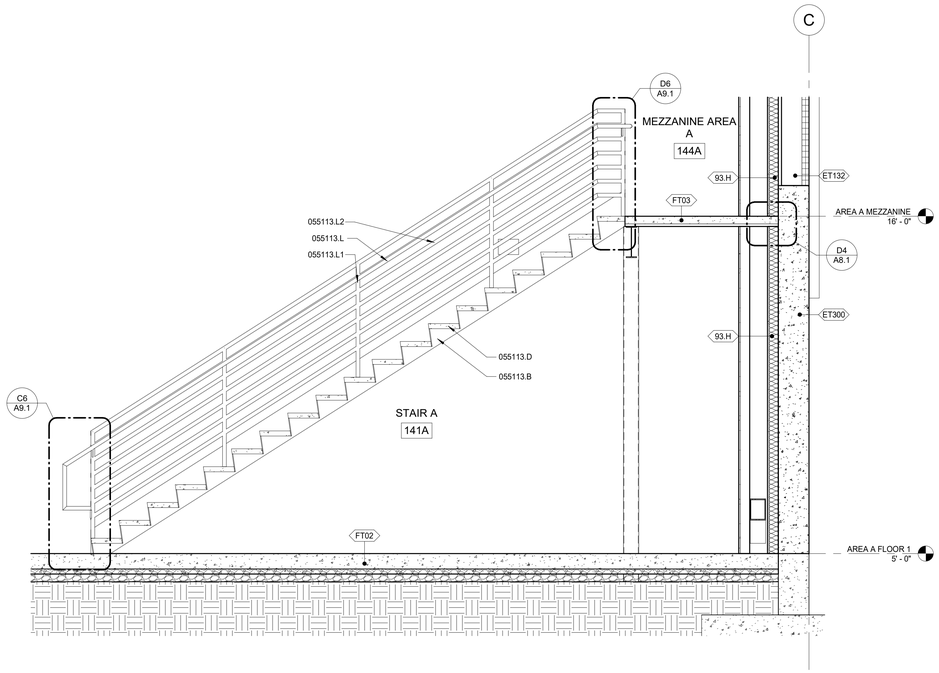
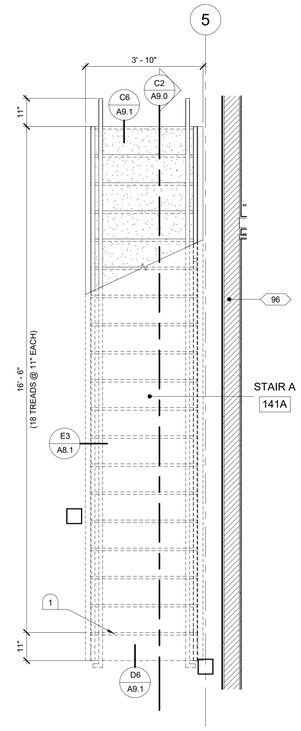
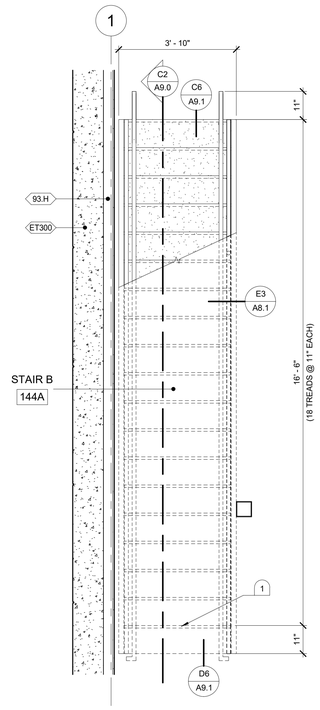


C2 AREA A - STAIR A/B SECTION
1/2" = 1'-0"



C5 AREA A - STAIR A PLAN
1/2" = 1'-0"



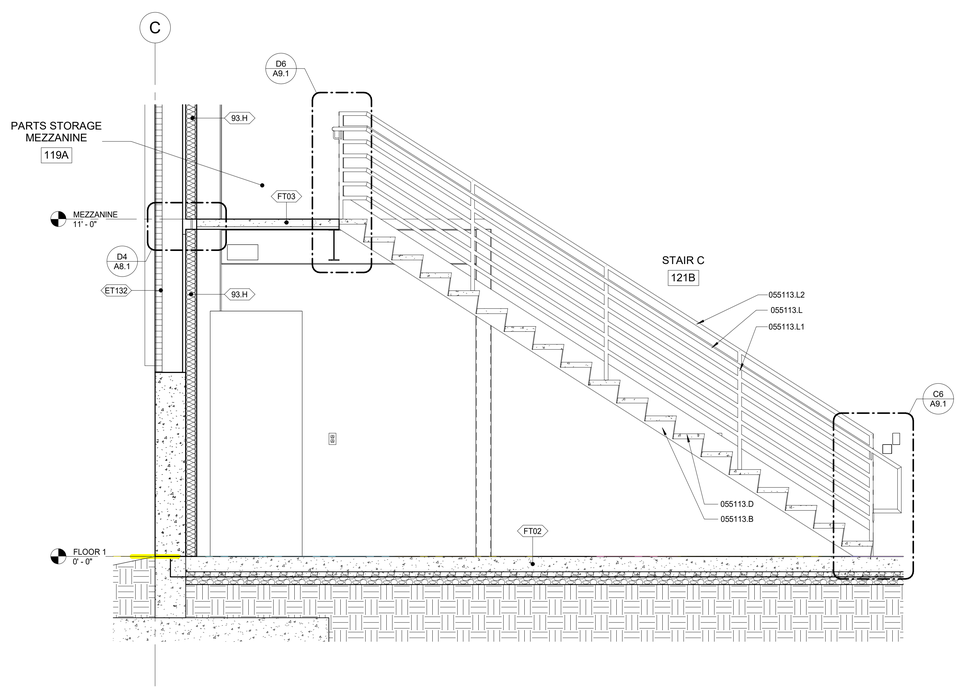
C6 AREA A - STAIR B PLAN
1/2" = 1'-0"

CONDOC

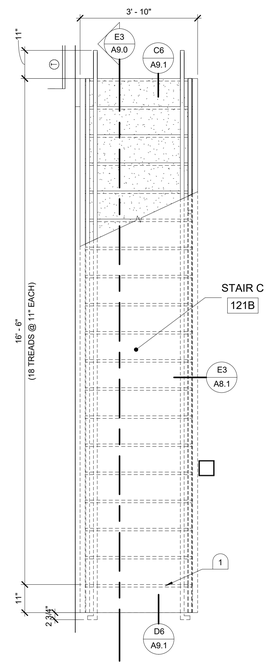
055113.B	STEEL STRINGER.
055113.D	CONCRETE FILLED TREAD.
055113.L	HANDRAIL.
055113.L1	HANDRAIL BRACKET.
055113.L2	GUARDRAIL.

KEYNOTES

1. LAST STAIR RISER.



E3 AREA B - STAIR C SECTION
1/2" = 1'-0"



E6 AREA B - STAIR C PLAN
1/2" = 1'-0"

GENERAL NOTES

1. REFER TO GENERAL NOTES ON SHEET **A2.10** FOR GENERAL PLAN NOTES WHICH APPLY HERE.
2. REFERENCE ROOM FINISH SCHEDULE, FINISH LEGEND, FOOTING DIMENSIONS, FOUNDATION DETAILS, STRUCTURAL MEMBER SIZES, BEARING HEIGHTS AND CONNECTIONS AND DETAILS AT EACH CONDITION.
3. ALL EXPOSED METAL FABRICATIONS, INCLLUDING STRUCTURAL COMPONENTS, STEEL DECKM GUARDRAILS, HANDRAILS, AND STRINGERS SHALL BE PREFINSIHED OR PAINTED. SEE INTERIOR FINISH SCHEDULE FOR COLOR.
4. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
5. PROVIDE CLEAN, ARCHITECTURAL WELD AT ALL EXPOSED METAL FABRICATIONS WELDED CONNECTIONS.
6. ALL EXPOSED CONCRETE TO BE SEALED.

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STAIR PLANS / SECTIONS

SHEET NO.
A9.0

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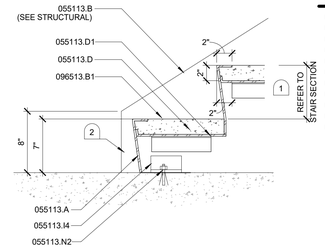
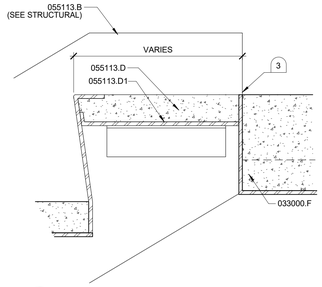
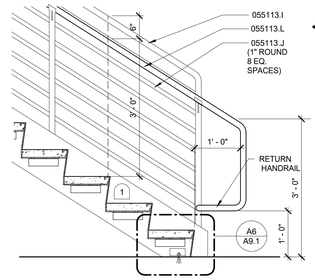


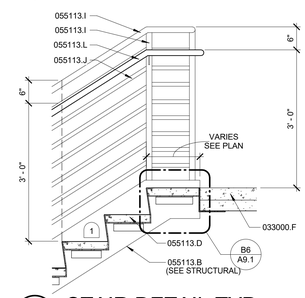
A6 STAIR DETAIL TYP.
1 1/2" = 1'-0"
ST07



B6 STAIR DETAIL TYP.
3" = 1'-0"
ST17



C6 STAIR DETAIL TYP.
3/4" = 1'-0"
ST10



D6 STAIR DETAIL TYP.
3/4" = 1'-0"
ST11

CONDOC

033000.F	CONCRETE SLAB ON METAL DECK, SEE STRUCTURAL.
055113.A	STEEL-FRAMED STAIR.
055113.B	STEEL STRINGER.
055113.D	CONCRETE FILLED TREAD.
055113.D1	METAL STAIR TREAD PAN.
055113.I	STEEL STAIR RAILING.
055113.I4	STEEL ANGLE.
055113.J	INTERMEDIATE RAILING.
055113.L	HANDRAIL.
055113.N2	POST-INSTALLED ANCHOR.
096513.B1	RESILIENT STAIR TREADS WITH INTEGRAL RISER.

KEYNOTES

1. MAXIMUM RISER HEIGHT SHALL NOT EXCEED 7".
2. INSTALL CAP PLATE END AT STRINGER, TYPICAL.
3. PROVIDE JOINT AT TREAD/LANDING LOCATION. FILL JOINT WITH SEALANT.

GENERAL NOTES

1. ALL EXPOSED STEEL, GUARDRAILS, HANDRAILS, STRINGERS, RISERS TO BE PAINTED.

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JOB N0.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
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STAIR DETAILS

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ABBREVIATIONS

AB.	Anchor Bolt	LLH.	Long Leg Horizontal
ACI	American Concrete Institute	LLV.	Long Leg Vertical
ACT.	Acoustic Ceiling Tile	LOC.	Locations
ADD.	Addition	LONG.	Longitudinal
ADD'L.	Additional	LVL.	Laminated Veneer Lumber
AFF.	Above Finish Floor	LW.	Light Weight
AIA.	American Institute of Architects		
AISC	American Institute of Steel Construction	MFR.	Manufacturer
AISI	American Iron and Steel Institute	MATL.	Material
ALT.	Alternate	MAX.	Maximum
AL.	Aluminum	MB.	Machine Bolt
ANSI	American National Standards Institute	MECH.	Mechanical
AOR	Architect of Record	MEZZ.	Mezzanine
APA	American Plywood Association	MIN.	Minimum
APPROX.	Approximate	MISC.	Miscellaneous
ARCH.	Architect or Architectural	MK.	Mark
ASTM	American Society for Testing and Materials	ML	MicroLam
AWS	American Welding Society		
		NF.	Near Face
BOTT.	Bottom	NO. or #	Number
BD.	Board	NOM.	Nominal
BLKG.	Blocking	NTS.	Not to Scale
BOD. or BO DECK	Bottom of Deck	NS.	Near Side
BM	Bending Moment		
BPL.	Base Plate	OC.	On Center
BRG.	Bearing	OD.	Outside Diameter
		OPP.	Opposite
C	Channel	OSB	Oriented Strand Board
CF	Cubic Foot	OWSJ	Open Web Steel Joist
COORD.	Coordinate		
CFS	Cold-formed Steel	PAF.	Powder Actuated Fastener
C.J.	Control Joint	PARA.	Parallel
CJP.	Complete Joint Penetration	PCF.	Pounds Per Cubic Foot
CL.	Center Line	PEN.	Penetration
CLR.	Clear	PERM.	Permanent
COL.	Column	PERP.	Perpendicular
CONC.	Concrete	PL.	Plate
CONN.	Connection	PP	Partial Pen.
CONST.	Construction	PSF.	Pounds Per Square Foot
CONT.	Continuous	PSI.	Pounds Per Square Inch
CMU	Concrete Masonry Units	P-T	Post Tension, Post Tensioned
CY.	Cubic Yard	P.T.	Pressure Treated
DBA.	Deformed Bar Anchor	RAD. or R.	Radius
DIAG.	Diagonal	REF	Reference
DIA.	Diameter	REINF.	Reinforce, Reinforced,
DIM.	Dimensions		Reinforcement or Reinforcing
DF-L	Douglas Fir-Larch	REQD.	Required
DWG.	Drawing	REV.	Revise or Revision
		RO.	Rough Opening
EA.	Each		
EB.	Expansion Bolt	SCHED.	Schedule
EJ.	Expansion Joint	SF.	Strut Force
EL. or ELEV.	Elevation or Elevator	SHTG.	Sheathing
ELEC.	Electric	SIM.	Similar
EOD. or EO DECK	Edge of Deck	SK.	Sketch
EOR	Engineer of Record	SPECS.	Specifications
EN.	Edge Nail (Nailing)	SQ.	Square
EQ.	Equal	SS.	Stainless Steel
EQUIP.	Equipment	SSLT.	Short Slotted Holes Transverse
EXIST. / (E)	Existing		to Direction of Load
EXT.	Exterior	STD.	Standard
		STRUCT.	Structural
FAB.	Fabrication	SYM.	Symmetrical
FD.	Floor Drain		
FIN.	Finish	T&G	Tongue and Groove
FLR.	Floor	T AND B	Top and Bottom
FND.	Foundation	THK.	Thick
FS.	Far Side	THRU.	Through
FT. or '	Feet or Foot	TJI	Trus Joist I-Joist
FTG.	Footing	TO.	Top Of
		TOC. or TO CONC.	Top of Concrete
GALV.	Galvanize	TOF. or TO FTG.	Top of Footing
GC.	General Contractor	TOM. or TO MASONRY	Top of Masonry
GEN.	General (Notes)	TOS. or TO STL.	Top of Steel
GLB	Glu Lam Beam	TOW. or TO WALL	Top of Wall
GR. or GRD.	Grade	TRANSV.	Transverse
GYP.	Gypsum	TYP.	Typical
HD.	Hold-down	UNO.	Unless Noted Otherwise
HORIZ.	Horizontal		
		VERT.	Vertical
ID.	Inside Diameter	VIF.	Verify in the Field
IF	Inside Face		
IN. or "	Inches	W	Wide Flange
		WP.	Work Point
K	Kip (1,000 lbs.)	WT.	Weight
LESK.	LOCHSA ENGINEERING SKETCH	XS	Extra Strong
LAM.	Laminate		
lb. / lbs. / #	Pound / Pounds	YD.	Yard
L	Angle		
LFRS	Lateral Force Resisting System	2L	Double Angle
LLBB.	Long Leg Back To Back		

SYMBOL LEGEND

SLOPE — Slope Direction (down / up)
Span Direction
98'-0" — Miscellaneous Elevation
99'-10" — Floor or Steel Elevation
Rigid Connection
Masonry (CMU) Wall
Concrete Wall
Earth
New Construction
Existing Construction
Existing Construction Beyond
Elevation Reference
Section Cut
LFRS — Lateral Force Resisting System

Fastener Notation

(2) 1 1/4"x3"
Quantity
Fastener Length
Fastener Diameter Size

Symbols for Concrete per ACI

AT — Spacing - Center to Center
Direction in Which Bars Extend
Limits of Area Covered By Bars or Post Tension

Symbols for Structural Steel per AISC

Brace Up
Brace Frame
Brace Down
Change (Step) in Elevation
SC 2 - 3 — Slip Critical Connection
Number of Bolts per Row
Number of Rows
1 — Revision Cloud and Number
Number of Nelson Studs required
W12x19 [10] c=3/4" — Camber size
AISC beam designation
Depth of steel joist
14K (240/130) — Uniform Live Load (PLF)
Uniform Total Load (PLF)
Series of Steel Joist
Welding symbols per AWS

DESIGN CODES 2018

1. All design and construction shall conform to the 2018 International Building Code and local jurisdictional amendments per state, county, city, etc.
2. References to ASTM and other standards shall refer to the latest edition designated by IBC Chapter 35. Refer to the specifications for information in addition to that covered by these structural notes and drawings. The following standards were used for design.

Building Code Requirements for Structural Concrete	ACI 318-14
Specifications For Structural Steel Buildings	AISC 360-16
Minimum Design Loads For Buildings And Other Structures	ASCE 7-16

All specifications and codes noted shall be the latest approved editions and revisions by the governmental agency having jurisdiction over this project.

STRUCTURAL LOADS

SNOW LOADS:	
Ground Snow Load	Pg = 64 psf
Importance Factor	Is = 1.0
Exposure Factor	Ce = 1.0
Flat Roof Snow Load	Pf = 45 psf
Thermal Factor	Ct = 1.0
Snow Drifts	As indicated on drawings.
WIND LOADS:	
Basic Wind Speed	Vult = 115 mph
	Vasd = 89 mph
Risk Category	II
Exposure	C
Internal Pressure Coefficient	GCpi ± 0.18
SEISMIC LOADS:	
Risk Category	II
Importance Factor	Ie = 1.00
Soil Site Class	D
Mapped Spectral Response Acceleration	
SS = 0.293 g	S1 = 0.106 g
SOIL FACTOR COEFFICIENTS:	
Fa = 1.565	Fv = 2.388
SPECTRAL RESPONSE COEFFICIENT:	
SDS = 0.306 g	SD1 = 0.169 g
SEISMIC DESIGN CRITERIA:	
Seismic Response Coefficient:	CS = 0.1019
Seismic Design Category	C
Analysis Procedure	Equivalent Lateral Force (ELF) Method
Structural System	Steel Not Specifically Designed for Seismic
Response Modification Factor	3.00
Tabulated Overstrength Factor	2.50
ADDITIONAL ITEMS:	
Building Location	46.740607, -116.995694
Mean Building Height	20 feet
REDUNDANCY FACTORS:	
North/South Direction	rho = 1.0
East/West Direction	rho = 1.0
ROOF DEAD LOADS:	
Structural Self Wt.	Per Prefabricated Metal Building MFR
Collateral	5 psf
Solar	5 psf
ROOF LIVE LOADS:	
Roof Live Load	40 psf
STORAGE LIVE LOADS:	
Light Storage	125 psf (non-reducible)
MISCELLANEOUS LIVE LOADS:	
Guardrails/Balcony Rails	50 plf or 200lbs.
Mechanical Equipment	Weights Furnished by Manufacturer

GENERAL

1. The Contractor shall verify all dimensions prior to starting construction. The Architect shall be notified of any discrepancies or inconsistencies.
2. Summary of Work: Project consists of new construction as shown on these Contract Documents used in coordination with the Architectural and other discipline's documents. See also note 7.
3. Warranty: The EOR has used the degree of care and skill ordinarily exercised under similar circumstances by members of the profession in this locale and no other warranty, either expressed or implied, is made in connection with rendering professional services.
4. Structure noted in the drawings as existing or by others, shall be field verified by the contractor and any discrepancies noted shall be reported to the Architect/Structural Engineer.
5. Construction documents include but are not limited to: drawings, plan notes, typical details, general notes, custom details, specifications, etc. In addition to those prepared by other disciplines.
6. Do not scale the drawings for dimensions not shown.
7. Notes and details on the drawings shall take precedence over general notes, typical details, and the project specifications. Where discrepancies between specifications and drawings occur, use the more stringent requirement.
8. Typical details and schedules indicated may not be specifically referenced on the drawings. The contractor is responsible to determine where each typical detail or schedule applies. If locations are found where no typical detail, typical schedule, or specific detail applies, notify the Architect/Structural Engineer. - Drawings indicate general and typical details of construction. Typical details and general notes shall apply even if not specifically denoted on plans, uno. Where conditions are not specifically indicated similar details of construction shall be used, subject to review and approval by the Architect and the Structural Engineer of Record.
9. The contract Structural drawings and specifications represent the finished structure. They do not indicate the method of construction. Contractor to provide construction means, methods, techniques, sequences and procedures as required. Contractor to provide adequate excavation procedures, shoring, bracing and erection procedures complying with national, state and local safety ordinances. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing and shoring for loads due to hydrostatic, earth, wind or seismic forces, construction equipment, temporary loading, etc.
10. Observation visits (site visits) by representatives of Architect/Structural Engineer do not include inspection of construction means and methods. Site visits during construction are not continuous nor detailed inspection services which are to be performed by others. Observations are performed solely for the purpose of determining if the Contractor understands design intent shown in the contract drawings. Observations do not guarantee Contractor's performance and are not to be construed as supervision or verification of construction.
11. Notify the Structural Engineer prior to constructing or fabricating, when drawings by others show openings, pockets, etc., not shown on the structural drawings, but which are located in the structural members.
12. Products that require a report on code compliance shall have an ICC-ES or IAPMO report evaluated for the above listed governing building code. Where required by the governing jurisdiction, a submittal as an alternate material and method is required for all reports evaluated to an earlier edition of the IBC. Reports evaluated to codes other than the above listed code are not permitted, unless allowed by the governing jurisdiction.
13. Contractor shall investigate the site during clearing and earth work operations for filled excavations or buried structures such as cesspools, cisterns, foundations, utilities, etc. If any such structures are found, the Structural Engineer shall be notified immediately.
14. Construction materials shall be spread out when placed on framed floors or roofs. The construction material load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained design strength.
15. See the architectural drawings for the following: Size and location of door and window openings, size and location of interior and exterior non-bearing partitions, size and location of concrete curbs, floor drains, slopes, depressed areas, changes in level, chamfers, grooves, inserts, size and location of floor and roof openings, floor and roof finishes, stair framing and details, dimensions not shown on the structural drawings, ceiling assemblies, exterior wall assemblies,etc.
16. See mechanical, plumbing, and electrical drawings for the following: Pipes, sleeves, hangers, trenches, wall, floor, and/or roof openings, duct penetration, electrical conduit runs, boxes, outlets in walls and slabs, concrete inserts for electrical, mechanical or plumbing fixtures, size and location of machine or equipment bases, anchor bolts for mounts, etc., except as shown or noted. See also note 13.
17. For mechanical and electrical equipment anchorage that is to be designed by others, see IBC section 1613 and ASCE 7 chapter 13. Use isolators, fasteners and bracing approved by ICC-ES or approved third party capable of transmitting code required lateral loads. Secure suspended equipment with lateral bracing.
18. For piping and ductwork bracing to be designed by others, see the latest edition of "Guidelines for Seismic Restraints of Mechanical Systems" by the Sheet Metal and Air Conditioning Contractors National Association.

DEFERRED / DELEGATED STRUCTURAL COMPONENTS

1. Components referred to as Deferred Structural Components shall comply with these notes. These elements have not been permitted under the base building application. The contractor will be required to submit the component system documents to the building official for approval. The documents shall be stamped and signed by a structural engineer licensed by the state where the project is located. The deferred structural components shall not be installed until the design and submittal documents have been approved by the building official.
2. Prior to building department submittal, the deferred structural components submittals shall receive cursory review by Structural Engineer of Record for loads imposed on primary structure and general conformance with design concept of the project and general compliance with the information given in the Structural Contract Documents. Review of submittals does not constitute approval or acceptance of unauthorized deviation from Contract Documents.
3. Submittals of contractor-designed components shall include the designing structural engineer's stamp and signature, as noted above. The submittal shall be approved by the component vendor prior to review by the Structural Engineer of Record.
4. The designing professional is responsible for code conformance and all necessary connections not specifically called out on architectural or structural contract documents.
5. Submittals shall include details of connections to primary structure that indicate magnitude and direction of all loads imposed at point of connection.
6. Design criteria shall be provided with submittal and calculations shall be made available upon request.
7. Refer to other discipline's contract documents for additional deferred components that may require structural design and details. Connections of these elements shall not induce torsion on structural members.
8. Deferred Structural Components shall be manufactured, delivered, handled, stored, and field erected in conformance with instructions prepared by the component vendor.
9. The following list includes the items that are defined as Deferred Structural Components. Additional items may be included in the project specifications.
10. Deferred structural components:
    A. Handrails, guards, grab bars, and wall mounted shower seats
    B. Marquees and canopies unless detailed on Contract Documents

SHOP DRAWINGS

1. Shop drawings and material submittals shall be submitted to the Architect and Structural Engineer of Record prior to any fabrication or construction. Electronic submittals shall be made where possible. Any submittals containing hard copies shall include one reproducible and one copy; reproducible will be marked and returned. Additional copies of reviewed shop drawings are the responsibility of the general contractor. No modifications or substitution of drawings and specifications will be accepted via shop drawing review. Contractor shall review and stamp shop drawings prior to submission to the Architect/Structural Engineer. Contractor shall review for completeness and compliance with contract documents including addendum's, clarifications, etc. See also note 7.
2. Submit shop drawings to the Architect/Structural Engineer as indicated or specified for review prior to fabrication. Review will be for general conformance with design intent conveyed in contract documents.
3. When an engineer is required to sign and stamp shop drawings and calculations, ensure seal indicates engineer as registered in state where project site occurs.
4. Shop drawings are not a part of contract documents, therefore, Architect's/Structural Engineer's review does not constitute an authorization to deviate from terms and conditions of the contract. See also note 7.
5. Review of submittals by the structural engineer will include checking for conformance with the design concept and general compliance with the information given in the construction documents. It will not include reviews of the accuracy or completeness of items such as quantities, dimensions, weights or thicknesses, fabrication processes, construction means or methods, coordination with the work of other trades, or construction safety precautions. Review of a specific item shall not indicate that the structural engineer has reviewed the entire assembly of which the item is a component. The structural engineer shall not be responsible for any deviations from the construction documents not brought to the structural engineer's attention in writing.
6. Submittals processed by the structural engineer are not change orders
7. Shop drawings will be rejected for incompleteness, lack of coordination with other portions of contract documents, lack of calculation (if required), or where modifications or substitutions are indicated without prior review per paragraph A above. Resubmittals shall be clouded and dated for all changes to the submittal. Only clouded portions of resubmittal will be reviewed and Structural Engineer of Record's review stamp applies to only these areas.
8. Submit shop drawings and calculations to governing code authority when specifically indicated or requested.
9. Maintain a copy of all shop drawings reviewed by the Architect/Structural Engineer at site during construction period.
10. Structural Engineer requires 10 working days after receipt of shop drawings and calculations for processing.
11. As a minimum shop drawing submittals shall include the following items plus, additional items listed in the project specifications for structural review, but not be limited to:
    A. Concrete mix designs
    B. Concrete construction joint plans
    C. Concrete reinforcing bar shop drawings and placing plans
    D. Concrete accessories material specification, size and location
    E. Non-shrink grout material specifications and manufacturer's installation recommendations
    F. Fabrication shop AISC Certification or statement of equivalent testing and inspection procedures
    G. Structural steel shop and erection drawings
    H. Welding Procedure Specifications and certifications
    I. Metal deck material submittal
    J. Metal deck and accessories layout

SHEET LIST

DWG #	DRAWING TITLE	ORIGINAL SUBMITTAL	REV. #	REV. DATE
S0.01	STRUCTURAL COVER SHEET	07/24/2024	1	09/27/24
S0.02	STRUCTURAL DESIGN NOTES	07/24/2024		
S0.03	SPECIAL INSPECTION TABLES	07/24/2024		
S1.01	FOUNDATION PLAN - OVERALL	07/24/2024		
S1.01A	FOUNDATION PLAN - AREA A	07/24/2024		
S1.01B	FOUNDATION PLAN - AREA B	07/24/2024		
S2.01	ENLARGED MEZZANINE FRAMING PLANS	07/24/2024		
S4.01	SCHEDULES	07/24/2024		
S5.01	GENERAL CONCRETE DETAILS	07/24/2024		
S5.02	GENERAL SLAB DETAILS	07/24/2024		
S5.21	GENERAL STRUCTURAL STEEL DETAILS	07/24/2024		
S5.31	GENERAL CFS DETAILS	07/24/2024		
S5.32	GENERAL CFS DETAILS	07/24/2024		
S6.01	FOUNDATION DETAILS	07/24/2024		
S6.02	FOUNDATION DETAILS	07/24/2024		
S7.01	FLOOR FRAMING DETAILS	07/24/2024		

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1	09/27/24	PLAN REVIEW COMMENTS

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**JG/CE**
CHECKED BY:	**KF/CH**
PHASE:	**PERMIT SET**

STRUCTURAL COVER SHEET

SHEET NO.
S0.01

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STRUCTURAL STEEL

1. Submit shop drawings to structural engineer indicating fabrication of structural steel components. Include details of cuts, connections, splices, camber, holes and other pertinent data. Include embedment drawings. Indicate welds by standard AWS symbols, distinguishing between shop and field welds,and show size, length and type of each weld. Indicate type, size and length of bolts distinguish between shop and field bolts. Identify retensioned and slip-critical high strength bolted connections.

2. Designing, detailing, fabrication, and erection of structural steel shall be in accordance with the American Institute of Steel Construction (latest edition and supplements). See general notes for additional information.

3. Structural steel not exposed to weather shall be left unpainted unless noted otherwise in the architectural drawings and/or specifications.

4. MATERIALS:
   A. Structural Steel Shapes Shall Conform to the following: Structural steel "W" shapes shall comply to ASTM Standard A992.
   B. Angles, plates "M" and "S" shapes, channels and bars shall comply to ASTM Standard A36, unless noted otherwise.
   C. Steel pipe shall comply to ASTM Standard A53 grade B (Fy = 35 ksi).
   D. Rectangular and square Hollow Structural Sections (HSS) shall comply to ASTM Standard A500 grade B (Fy = 46 ksi).
   E. Round Hollow Structural Sections (HSS) shall comply to ASTM Standard A500 grade B (Fy = 42 ksi).

5. WELDING:
   A. All welding shall comply to the American Welding Society Standard (AWS D1.1 and AWS D1.8). All welded joints shall be detailed as indicated by the prequalified joint details in the Structural Welding Code.
   B. Weld lengths called for on plans are the net effective length required. Weld size shall be AISC minimum unless a larger size is noted. All welds shall use minimum E70XX electrodes.
   C. Welding tests and inspections, see specifications.
   D. Filler material covered in ANSI/AWS D1.1 TABLE 3.1.

6. BOLTING:
   A. Anchor bolts and rods shall conform to ASTM F1554, grade 55 unless noted otherwise.
   B. Bolts shall conform to ASTM A325-N TYPE 1 less than 1 1/2" dia. uno., see also note 'G' below.
   C. Weather or Corrosion Resistance bolts are required to conform to A325-N Type 3.
   D. Nuts shall conform to ASTM A563.
   E. Washers shall conform to ASTM F436. Washers used in load transfer or subject to direct tension shall conform to ASTM F844.
   F. Threaded rods shall comply to ASTM A36 uno.
   G. Except as subsequently noted, high strength bolts need not be tightened beyond the snug-tight condition, as defined in section 8.1 of the specifications for structural joints using ASTM A325 or A490 Bolts. For connections subject to direct tension, connections for braced frames, and other connections shown or noted on the plans as SC (slip critical) or fully tensioned, bolts shall be tightened by one of the methods described in section 8.2 and to the minimum tension specified in section 8.2, Table 8.1.
   H. Bolt holes in steel shall be 1/16 inch larger than nominal size of bolt used, except anchor bolt holes which may be 1/8" larger or as noted on drawings.

7. ANCHOR STUDS, SHEAR STUDS, AND DEFORMED ANCHORS:
   A. Shall be manufactured by Nelson Stud Welding Co. or equal.
   B. Headed studs (shear and anchor) shall be made of material conforming to ASTM A108.
   C. Deformed anchors shall be made of material conforming to ASTM A496.
   D. Studs and anchors shall be welded according to manufacturer's recommendations. Manual arc (stick) welding of headed studs and/or deformed anchors is not allowed: Paragraphs 7.5.5 to 7.5.5.6 of AWS D1.1, are deleted.

8. STEEL DECK:
   A. Deck shall be cold rolled steel factory primer painted uno., and conforming to ASTM A 1008 grade 33 minimum (minimum yield of 38ksi), with the profile, depth, and uncoated thickness as indicated on the drawings. All metal accessories are to have the same thickness as the decking, uno.
   B. Minimum bearing of steel deck on supports shall be 2 inches. All 3" deep steel deck shall have minimum bearing of 3". Sheets shall be attached to all supporting steel members as indicated on drawings and in accordance with manufacturer's recommendations.
   C. Minimum deck connection shall be 7-1/2" puddle welds per sheet and 3/16" button punch or welds at 12" oc. uno. See plans for additional information.
   D. See architectural, mechanical, electrical, etc., for sizes and locations of deck openings and for deck openings smaller than 12" not shown on the structural drawings. See general details for framing requirements at deck openings. Openings larger than 12" shall not be placed in deck unless specifically shown on the structural drawings.
   E. DO NOT hang loads from metal deck. Provide engineered structural system to hang all loads from steel joists or beams. This includes but is not limited to metal stud soffit or ceiling framing, mechanical or plumbing equipment, etc.
   F. Steel deck manufacturers shall submit shop drawings for approval.
   G. Steel deck units with concrete fill shall be continuous over three or more spans. If steel deck units with concrete fill span less than 3 spans, the deck units shall be shored, uno. steel roof deck units shall be continuous over two or more spans, uno.
   H. All exterior exposed or high moisture area decks are to be galvanized. Galvanized deck to be zinc coated steel per ASTM A653, grade 33 minimum (minimum yield of 38 ksi) and ASTM A653, G60 with the profile, depth and uncoated thickness as indicated on the drawings. All metal accessories are to have the same thickness as the decking, uno. Upon completion of erection, all welds on galvanized steel deck areas shall be de-slagged, cleaned and touched-up with a zinc rich primer.
   .

9. In addition to the steel included on the drawings, the contractor shall provide a 5% allowance of steel to be finished, fabricated and installed during the progression as may be directed by the structural engineer. In the event the allowance is not completely exhausted, the contractor should be prepared to issue a credit to the owner for the remaining portion of the allowance.

EPOXY INSTRUCTIONS FOR ANCHORING REBAR AND BOLTS

1. Epoxy shall not be installed without prior approval of engineer unless specifically detailed on the drawings.
2. Bars must be deformed or threaded for the full embedment depth in epoxy.
3. Over-drill bar diameter as indicated by the Epoxy Manufacturer, and to the depth indicated on the structural drawings.
4. Clean hole per manufacture requirements.
5. Any dirt, rust, and oil on the bars shall be removed.
6. During the epoxy mixing and application process, install in strict accordance with ICC Report and the Epoxy Manufacturer's specifications exactly.
7. Vertical holes to be filled from the bottom are to use an epoxy gel. See also note 12.
8. The following epoxy systems are acceptable for use in uncracked, cracked and seismic concrete applications:
   Hilti HIT-HY 200 – ICC ESR-3187
   Simpson SET-XP – ICC ESR-2508
   Dewalt Pure110+ – ICC ESR-3298
   Simpson AT-XP – IAPMO UESR-0263
   Hilti HIT-RE 500 V3 – ICC ESR-3814
   Dewalt AC200+ – ICC ESR-4027
9. Threaded anchor rods shall be ASTM F1554 Grade 55 unless noted otherwise.
10. Use of any other epoxy in a seismic / cracked concrete location will only be considered with an approved third party evaluation report that includes recognition of earthquake resistance in accordance with the current IBC.
11. Installation of adhesive anchors that are to be under sustained tension loading in horizontal to vertically overhead orientation shall be done by a certified adhesive anchor installer (AAI) as certified through ACIand in accordance with ACI 318-2014 (section 17.8.2.2). Proof of current certification shall be submitted to the engineer for approval prior to commencement of installation.
12. Per ACI 318-2014 (Section 17.1.2) adhesive anchors shall be installed in concrete having a minimum age of 21 days at time of anchor installation. For installation sooner than 21 days consult adhesive manufacturer.
13. If temperature of base material at time of adhesive installation is at 45 degrees (Fahrenheit) or less, an "acrylic" (cold weather) adhesive is required.

REINFORCING STEEL (FOR CONCRETE)

1. All reinforcing steel shall be detailed and placed in accordance with the 'Building Code Requirements for Reinforced Concrete' (ACI 318) and the Manual of Standard Practice for Reinforced Concrete Construction' by CRSI and WCRSI as modified by the project drawings and specifications.
2. Deformed reinforcing bars shall conform to the requirements of ASTM A615 grade 60 and ASTM A706 grade 60 for deformed weldable bars.
3. Welding of reinforcing is permitted only where shown on the drawings or when approved by the structural engineer. Welding of reinforcing bars shall be with low hydrogen electrodes in accordance with the 'Recommended Practices for Welding Reinforcing Steel, Etc.', American Welding Society, AWS D1.4 and IBC table 1704.4.1 all reinforcing to be welded shall conform to ASTM A706 grade 60 uno.
4. All reinforcing bar bends shall be made cold.
5. Lap splices made at locations other than those specifically indicated on the drawings shall require approval by engineer prior to any fabrication or construction activities.
6. Reinforcing dowels between footings and walls or columns shall be the same number, size, spacing and grade as the specified vertical reinforcing, uno.
7. All reinforcing bars shall be marked so their identification can be made when the final in-place inspection occurs.
8. Welded wire fabric shall conform to ASTM A185.
9. Minimum lap of welded wire fabric shall be 6 inches or one full mesh and one half, whichever is greater.
10. In addition to all the reinforcing steel indicated on the drawings, the contractor shall provide for an allowance of two tons of reinforcing bars to be furnished, fabricated and placed during the progression of work as may be directed by the Structural Engineer.
11. Submit shop drawings to structural engineer: Placing drawings that detail fabrications, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

PREFABRICATED METAL BUILDINGS

1. Metal building framing, including rigid frames, rafter beams, columns, purlins, girts, lateral bracing and metal roofing and siding shall be designed by the manufacturer for the structure dead load and the live and lateral loads indicated on these drawings. All design shall be completed in accordance with the building code listed on these drawings and sealed by an engineer licensed in the appropriate state per the appropriate discipline. Provide structural members as required by design and consistent with locations shown on these drawings. Modifications of building configuration will be permitted only with written approval of the Architect and Engineer. Submit design calculations and framing / erection plan for Engineer review prior to fabrication. As a minimum, the submittal shall include foundation reactions, anchor bolt placement and sizes, column bearing area requirements, member sizes and spacing, and all connection details. Building manufacturer shall be responsible for redesign if the maximum reactions or required pier and footing sizes exceed those stated on these drawings. Snow drifts from adjacent buildings shall be accounted for per the appropriate ASCE-7design standard. Refer to shop drawing notes regarding submittal, substitutions and additional requirements.

FOUNDATION

1. The design of the foundation system is based on the Geotechnical report (and any addenda) prepared by the following company:

Company:	GeoProfessional Innovation
Report No.	MO24085A
Dated:	May 17, 2024

   Copies are available for review at the Architect's office and contractor shall have a copy at the job site.

2. The foundation system is designed based on the following:

Soil Bearing Capacity	3000 psf
Frost Depth	30"
At-rest Case	65 pcf
Active Case	45 pcf
Passive Pressure	350 pcf
Friction Coefficient	0.5
Retaining Wall Surcharge	100 psf

3. It is recommended that the contractor shall retain the services of a Geotechnical Engineer to perform necessary testing and inspections for quality control to ensure that the recommendations of chapter 18 of the IBC and presumptive soil loads noted above are complied with and achievable. If the recommendations of chapter 18 of the IBC and the presumptive soil loads noted above are not achievable, all work shall stop and the architect and structural engineer shall be notified immediately.
4. The contractor shall provide for proper dewatering of excavations from surface water, ground water, seepage, etc.
5. Drainage systems, including foundation, roof and surface drains, shall be installed as directed by the Geotechnical Report and IBC Section 1805.
6. Vapor retarder placed below slab on grade shall conform to ASTM E 1643 and ASTM E 1745. Coordinate placement with Geotech and/or Architectural drawings.
7. The Contractor shall provide for the installation and design of all cribbing, sheathing and shoring required to safely and adequately retain the earth banks and support any existing structures in accordance with all national, state and local safety ordinances.
8. All abandoned utilities, footings, etc., that interfere with the new construction shall be removed. Notify the Structural Engineer should any foundations for existing structures be encountered that are not shown on the structural drawings.
9. Footings shall be placed and estimated according to depths shown on the drawings. Excavations for footings shall be approved by the Geotechnical Engineer prior to placing the concrete and reinforcing. The Contractor shall notify the Geotechnical Engineer when the excavations are ready for inspection. The Geotechnical Engineer shall submit a letter of compliance to the Owner. Should soil encountered at these depths not be approved by the Geotechnical Engineer, modified footing elevations or footing designs may be subject to additional engineering fees.
10. All excavations shall be properly backfilled. Footing backfill and utility trench backfill within the building perimeter shall be mechanically compacted in layers, to the approval of the Geotechnical Engineer. See Geotechnical report for requirements. Backfill by flooding will not be permitted.
11. The Contractor shall not backfill behind retaining walls before the concrete or masonry walls have reached full design strength. The Contractor shall brace or protect all building and pit walls below grade from lateral loads until attaching floors are completely in place and have reached full design strength. The Contractor shall provide for the design, any required permits and the installation of such bracing and protection.
12. Sub-base below, slabs on grade shall be supported on natural grade or structural fill as directed in the Geotechnical report or by a geotechnical engineer. Sub-grade will be compacted per the recommendations of the geotechnical engineer and no sub-grade rutting will be allowed at time of concrete placement under slabs on grade.
13. Unless otherwise noted, footings shall be centered below columns or walls.
14. EXISTING UTILITIES:
   A. The contractor shall determine the location of all adjacent underground utilities prior to any excavation, shoring, pile driving, or pier drilling. Any utility information shown on the plans and details are approximate and not verified by the structural Engineer of record. Contractor is to provide protection of any utilities or underground structures during construction.
15. NEW UTILITIES:
   A. Contractor to determine the location of all new below grade utilities and coordinate placement with new footings, see general details for foundation at or adjacent to excavations and utilities.
16. RETAINING WALLS:
   A. Grade on either side of concrete walls shall not vary by more than 4", uno. Slope of backfill shall not exceed 12H to 1V, uno. Backfill behind all retaining walls with free draining, granular fill installed per the Geotechnical Report. Provide for subsurface drainage. Design pressures used for the design of retaining walls are based on drained conditions.
   B. Retaining walls are to be designed for active and passive soil pressures, see note 2.
   C. Provide temporary shoring for tops of walls if backfill is placed prior to the supporting structure being constructed. Supporting structure is the floor framing and sheathing completely installed and attached to perpendicular walls.

POST INSTALLED MECHANICAL ANCHORS

1. Mechanical anchors shall not be installed without prior approval of engineer unless specifically detailed on the drawings.
2. Over-drill as indicated by the Anchor Manufacturer, and to the depth indicated on the structural drawings.
3. Clean hole per manufacture requirements.
4. The following expansion type anchors are structurally acceptable for use in uncracked, cracked, and seismic concrete applications:
   A. Simpson Strong-Bolt 2 Wedge Anchor – ICC ESR-3037
   B. Hilti Kwik Bolt TZ – ICC ESR-4266
   C. Dewalt Power-Stud+ SD2, SD4, SD6 – ICC ESR-2502
5. The following screw type anchors are structurally acceptable for use in uncracked, cracked, and seismic concrete applications:
   A. Simpson Titen HD – ICC ESR-2713
   B. Hilti KH-EZ – ICC ESR-3027
   C. ITW RedHead Tapcon – ICC ESR-2202
   D. Dewalt SCREW-BOLT+ – ICC ESR-3889
6. Installation and inspection of post installed anchors shall be performed as required by ICC reports and manufacturer's instructions.

CONCRETE

1. All aspects of work pertaining to the concrete construction shall be in accordance with ACI 318-14, 'Building Code Requirements for Structural Concrete' and the latest edition of 'Specifications for Structural Concrete for Buildings', ACI 301, with modifications as noted on the project drawings and\or specifications.
2. Concrete mix designs shall be submitted to the Structural Engineer for review. All mix designs shall be designed by a qualified testing laboratory and shall be wet stamped by a Civil Engineer licensed in the State of ID. Base design mix per compliance requirements of ACI 318-14 Section 26.4.
3. Portland cement shall conform to ASTM C150 Type I or II concrete minimum, use Type V where the concrete is in contact with soil and to a height 12" min. above the soil. Concrete that will be exposed to sulfate - containing solutions shall comply with IBC Section 1904.3. Severe (S2) and Very Severe (S3) sulfate exposures as identified in the project geotechnical report, the water cement ratio shall not exceed 0.45 and shall not exceed 0.50 for Moderate (S1) sulfate exposure. Type II cement shall be used at all other locations in the structure.
4. Fly ash may be used in concrete mixes. The fly ash shall conform to ASTM C618 Class F. The loss of ignition shall be limited to 2%. The addition rate for fly ash shall be limited to 15% of the cement weight. The contractor shall submit all certificates showing the fly ash is in accordance with the above criteria.
5. Do not use concrete or grout containing chlorides.
6. All concrete exposed to freeze - thaw cycles shall contain 6% +/- 1% of entrained air.
7. Hard rock concrete - aggregate shall conform to all requirements and tests of ASTM C33 and project specifications. Exceptions may be used only with approval of the Structural Engineer. Provide concrete mix design with proven shrinkage characteristics of less than 0.0005 inches/inch. Lightweight concrete - aggregate shall be in accordance with ASTM C330 and project specifications. Lightweight concrete mix designs shall be tested prior to approval, for shrinkage in accordance with ASTM C157. Shrinkage shall not exceed 0.0005 inches / inch.
8. Structural concrete 28-day strengths & types are as follows:

Location of Concrete	Strength, psi	Type	EXPOSURE CATEGORY/CLASS*			
			F#	S#	W#	C#
Lean Mix	3000	Hard Rock	F0	S0	W1	C1
Footings	4000	Hard Rock	F0	S0	W1	C1
Stem Walls	4500	Hard Rock	F1	S1	W1	C1
Slab on Grade (Lowrise)	4000	Hard Rock	F0	S0	W1	C1
Slab on Metal Deck	3500	Hard Rock	F0	S0	W0	C0

*Table 19.3.1.1 - Exposure Categories and Classes

Category	Class	Condition	
Freezing and thawing (F)	F0	Concrete not exposed to freezing-and-thawing cycles	
	F1	Concrete exposed to freezing-and-thawing cycles with limited exposure to water	
	F2	Concrete exposed to freezing-and-thawing cycles with frequent exposure to water	
	F3	Concrete exposed to freezing-and-thawing cycles with frequent exposure to water and exposure to deicing chemicals	
Sulfate (S)		Water-soluble sulfate (SO_4^{2-}) in soil, percent by mass (1)	Dissolved sulfate (SO_4^{2-}) in water, ppm(2)
	S0	$SO_4^{2-} < 0.10$	$SO_4^{2-} < 150$
	S1	$0.10 \le SO_4^{2-} < 0.20$	$150 \le SO_4^{2-} < 1500$ or seawater
	S2	$0.20 \le SO_4^{2-} \le 2.00$	$1500 \le SO_4^{2-} \le 10000$
	S3	$SO_4^{2-} > 2.00$	$SO_4^{2-} > 10000$
In contact with water (W)	W0	Concrete dry in service Concrete in contact with water and low permeability is not required	
	W1	Concrete in contact with water and low permeability is required	
Corrosion protection of reinforcement (C)	C0	Concrete dry or protected from moisture	
	C1	Concrete exposed to moisture but not to an external source of chlorides	
	C2	Concrete exposed to moisture and an external source of chlorides from deicing chemicals, salt, brackish water, seawater, or spray from these sources	

9. The modulus of elasticity of concrete, shall be tested in accordance with ASTM C469 for framed concrete slabs and beams and shall be at least the value given by the equations in section 19.2.2.1 of ACI 318 for the specified concrete 28-day strength.
10. All concrete shall be ready mix concrete and shall be mixed and delivered in accordance with ASTM C94 or ASTM C685.
11. Dry pack or grout under baseplates, sill plates, etc., see specifications. Strength requirements are as required for concrete. Minimum grout strength shall be f'c = 7,000 psi.
12. Concrete forms shall be laid out and constructed to provide the specified cambers indicated on the structural drawings.
13. Submit shop drawings to Architect/Structural Engineer indicating locations of concrete joints for review prior to placing concrete. Place joints at locations to minimize effects of shrinkage as well as being placed at points of low stress.
14. Concrete placement shall be in accordance with ACI standard 304 and project specifications. Provide keys in construction joints unless detailed otherwise. Thoroughly clean, remove laitance and thoroughly wet and remove standing water in construction joints before placing new concrete. At vertical joints, slush with a coat of neat cement before placing new concrete.
15. Roughen concrete surface to a full amplitude of 1/4 inch where masonry walls intersect concrete or where new concrete interfaces with existing concrete.
16. If columns and walls are placed with a floor, two hours must elapse between end of column or wall placement and beginning of the floor placement.
17. Clear coverage of concrete over reinforcing bars shall be as follows:

Location of Concrete	Minimum Concrete Cover
Concrete cast against and permanently exposed to earth	3"
Concrete exposed to earth or weather: #6 through #18 bar #5 bar and smaller	 2" 1 1/2"
Concrete not exposed to weather or in contact with ground, UNO: Slabs, Walls, Joist: #14 and #18 bar. #11 bar and smaller. Beams, Columns: Primary reinforcing, ties stirrups, spirals	 1 1/2" 3/4" 1 1/2"
Slab on grade:	2" clear from top

18. Prior to concrete placement, all reinforcing bars, anchor bolts and other concrete inserts shall be well secured in position.
19. Mechanical pipes or electrical conduit shall not pass through concrete columns or beams unless specifically detailed.
20. Unless otherwise indicated in the mechanical or electrical drawings or project specifications, mechanical pipes and electrical conduits which pass through slab on grade, concrete on steel deck, framed concrete floors and walls do not require sleeves. If sleeves are required, the sleeves shall be installed prior to placing concrete. Do not cut any reinforcing which may interfere with sleeve placement. Coring openings in concrete is not permitted. Notify the Structural Engineer in advance of conditions not shown on the structural drawings.
21. With the exception of slabs on grade and concrete on steel deck, the outside diameter of mechanical pipes and/or embedded electrical conduits (other than those passing through) shall not exceed 1/3 of the slab thickness and shall be centered between the top and bottom reinforcing, unless specifically detailed otherwise. Concentrations of mechanical pipes and/or electrical conduits shall be avoided except where detailed openings are provided. Conduit and pipe shall be spaced at 3" or 3 diameters on center, whichever is larger.
22. For slabs on grade and concrete on steel deck no pipes or conduits shall be placed within the indicated concrete slab thickness and shall be located below he slab unless specifically detailed otherwise.
23. The projecting corners of columns, beams, and walls, etc., shall be formed with a 3/4 in. chamfer, unless otherwise noted on architectural drawings or specifications.
24. Maintain concrete above 50 degrees Fahrenheit and in a moist condition for a minimum of 7 days after placement unless otherwise accepted by Architect/Structural Engineer.
25. Any curing compounds used on concrete that is to receive a resilient tile finish shall be approved by the Finish Applicator before use.
26. Contractor to coordinate floor flatness and levelness with architectural drawings and/or equipment manufacturer's requirements. The following table may be used as a minimum:

Composite flatness, FF	Composite levelness, FL	Typical applications
25	20	Carpeted areas of commercial office buildings or lightly-trafficked office/industrial buildings
35	25	Warehouse floor with moderate or heavy traffic

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JOB N0.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**JG/CE**
CHECKED BY:	**KF/CH**

PHASE: **PERMIT SET**

STRUCTURAL DESIGN NOTES

APPROVAL AREA

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2018 IBC SPECIAL INSPECTION TABLES

IBC 2018 - Section	IBC 2018 - Task	IBC 2018 - Inspection Type	IBC 2018 - Description
INSPECTION DEFINITIONS:			
Perform	Perform these tasks for each weld, fastener, or bolted connection and noted verification		
Observe	Observe these items on a random basis during the course of each work day to insure that applicable requirements of the code are being met. Operations need not be delayer pending these inspections at contractor's risk		
Document	Document, with a report that the work has been performed in accordance with the contract documents. This is in addition to any other reports required in the Special Inspection guide specifications		
Continuous	The full-time observation of work requiring special inspection by an approved special inspector who is in the area where the work is being performed		
Periodic	The part-time or intermittent observations of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work		
	STRUCTURAL - STEEL - WELDING SECTION		
STEEL INSPECTION PRIOR TO WELDING - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Table C-N5.4-1			
1	Verify that the welding procedures specifications (WPS) is available	Perform	
2	Verify manufacturer certifications for welding consumables are available	Perform	
3	Verify material identification	Perform	Type and Grade
4	Welder identification system	Perform	
5	Fit-up of groove welds (including joint geometry)	Observe	● Joint preparation ● Dimensions (alignment, root opening, root face, bevel) ● Cleanliness (condition of steel surfaces) ● Tacking (tack weld quality and location) ● Backing type and fit (if applicable)
6	Configuration and finish of access holes	Observe	
7	Fit-up of fillet welds	Observe	● Dimensions (alignment, gabs at root) ● Cleanliness (condition of steel surfaces) ● Tacking (tack weld quality and location)
STEEL INSPECTION DURING WELDING - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Table C-N5.4-2			
8	Use of qualified welders	Perform	Welding by welders, welding operators, and tack welders who are qualified in conformance with requirements
9	Control and handling of welding consumables	Observe	● Packaging ● Electrode atmospheric exposure control
10	No welding over racked tack welds	Observe	
11	Environmental conditions	Observe	● Wind speed within limits ● Precipitation and temperature
12	Welding procedures specification followed	Observe	● Settings on welding equipment ● Travel speed ● Selected welding materials ● Shielding gas type / flow rate ● Preheat applied ● Interpass temperature maintained (min. / max.) ● Proper position (F, V, H, OH) ● Intermix of filler metals avoided
13	Welding techniques	Observe	● Interpass and final cleaning ● Each pass within profile limitations ● Each pass meets quality requirements
STEEL INSPECTION AFTER WELDING - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Table C-N5.4-3			
14	Welds Cleaned	Observe	
15	Size, length, and location of all welds	Perform	Size, length, and location of all welds conform to the requirement of the detail drawings
16	Welds meet visual acceptance criteria	Perform and Document	● Crack prohibition ● Weld / base-metal fusion ● Crater cross section ● Weld profiles ● Weld size ● Undercut
17	Arc strikes	Perform	
18	k-area	Perform	When welding of doubler plates, continuity plates, or stiffeners has been performed in the k-area visually inspect the web k-area for cracks
19	Backing removed, weld tabs removed and finished, and fillet welds added where required	Perform	
20	Repair activities	Perform and Document	
21	Document acceptance or rejection of welded joint or member	Perform	
	STRUCTURAL - STEEL - BOLTING SECTION		
STEEL INSPECTION TASKS PRIOR TO BOLTING - Verify the following are in compliance with IBC 1705.2.2, AISC 360-16: Table C-N5.6-1			
1	Manufacturer's certifications available for faster materials	Perform	
2	Fasteners marked in accordance with ASTM requirements	Observe	
3	Proper fasteners selected for joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	Observe	
4	Proper bolting procedure selected for joint detail	Observe	
5	Connection elements, including appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	Observe	
6	Proper storage provided for bolts, nuts, washers, and other fastener components	Observe	
STEEL INSPECTION TASKS DURING BOLTING - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Table C-N5.6-2			
7	Fastener assemblies of suitable condition, placed in all holes and washers (if required) are positioned as required	Observe	
8	Joint brought to the snug-tight condition prior to pretensioning operation	Observe	
9	Fastener component not turned by the wrench prevented from rotating	Observe	
10	Bolts are pretensioned in accordance with RCSC Specification, progressing systematically from the most rigid point toward the free edges	Observe	
STEEL INSPECTION TASKS AFTER BOLTING - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Table C-N5.6-3			
11	Document acceptance or rejection of all bolted connections	Document	
	STRUCTURAL - STEEL - NON-DESTRUCTIVE TESTING		
NON-DESTRUCTIVE TESTING OF WELDED JOINTS - Verify the following are in compliance with IBC 1705.2.1, AISC 360-16: Section N5.5			
1	Use of qualified non-destructive testing personnel	Perform	Visual weld inspection and non-destructive testing (NDT) shall be conducted by personnel qualified in accordance with AWS D1.8 clause 7.2
2	CJP groove welds	Observe	[NOTE: EOR must delete this row if section D (SEISMIC PROVISIONS SECTION) is checked] Dye penetrant testing (DT) and ultrasonic testing (UT) shall be performed on 20% of CJP groove welds for materials greater than 5/16" (8mm) thick. Testing rate must be increased to 100% if greater than 5% of welds tested have unacceptable defects
3	Welded joints subject to fatigue	Observe	Dye penetrant testing (DT) and ultrasonic testing (UT) shall be performed on 100% of welded joint identified on contract drawings and being subject to fatigue
4	Weld tab removal sites	Observe	At the end of welds where weld tabs have been removed, magnetic particle testing shall be performed on the same beam-to-column joints receiving (UT)

2018 IBC SPECIAL INSPECTION TABLES

IBC 2018 - Section	IBC 2018 - Task	IBC 2018 - Inspection Type	IBC 2018 - Description
	STRUCTURAL - STEEL - AISC 341 REQUIREMENTS (SEISMIC PROVISIONS) SECTION		
NON-DESTRUCTIVE TESTING OF WELDED JOINTS - Verify the following are in compliance with IBC 1705.2.1, AISC 341-16: Section J6.2			
	[NOTE: EOR may uncheck this section for projects not assigned in accordance with AISC 341 (Seismic Provisions) or for projects designed according to AISC 341, but using an R value equal to 3]		
1	CJP groove welds	Observe	Dye penetrant testing (DT) and ultrasonic testing (UT) shall be performed on 100% of CJP groove welds for materials greater than 5/16" (8mm)
2	Beam cope and access hole	Observe	At welded splices and connections, thermally cut surfaces of beam copes and access holes shall be tested using magnetic particle testing (MT) or dye penetrant testing (DT), when the flange thickness exceeds 1 1/2" for rolled shapes, or when the web thickness exceeds 1 1/2" for built up shapes
3	K-area NDT (AISC 341)	Perform	Where welding of doubler plates continuity plates or stiffeners has been performed in the k-area, the web shall be tested for cracks using magnetic particle testing (MY). The MT inspection area shall include the k-area base metal with 3" of the weld. The MT shall be performed no sooner than 48 ours following completion of the welding
4	Placement of reinforcing or contouring fillet welds	Document	
	STRUCTURAL - STEEL - OTHER INSPECTIONS		
OTHER STEEL INSPECTIONS - Verify the following are in compliance with IBC 1705.2.1, AISC 341-16: Tables J8-1 and J10-1			
1	Anchor rods and other embedments supporting structural steel	Perform	Verify the diameter, grade, type, and length of the anchor rod or embedded item, and the extent or depth of embedment prior to placement of concrete
2	Fabricated steel or erected steel frame	Observe	Verify compliance with the details shown on the construction documents, such as braces, stiffeners, member locations, and proper application of joint details at each connection
3	Reduced beam sections (RBS) where / if occurs	Document	● Contour and finish ● Dimensional tolerances
4	Protected zones	Document	No holes or unapproved attachments made by fabricator or erector
5	H-piles where / if occurs	Document	No holes or unapproved attachments made by the responsible contractor
	STRUCTURAL - COLD-FORMED METAL DECK - PLACEMENT SECTION		
METAL DECK INSPECTION PRIOR TO DECK PLACEMENT - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.1			
1	Verify compliance of materials (deck and all deck accessories) with construction documents, including profiles, material properties, and base metal thickness	Perform	
2	Document acceptance or rejection of deck and deck accessories	Document	
METAL DECK INSPECTION DURING DECK PLACEMENT - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.2			
3	Verify compliance of deck and all deck accessories installation with the construction documents	Perform	
4	Verify deck materials are represented by the mill certifications that comply with the construction documents	Perform	
5	documnet acceptance or rejection of installation of deck and deck accessories	Document	
METAL DECK INSPECTION AFTER DECK PLACEMENT - Verify the following are in compliance with IBC1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.3			
6	Welding procedure specification (WPS) available	Perform	
7	Manufactures certification for welding consumables available	Document	
8	Material identification (type / grade)	Document	
9	Check welding equipment	Document	
	STRUCTURAL - COLD-FORMED METAL DECK - WELDING SECTION		
METAL DECK INSPECTION DURING WELDING - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.4			
1	Use of qualified welders	Observe	
2	Control and handling of welding consumables	Observe	
3	Environmental conditions (wind speed, moisture, temperature)	Observe	
4	WPS followed	Observe	
METAL DECK INSPECTION AFTER WELDING - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.5			
5	Verify size and location of welds, including support, side-lap, and perimeter welds	Perform	
6	Welds meet visual acceptance criteria	Perform	
7	Verify repair activities	Perform	
8	Document acceptance or rejection of welds	Document	
	STRUCTURAL - COLD-FORMED METAL DECK - FASTENING SECTION		
METAL DECK INSPECTION BEFORE MECHANICAL FASTENING - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.6			
1	Manufacturer installation instructions available for mechanical fasteners	Observe	
2	Proper tools available for fastener installation	Observe	
METAL DECK INSPECTION BEFORE MECHANICAL FASTENING - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.7			
3	Fasteners are positioned as required	Observe	
4	Fasteners are installed in accordance with manufacturer's instructions	Observe	
METAL DECK INSPECTION BEFORE MECHANICAL FASTENING - Verify the following are in compliance with IBC 1705.2.2.1.1, SDI QA/QC-2017, Appendix 1, Table 1.8			
5	Check spacing, type, and installation of support fasteners	Perform	
6	Check spacing, type, and installation of side-lap fasteners	Perform	
7	Check spacing, type, and installation of perimeter fasteners	Perform	
8	Verify repair activities	Perform	
9	Document acceptance or rejection of mechanical fasteners	Document	
	STRUCTURAL - OPEN-WEB STEEL JOISTS SECTION		
OPEN-WEB STEEL JOIST AND GIRDERS - Verify the following are in compliance with SJI specification Section 2207.1 and IBC Table 1705.2.3			
1	Installation of open-web steel joists and joist girders	Periodic	● End connections - welded or bolted ● Bridging - horizontal and diagonal

2018 IBC SPECIAL INSPECTION TABLES

IBC 2018 - Section	IBC 2018 - Task	IBC 2018 - Inspection Type	IBC 2018 - Description
	STRUCTURAL - CONCRETE CONSTRUCTION SECTION		
CONCRETE CONSTRUCTION, INCLUDING COMPOSITE DECK - Verify the following are in compliance with IBC Table 1705.3 (ACI 318 references noted in IBC Table)			
1	Inspect reinforcement, including prestressing tendons, and verify placement	Periodic	Verify prior to placing concrete that reinforcing is of specified type, grade, and size; that it is free of oil, dirt, and unacceptable rust; that it is located and spaced properly; that hooks, bends, ties, stirrups, and supplemental reinforcement are placed correctly; that lap lengths, stagger and offsets are provided; and that all mechanical connections are installed per the manufacturer's instruction and/ or evaluation report
2	Reinforcing bar welding	● Periodic ● Periodic ● Continuous	(a) Verify weldability of reinforcing bars other than ASTM A 706, (b) Inspect single-pass fillet welds, maximum 5/16" in accordance with AWS D1.4, (c) Visually inspect all other welds in accordance with AWS D1.4
3	Inspect anchors cast in concrete	Periodic	Verify prior to paving concrete that cast in place anchors and post installed drilled anchors have proper embedment, spacing, and edge distance
4	Inspect anchors post-installed in hardened concrete members	● Continuous and Document ● Periodic	(a) Adhesive anchors installed in horizontally or upward inclined orientations to resist sustained tension loads, (b) Mechanical anchors and adhesive anchors not defined in 4a
5	Verify use of required mix design	Periodic	Verify that all mixes used comply with the approved construction documents
6	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	Continuous	At the time fresh concrete is sampled to fabricate specimens for strength test, verify these tests are performed by qualified technicians
7	Inspect concrete and shotcrete placement for proper application techniques	Continuous	Verify proper application techniques are used during concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated
8	Verify maintenance of specified curing temperature and technique	Periodic	Inspect curing, cold weather protection, and hot weather protection procedures
11	Verify in-situ concrete strength prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Periodic	
12	Inspect formwork for shape, location, and dimensions of the concrete member being formed	Periodic	
	STRUCTURAL - ISOLATION AND ENERGY DISSIPATION SYSTEMS SECTION		
ISOLATION AND ENERGY DISSIPATION SYSTEM - Verify the following are in compliance with IBS 1705.12.4			
1	Fabrication and installation	Document	Verify that fabrication and installation of isolator units and energy dissipation devices conform to manufacturers recommendations and approved construction documents
	GEOTECHNICAL - SOILS INSPECTION SECTION		
SOILS INSPECTION - Verify the following are in compliance with IBC Table 1705.6			
1	Materials below shallow foundations are adequate to achieve the design bearing capacity	Periodic	
2	Excavations are extended to proper depth and have reached proper material	Periodic	
3	perform classification and testing of compacted fill materials	Periodic	
4	Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	Continuous	
5	Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly	Periodic	During fill placement, the special inspector shall verify that proper materials and procedures are used in accordance with the provisions of the approved geotechnical report
	ARCHITECTURAL - SPRAYED FIRE-RESISTANT MATERIALS SECTION		
SPRAYED FIRE-RESISTANT MATERIALS SECTION - Verify the following are in compliance with IBC Table 1705.13			
1	Surface preparation	Periodic	Prior to application confirm that surface has been prepared per the approved fire-resistance design and manufacturer's instructions
2	Material thickness	Periodic	Sample shall be taken from selected floor, roof, and wall assemblies and structural members. No more than 10% of the samples shall be less than the thickness required by the fire-resistance design
3	Material density	Periodic	Density tests shall be performed in accordance with ASTM E 605 for every 2,500 ft² of floor, roof or wall area. One sample must also be provided for each beam, girder, truss, or column at each story
4	Bonding strength	Periodic	Bonding strength tests shall be performed in accordance with ASTM E 736 for every 2,500 ft² of floor, roof, or wall area. One sample must also be provided for each beam, girder, truss, or column at each story. The bond strength shall not be less than 150psf

QUALITY ASSURANCE AND SPECIAL INSPECTION

1. Quality Assurance for Seismic Resistance
   - A. Special inspection in accordance with the requirements of IBC section 1704, 1705, and structural testing in accordance with the requirements of IBC section 1705.12 shall be required for:
   - B. All seismic force resisting systems shown in elevation
   - C. Designated seismic force resisting systems denoted by SFRS on plan or detail.
   - D. NOTE: Existing seismic force resisting systems denoted on plan or detail by SFRS shall require structural observation performed by a qualified third party, inspection and testing agency in accordance with IBC section 1709.1, any deficiencies or discrepancies from that shown on the structural drawings shall be reported to the engineer of record.
   - E. The type and frequency of special inspection, structural testing and subsequent reporting conforming to the requirements of IBC section 1704 and 1705 shall be submitted by the inspection and testing agencies to the architect/structural engineer for approval.
   - F. Structural observations and subsequent reporting of general conformance to the structural drawings shall be performed periodically by the engineer in responsible charge at his/her discretion or when specifically required by the building official.
2. Quality Assurance for General Construction
   - A. Testing Laboratory: Retained by owner and satisfactory to Architect/Structural Engineer and governing code authority to perform required tests and inspections of this contract and applicable code.
   - B. Material Certification: Submit laboratory test reports certifying materials are of identifiable tested stock to owner, testing laboratory, Architect/Structural Engineer and, upon request, to governing code authority. If laboratory test reports cannot be made available, testing laboratory will perform tests as directed by Architect/Structural Engineer. Contractor shall pay testing laboratory for costs related to tests and inspections of unidentifiable materials or materials furnished without laboratory test reports, materials found deficient after initial tests and inspections, or materials replacing deficient materials.
   - C. Special inspection in accordance with the requirements of IBC section 1704 and 1705 shall be required for items indicated on special inspection tables on this sheet.

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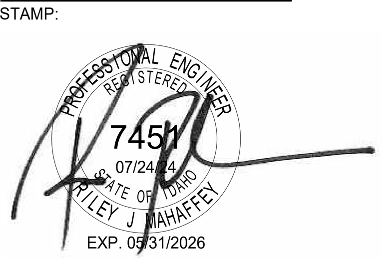

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SPECIAL INSPECTION TABLES

SHEET NO.

S0.03

OVERALL PLAN NOTES

1. For structural design notes, see sheets starting at S0.01.
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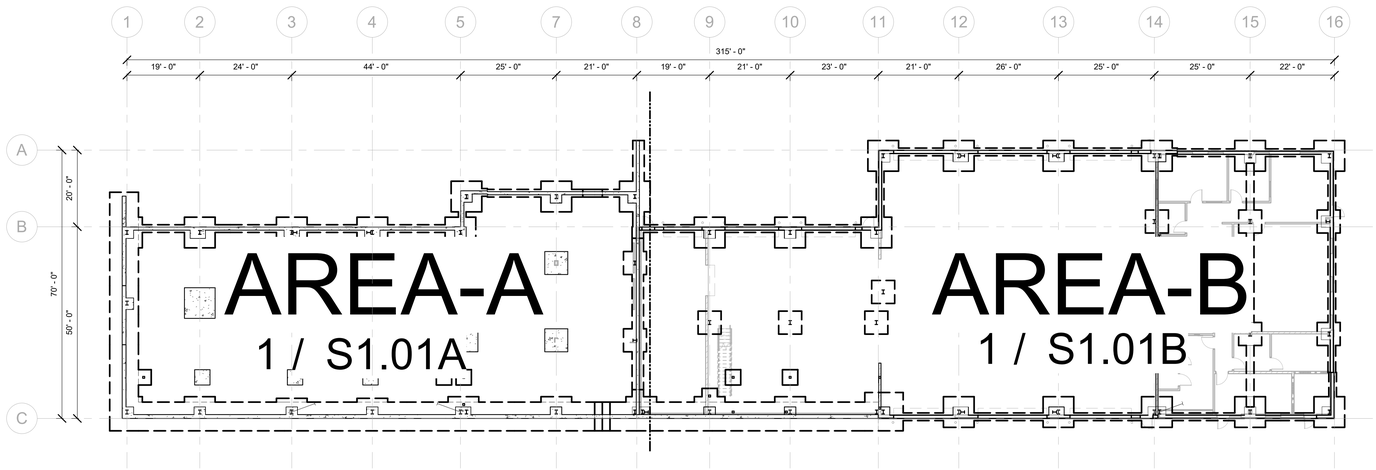
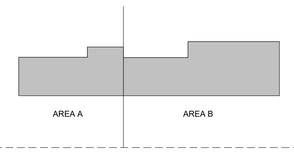
4. For additional information not shown, see plans.



1 FOUNDATION PLAN - OVERALL
1/16" = 1'-0"

KEY PLAN



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FOUNDATION PLAN - OVERALL

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S1.01

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FOUNDATION PLAN NOTES

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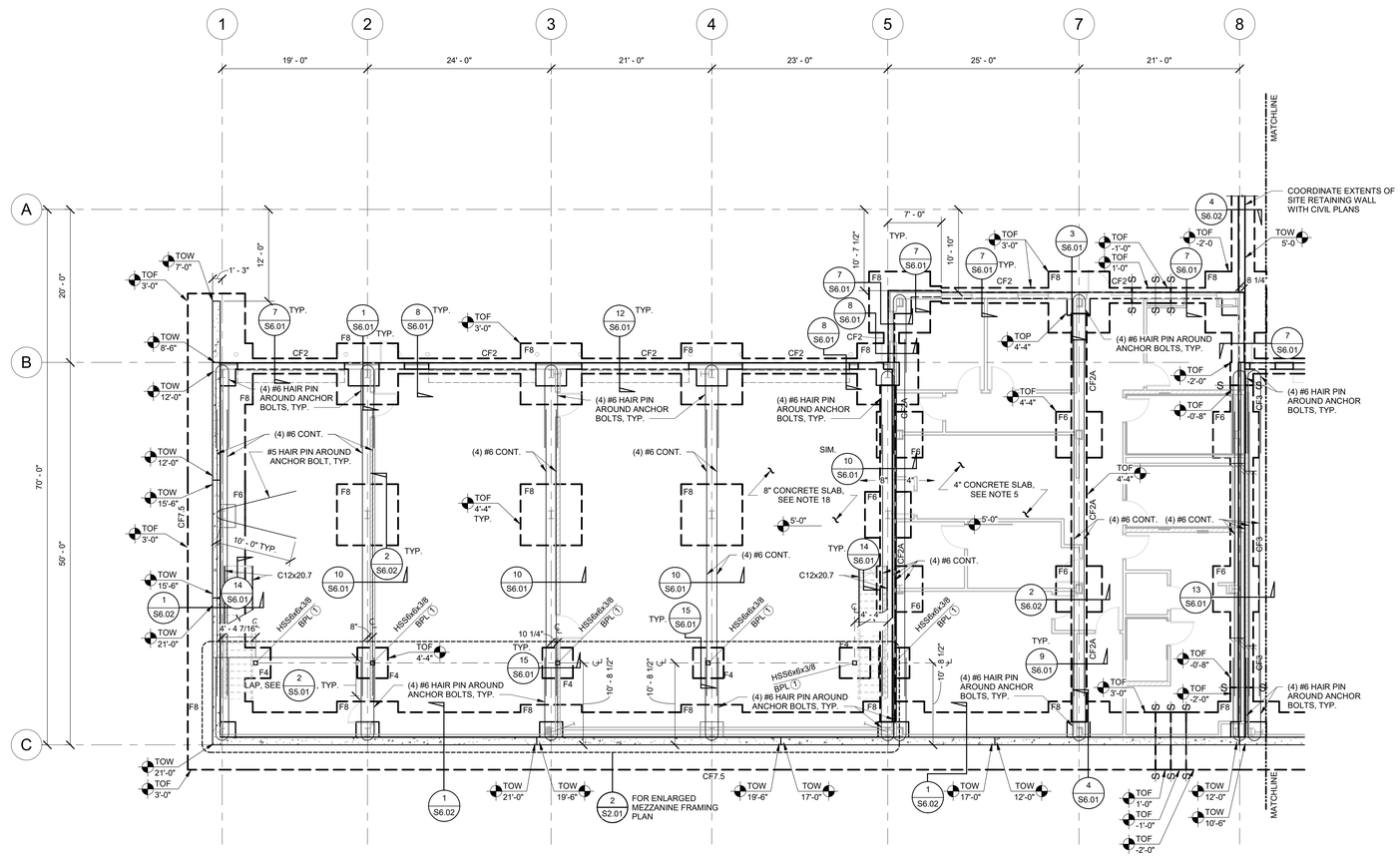
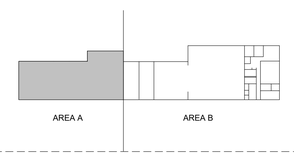
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. Top of concrete floor reference elevation = 0'-0" typical uno thus. X' - X"
5. Slab on grade shall be 4" thick concrete with 4x4 W2.9xW2.9 welded wire fabric, placed 2" clear from top of concrete. See architectural drawings for slab depressions, slopes, etc.
6. Top of exterior footing shall be elevation -2'-0" max. and top of interior footing shall be -0'-8" max., typ. uno. thus. TOF X' - X"
7. Contractor to coordinate slab on grade control joints with 1 / S5.02 .
8. Contractor to coordinate additional structural backfill quantities and requirements per Geo-Tech report.
9. For general concrete/foundation details, see sheets S5.01 and S5.02.
10. F# and CF# — Denotes footing type, see 4 / S4.01 .
11. Contractor to coordinate placement of utilities thru or adjacent to the footings or stem walls with detail 7 / S5.01 or the footings may be stepped per 8 / S5.01 at contractors option, typ.
12. S——S — Indicates step(s) in footing, see 8 / S5.01 .
13. BPL (#) — Denotes base plate type, see 1 / S4.01 .
14. Denotes recess, sloped or elevated floor elevations, coordinate size and location with arch. Also see 7 / S5.02 where applicable.
15. For typical elevated concrete pad or curb construction, see 6 / S5.02. Coordinate size, location, and thickness with equipment supplier.
16. Exterior non-structural cold-formed steel framing shown for reference only.
17. Denotes change (step) in slab on grade elevation, see 13 / S6.01.
18. Slab on grade shall be 8" thick concrete with #4 rebar at 18" oc. each way, placed 3" clear from top of concrete. See Architectural drawings for slab depressions, slopes, etc.
19. Denotes extents of bridge crane to be supported by Pre-Engineered metal building, see plan for weights.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.



1 FOUNDATION PLAN - AREA-A
1/8" = 1'-0"

KEY PLAN



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FOUNDATION PLAN - AREA A

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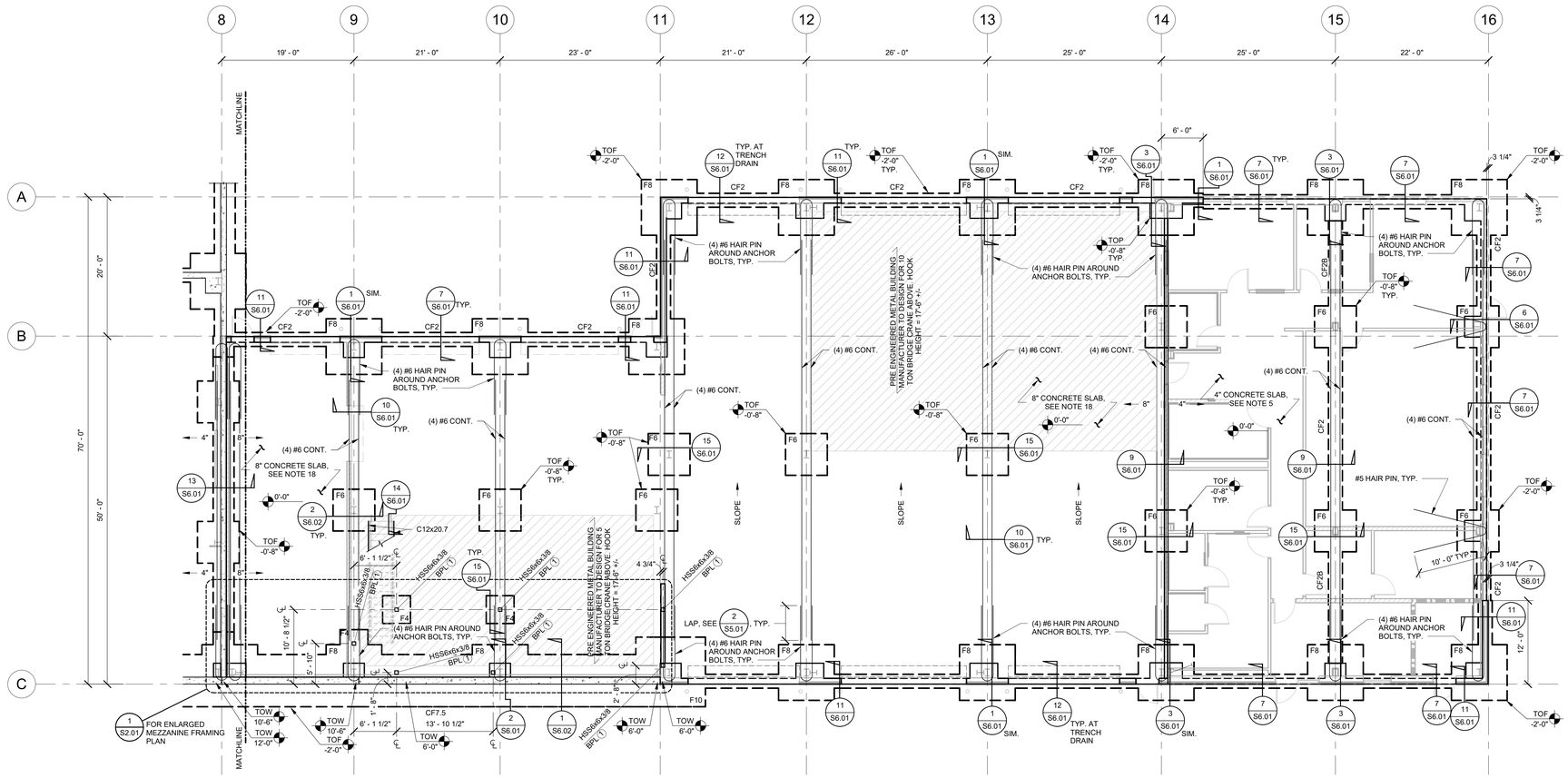
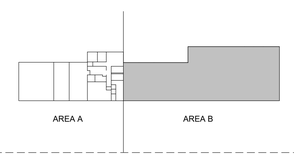


1 FOUNDATION PLAN - AREA B
1/8" = 1'-0"

KEY PLAN



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FOUNDATION PLAN - AREA B

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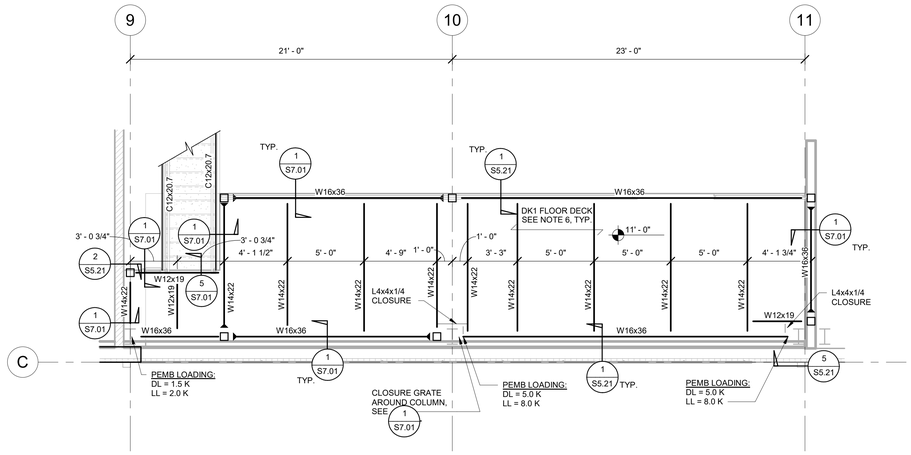
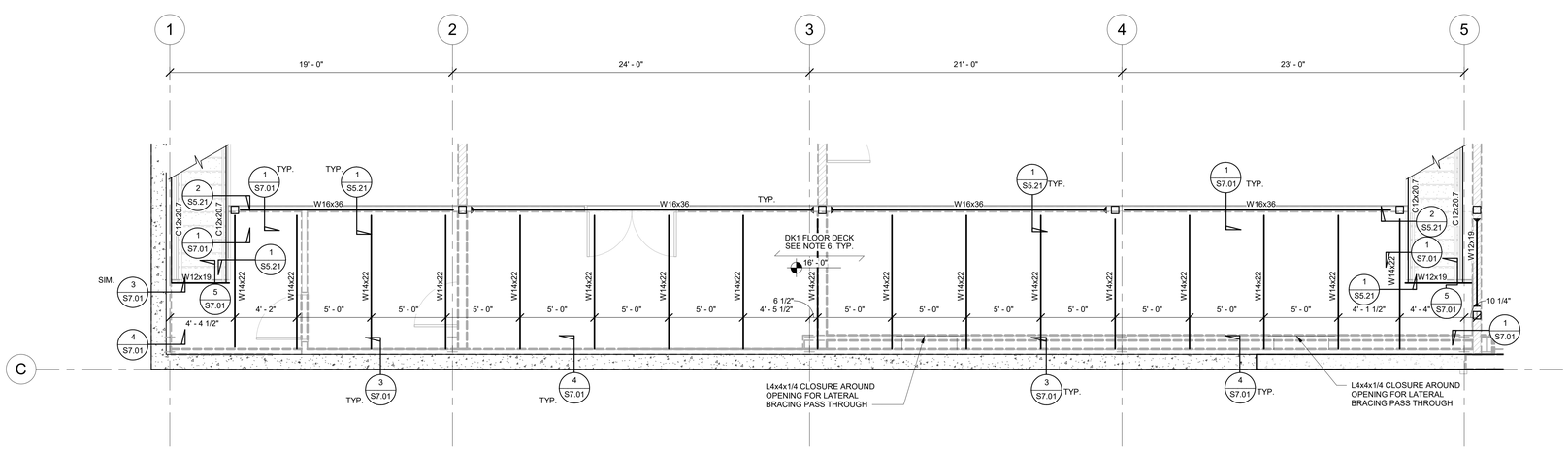
FLOOR FRAMING PLAN NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. Top of concrete floor reference elevation = 100'-0" typical uno thus X' - X"
5. For general framing details, see sheets S5.21 thru S5.22.
6. For steel deck schedule, see 5 / S4.01.
7. W_x_ [#] c=#" — Denotes AISC beam designation, number of studs required, and camber size.
8. SC — Denotes 1" dia. A490 slip critical bolts to be used in connection in area designated. As part of LFRS.
9. All structural walls shown on this plan are located below the floor framing.
10. Brace Up / Brace Down — Denotes brace frame.
11. Denotes moment connection, see 6 / S5.21 .



1 ENLARGED MEZZANINE FRAMING PLAN - AREA-B
1/4" = 1'-0"



2 ENLARGED MEZZANINE FRAMING PLAN - AREA-A
1/4" = 1'-0"

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ENLARGED MEZZANINE FRAMING PLANS

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S2.01

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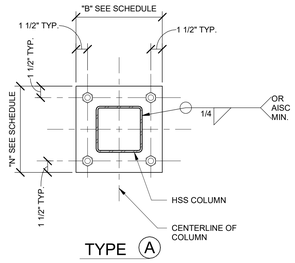
BASE PLATE SCHEDULE

BPL#	THICKNESS	DIM 'B'	DIM 'N'	ANCHOR BOLT	TYPE	REMARKS
1	3/4"	12"	12"	(4) 3/4" DIA. x 9" EMBED.	-	-

NOTES:
1. For grout thickness see schedule on 2 / S4.01 .
2. Anchor bolt detail, see 3 / S4.01 typ. For bolt grade, see steel notes on sheet S0.02.

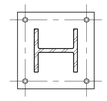


BASE PLATE DETAIL (1)

NO SCALE

NON-SHRINK GROUT SCHEDULE

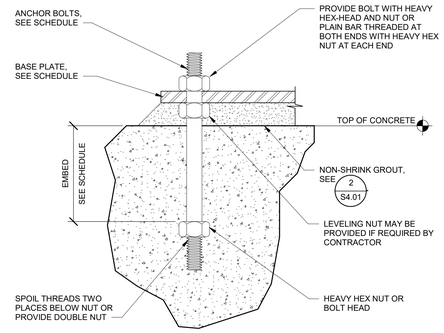
BASE PLATE MINIMUM WIDTH	MINIMUM NON-SHRINK GROUT THICKNESS *
UP TO 16"	1 1/2"



NOTES:
1. Minimum grout thickness shall be 2 times the anchor bolts diameter.
2. Minimum grout strength shall be f'c= 7,000 psi.

TYPICAL NON-SHRINK GROUT AT BASE PLATE (2)

NO SCALE



TYPICAL HEADED ANCHOR BOLT (3)

NO SCALE

FOOTING SCHEDULE

MARK	SIZE WIDTH	SIZE LENGTH	SIZE THICKNESS	REINFORCING TOP	REINFORCING BOTTOM	REMARKS
CF2	2' - 0"	CONT.	1' - 0"	-	(2) #5 CONT.	
CF2	2' - 0"	CONT.	1' - 4"		HAIRPINS PER PLAN	
CF2A	2' - 0"	CONT.	0' - 8"		HAIRPINS PER PLAN	
CF3	3' - 0"	CONT.	1' - 0"	-	(4) #5 CONT.	
CF7.5	7' - 6"	CONT.	1' - 8"	(7) #5 CONT.	(7) #5 CONT.	#4 AT 18" OC., T AND B TRANS.
F4	4' - 0"	4' - 0"	1' - 0"	5-#5 EACH WAY	5-#5 EACH WAY	
F6	6' - 0"	6' - 0"	1' - 0"	7-#5 EACH WAY	7-#5 EACH WAY	
F8	8' - 0"	8' - 0"	1' - 0"	9-#5 EACH WAY	9-#5 EACH WAY	
F10	10' - 0"	10' - 0"	1' - 0"	11-#5 EACH WAY	11-#5 EACH WAY	

NOTES:
1. All rebar to be evenly distributed in footing with minimum required clearances from edges.
2. Footing intersections and corners, see 5 / S5.01 .

FOOTING SCHEDULE (4)

3/4" = 1'-0"

STEEL DECK SCHEDULE

TYPE	DESCRIPTION	mil	SIDE LAP CONNECTION	CONNECTION TO SUPPORTING MEMBERS PERP. TO FLUTES	CONNECTION TO SUPPORTING MEMBERS PARALLEL TO FLUTES	CONCRETE THICKNESS OVER FLUTES	TOTAL SLAB THICKNESS	REINFORCING, UNO.	SHORING REQUIRED WHERE SINGLE SPANS EXCEED	COMMENTS SEE NOTE 5
DK1	1 1/2" TYPE B FORMLOK VERCO	43	BUTTON PUNCH AT 24" OC.	(4) 1/2" DIA. PUDDLE WELDS PER SHEET	1/2" DIA. PUDDLE WELDS AT 18" OC.	2 1/2"	4"	6x6 W2.9xW2.9	8'-0"	TYP. MEZZANINE

NOTES:
1. Reinforcing to be placed 1 1/2" clear from top of concrete uno.
2. Deck shall be continuous for (3) or more spans ((4) supports) where possible.
3. For support of steel deck at columns see - / ---
4. See architectural drawings for flooring, roofing, insulation, etc.
5. Comments are provided for reference only, for actual deck type layout see plans and legend.

STEEL DECK SCHEDULE (5)

NO SCALE

APPROVAL AREA

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LE JOB #24LOC4042

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MRK	DATE	DESCRIPTION

JOB NO.: **24000.01**
DATE: **07/24/2024**
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SCHEDULES

SHEET NO.
S4.01

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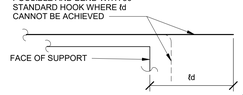
BAR SIZE	f'c = 3000 psi				f'c = 4000 psi				f'c = 4500 psi			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	22	33	17	25	19	28	15	22	18	27	14	21
#4	29	43	22	33	25	37	19	29	24	35	18	27
#5	36	54	28	41	31	47	24	36	30	44	22	34
#6	43	64	33	50	37	56	29	43	35	53	27	41
#7	63	94	48	72	54	81	42	63	51	77	39	59
#8	72	107	55	82	62	93	48	71	59	88	45	68
#9	81	121	62	93	70	105	54	81	66	99	50	76
#10	91	136	70	105	79	118	61	91	74	111	57	86
#11	101	151	78	116	87	131	67	101	82	123	63	95
#14	121	181	93	139	105	157	81	121	99	148	76	114
#18	161	241	124	186	139	209	107	161	132	197	101	152

NOTES:
1. Table for use with normal weight hardrock concrete and grade 60 uncoated reinforcing bars. For lightweight aggregate use 1.3*l*.
2. Top bars are horizontal bars with 12" or more of concrete cast in the member below the bar.
3. For bars enclosed in standard column spirals, use 0.75 *l* or 12" min.
4. Development length of individual bars within a bundle shall be 1.2 *ld* for that bar in a (3) bar bundle and 1.33 *ld* for a (4) bar bundle.
5. Compression development length (only where indicated on drawings) For grade 60 bars use 22 bar diameters.
6. Case Selection
   A. -For foundation reinforcement use Case 1 uno.
   B. -For foundation that have two layers of reinforcement in one direction top or bottom use Type 2.
   C. -For column reinforcement and dowels use Case 1 uno.
   D. -For beam reinforcement use Case 1 uno.
   E. -For structural slab reinforcement use Case 2 uno.
   F. -For slab on grade reinforcement use Case 1 uno.
   G. -For wall reinforcement and dowels use Case 2 (Except as noted below) uno.
   H. -For walls with a single mat of steel centered in the wall, use Case 1 for wall reinforcement and dowels uno.
   I. -For chord steel reinforcement use Case 2 uno.



TENSION DEVELOPMENT LENGTH (CONCRETE ONLY) 1
NO SCALE

BAR SIZE	LAP CLASS	f'c = 3000 psi				f'c = 4500 psi				f'c = 5000 psi			
		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25	18	27	14	21	17	25	13	19
	B	28	42	22	32	23	35	18	27	22	33	17	25
#4	A	29	43	22	33	24	35	18	27	22	33	17	26
	B	37	56	29	43	31	46	23	35	29	43	22	33
#5	A	36	54	28	41	30	44	22	34	28	42	22	32
	B	47	70	36	54	39	57	29	44	36	54	28	42
#6	A	43	64	33	50	35	53	27	41	33	50	26	38
	B	56	84	43	64	46	69	35	53	43	65	33	50
#7	A	63	94	48	72	51	77	39	59	49	73	37	56
	B	81	122	63	94	66	100	51	77	63	94	49	73

NOTES:
1. Table for use with normal weight hardrock concrete and grade 60 uncoated reinforcing bars. For lightweight aggregate use 1.3*l*.
2. Class A - Half or less of the bars are spliced within a required lap length. Class B - More than half of the bars are spliced within a required lap length.
3. Top bars are horizontal bars with 12" or more of concrete cast in the member below the bar.
4. For bars enclosed in standard column spirals, use 0.75*l* or 12" min.
5. Lap splices of individual bars with a bundle shall be 1.2*l* for that bar in a (3) bar bundle and 1.33*l* for a (4) bar bundle. Entire bundles shall not be staggered such that they do not overlap.
6. **l** - Basic lap length, shown at left.
7. Case Selection
   A. -For foundation reinforcement use Case 1 uno.
   B. -For column reinforcement and dowels use Case 1 uno.
   C. -For beam reinforcement use Case 1 uno.
   D. -For structural slab reinforcement use Case 2 uno.
   E. -For slab on grade reinforcement use Case 1 uno.
   F. -For wall reinforcement and dowels use Case 1 (Except as noted below) uno.
   G. -For walls with a single mat of steel centered in the wall, use Case 1 for wall reinforcement and dowels uno.
   H. -For chord steel reinforcement use Case 2 uno.
8. Different size bars are to be lapped by the larger bar.
9. Different diameter bars are to be lapped per the larger bar.

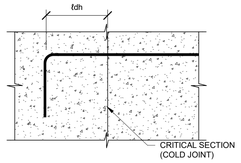
TENSION LAP SPLICE (CONCRETE ONLY) TENSION LAP SPLICE LENGTHS, (IN INCHES) FOR GRADE 60 UNCOATED BARS 2
NO SCALE

GENERAL DETAIL NOTES

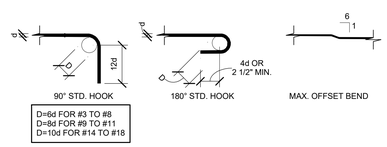
1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. For all top of footing, top of slab, and slab on grade construction, see foundation plan.
5. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
6. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report.
7. For structural framing sizes, bottom of deck and top of steel elevations, see plans.
8. For floor deck size, attachment, span direction,and finish floor elevations, see plans.
9. For typical bearing wall construction, see plans. Coordinate location with plans and architectural.
10. For interior and exterior wall finishes, see architectural.
11. For all typical construction details not shown on this sheet, see all "S5" series drawings.

BAR SIZE	GRADE	l_{dh} (in)						
		F'c = 3000	F'c = 4000	F'c = 4500	F'c = 5000	F'c = 6000	F'c = 7000	F'c = 8000
#3	60	8	7	6 1/2	6 1/2	6	6	6
#4	60	11	9 1/2	9	8 1/2	7 1/2	7	6 1/2
#5	60	13 1/2	12	11	10 1/2	9 1/2	9	8 1/2
#6	60	16 1/2	14	13 1/2	12 1/2	11 1/2	11	10
#7	60	19	16 1/2	15 1/2	15	13 1/2	12 1/2	11 1/2
#8	60	22	19	18	17	15 1/2	14 1/2	13 1/2
#9	60	24 1/2	21 1/2	20	19	17 1/2	16	15
#10	60	31	6	6	6	6	6	6
#11	60	37	32	30 1/2	28 1/2	26	24 1/2	22 1/2
#14	60	49 1/2	43	40 1/2	38 1/2	35	32 1/2	30 1/2

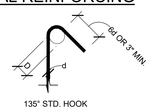
NOTES:
1. Table for use with normal weight hardrock concrete. For lightweight aggregate use 1.3*ldh*.
2. Table for use with uncoated reinforcement. For coated reinforcement, use 1.5*ldh*.
3. Effects of light weight aggregate and epoxy coating are cumulative.
4. For typical bar bends, see 4 / S5.01.



HOOKED BAR SCHEDULE 3
NO SCALE



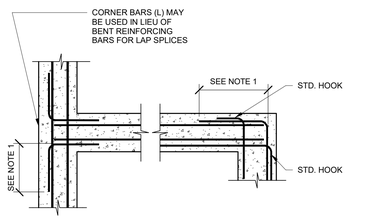
PRINCIPAL REINFORCING



STIRRUPS AND TIES

NOTES:
1. All bends shall be made cold.
2. #14 and #18 bars shall be bend tested and lab approved prior to bending.

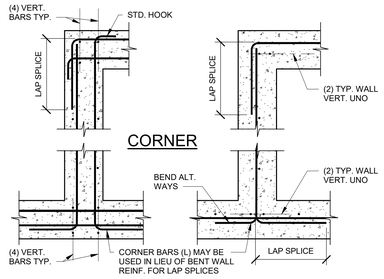
BAR BENDS 4
NO SCALE



INTERSECTION CORNER

NOTE:
1. Use tension lap splices, see 2 / S5.01.

REINFORCING AT FOOTING INTERSECTIONS 5
NO SCALE

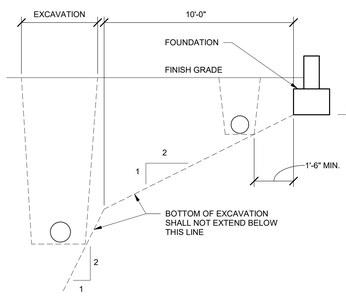


INTERSECTION

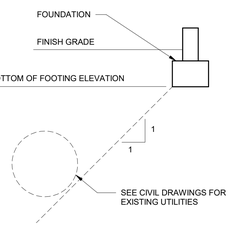
DOUBLE MAT SINGLE MAT

NOTE:
1. Use tension lap splices, see 2 / S5.01.

REINFORCING AT WALL INTERSECTIONS 6
NO SCALE



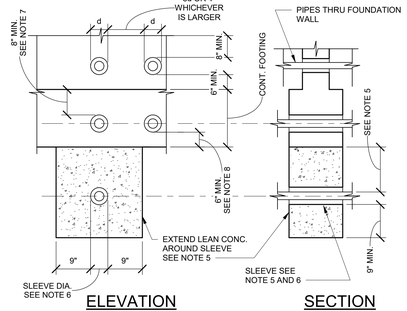
FOUNDATION PARALLEL TO EXCAVATION



EXISTING UTILITY PARALLEL TO FOUNDATION

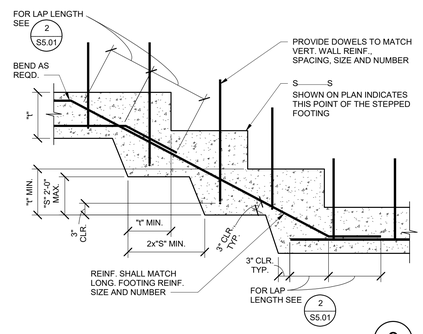
NOTES:
1. Contractor shall locate bottom of excavation to avoid surcharge on utilities and other foundations.
2. Contractor shall coordinate all excavations with foundation with foundation requirements.
3. Step foundation as required see 8 / S5.01.
4. Contractor shall adhere to the recommendations in the Geotechnical Notes, for all excavations, backfill requirements etc.
5. Pipes that are less than 4'-0" below foundation, provide sleeve and encase in lean concrete. For pipes more than 4'-0" below foundation, compact soil in pipe trench per soils report.
6. Sleeves shall be minimum 1" clear all around pipes, conduit etc.
7. For pipes within the footing thickness and are less than 8" from top of footing, step footing as required to pass pipes through stem wall.
8. For pipes passing through footing and are less than 6" clear from bottom of footing see 9 / S5.01.

FOUNDATION AT OR ADJACENT TO EXCAVATIONS AND UTILITIES 7
NO SCALE

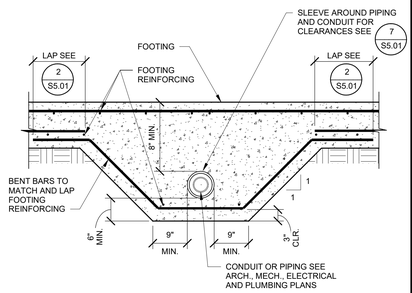


ELEVATION SECTION

UTILITY (PIPES) THROUGH FOUNDATIONS



STEPPED FOOTING 8
NO SCALE



THICKENED FOOTING AT CONDUIT AND PIPING 9
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APPROVAL AREA

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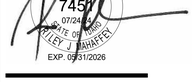

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GENERAL CONCRETE DETAILS

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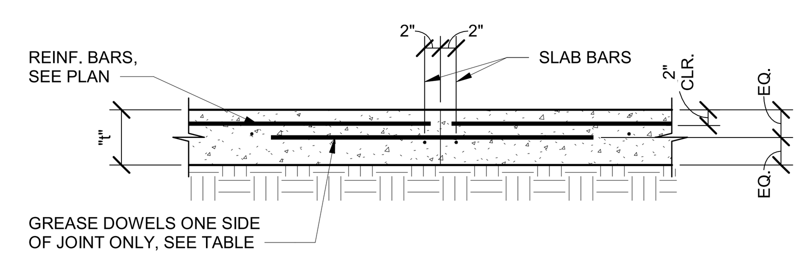
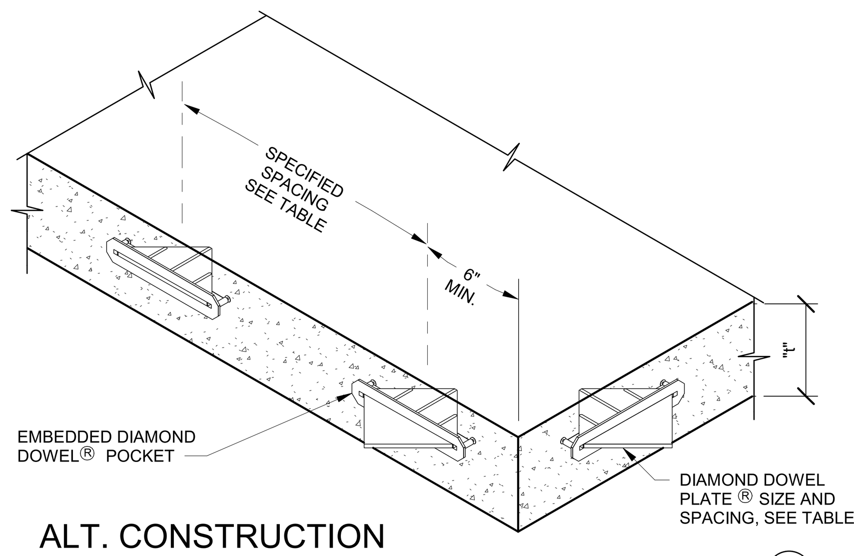
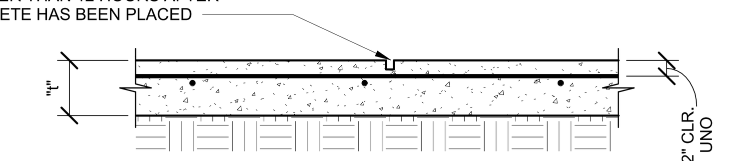


NOTE:
1. Contractors shall obtain architect's approval for all joint locations.

CONSTRUCTION JOINT (A)



ALT. CONSTRUCTION JOINT REINF. (C)

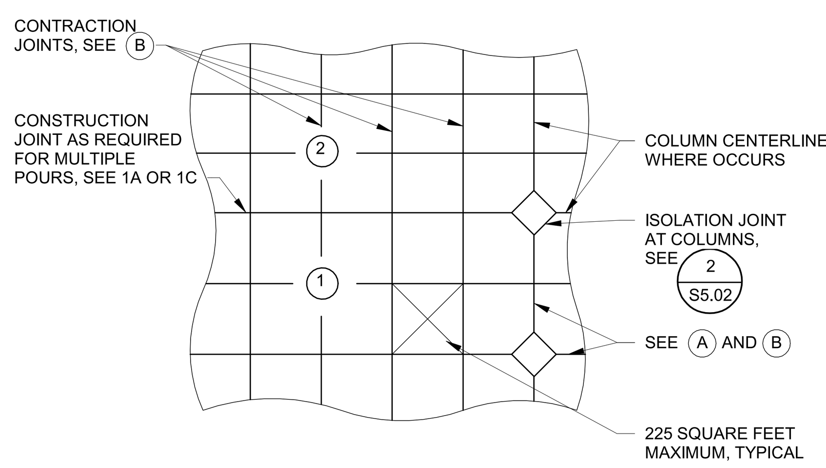


NOTES:
1. Contraction joint spacing to be max. 12'-0" for 4" slabs, 14'-0" for 6" slabs, or as directed per ACI 360.
2. Contraction joint to be 0'-1" for 4" slabs, 0'-1 1/4" for 5" slabs, and 0'-1 1/2" for 6" and thicker slabs.

CONTRACTION JOINT (B)

CONSTRUCTION JOINT - DOWELS OR DIAMOND PLATES SIZE AND SPACING

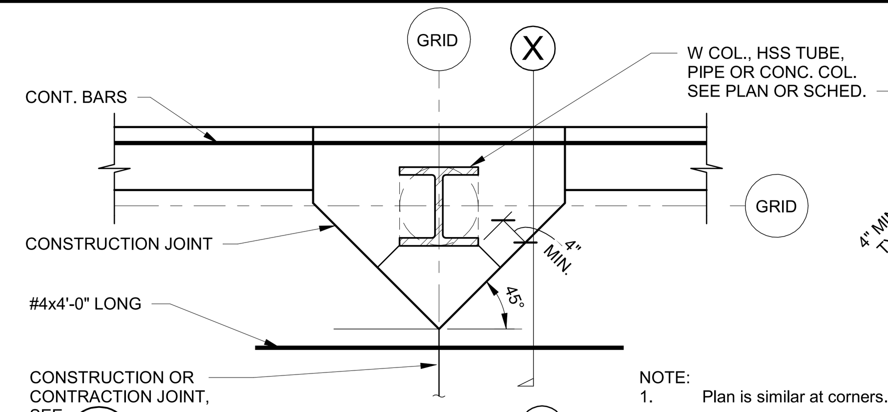
SLAB DEPTH "t" INCHES	OPTION A - DOWELS: DOWEL DIMENSIONS	OPTION A - DOWELS: DOWEL SPACING CENTER TO CENTER	OPTION C - DIAMOND LOAD PLATE: DIAMOND LOAD PLATE DIMENSIONS	OPTION C - DIAMOND LOAD PLATE: DIAMOND LOAD PLATE SPACING CENTER TO CENTER
4"	3/4" x 1'-4"	24"	1/4" x 4 1/2" x 4 1/2"	18"
7" - 8"	1" x 1'-4"	12"	3/8" x 4 1/2" x 4 1/2"	20"



NOTES:
1. Slab shall be placed in strip pattern.
(1) = First (2) = Second
2. Strips to be divided by construction or contraction joints at the centerline of columns where they occur and subdivided as required into areas not exceeding 225 sqft. by construction or contraction joints.
3. In areas where columns do not occur provide construction and contraction joints as above.
4. Contractors shall obtain architect's approval for all joint locations.
5. Diamond Dowel System® is manufactured by PNA Construction Technologies, Inc. or Engineered approved equivalent.
6. Comply with ACI302.IR04, ACI360R-06 and ACI detailing material (SP66).
7. Use internal vibration to consolidate concrete around diamond shear plate, per industry guidelines.

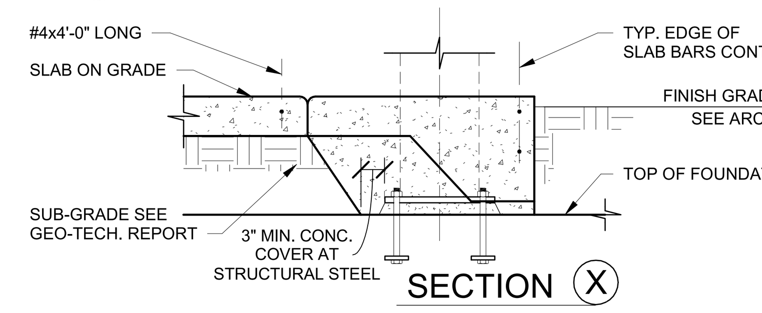
SLAB JOINT INFORMATION (1)

NO SCALE

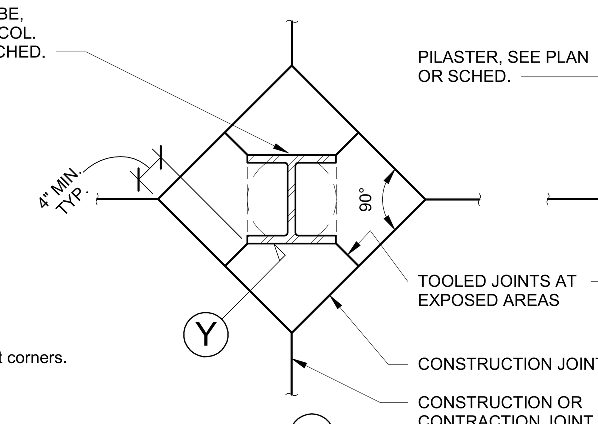


NOTE:
1. Plan is similar at corners.

PLAN (A)



SECTION (X)



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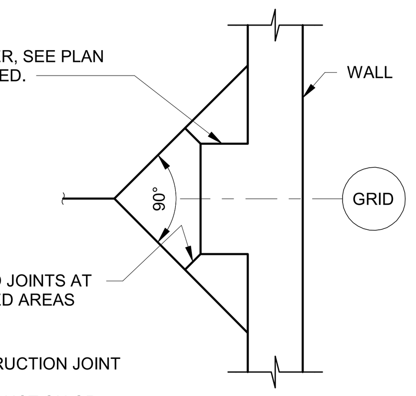

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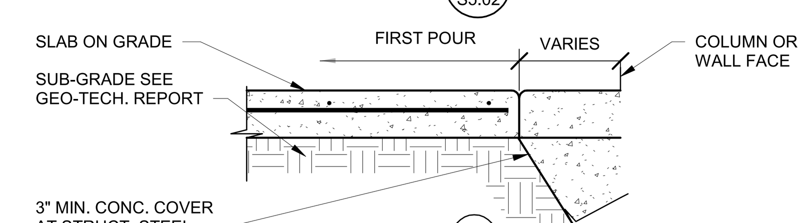
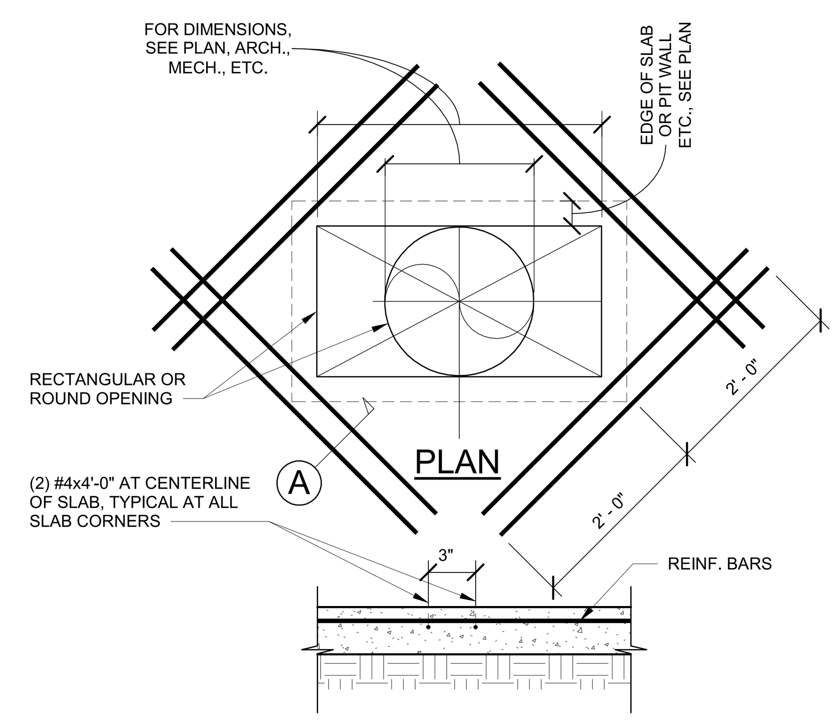


SECTION (Y)

COLUMN ISOLATION JOINTS (2)

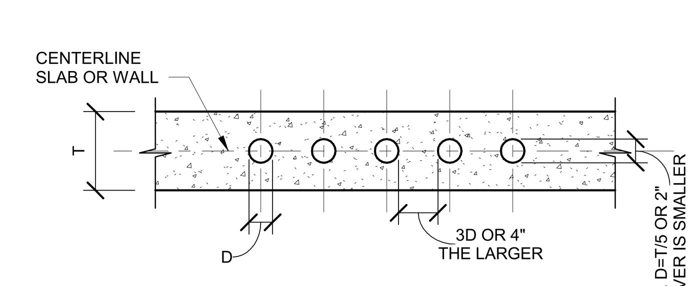
NO SCALE



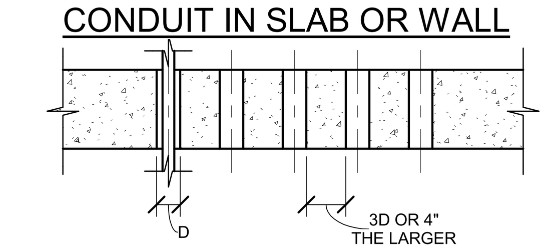
SECTION (A)

OPENING IN SLAB ON GRADE (3)

NO SCALE



CONDUIT IN SLAB OR WALL

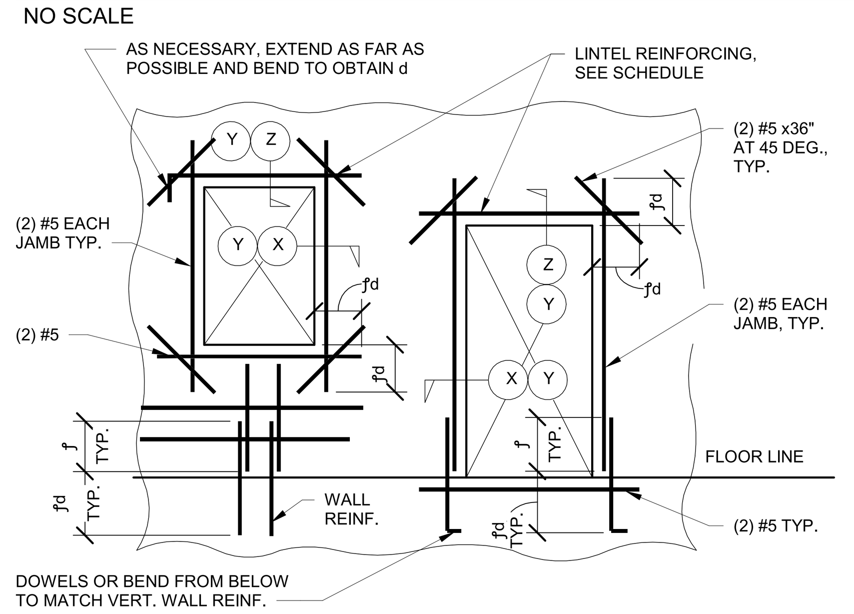


PIPING THRU SLAB OR WALL

NOTE:
1. Where clear distance between sleeves is impossible this area shall be treated as a slab opening or as a wall opening.

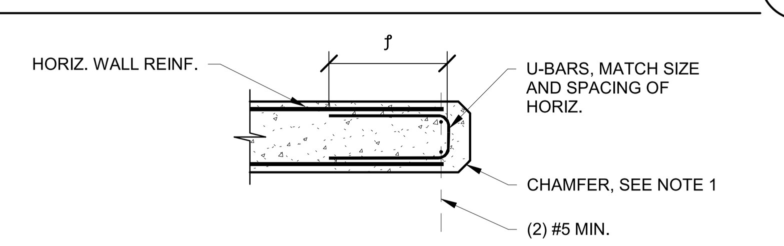
PIPING CONDUIT IN OR THRU SLAB OR WALL (4)

NO SCALE

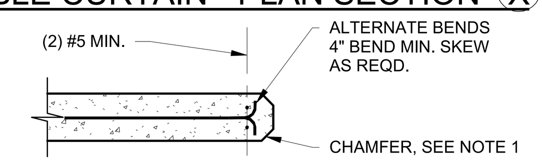


LINTEL REINFORCING	
WIDTH	REINF.
< 5'-0"	(2) #5
5'-0" - 7'-0"	(2) #6
7'-0" - 10'-0"	(2) #7

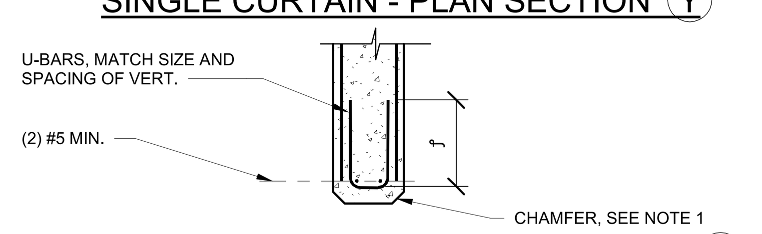
NOTES:
1. For ƒ see 1 / S5.01 .
2. For ƒd see 2 / S5.01.



JAMB OR END OF WALL - DOUBLE CURTAIN - PLAN SECTION (X)



JAMB, LINTEL OR END OF WALL - SINGLE CURTAIN - PLAN SECTION (Y)

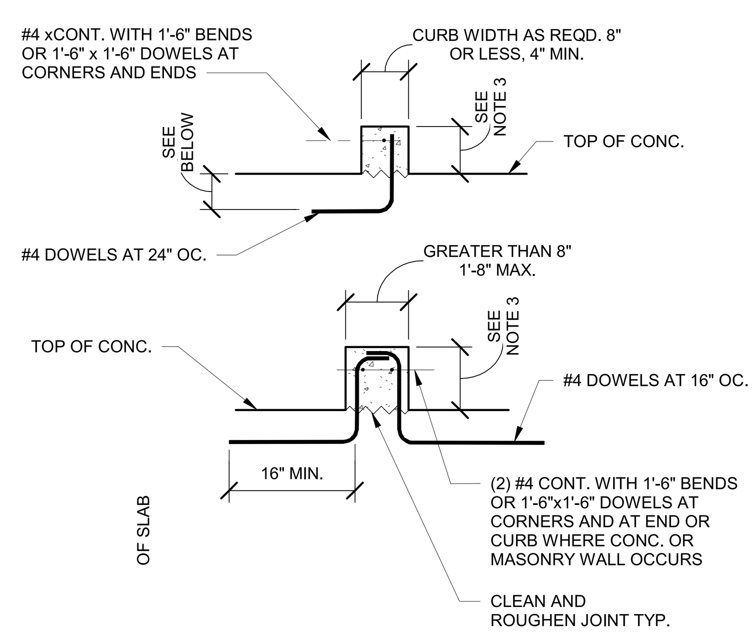


LINTEL SECTION - DOUBLE CURTAIN (Z)

NOTE:
1. 3/4" chamfer shall occur at the interior side of the wall only.

CONCRETE WALL OPENINGS AND DETAILS (5)

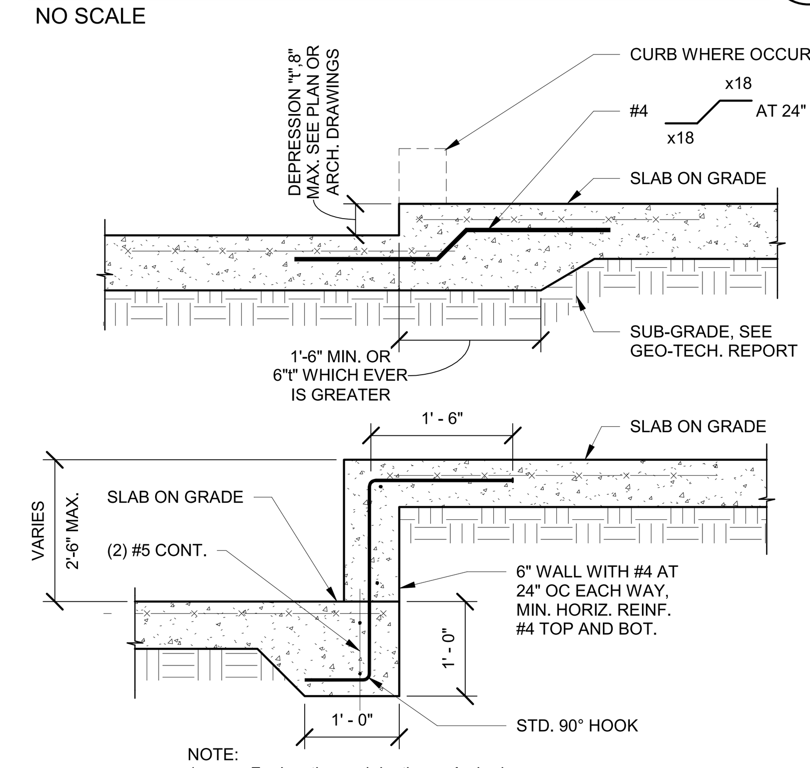
NO SCALE



NOTES:
1. Size and locate curbs as required.
2. Provide inserts in curbs as per Arch. and Mech. dwgs.
3. For height see Arch. or Mech. 10" max.

CONCRETE CURB (6)

NO SCALE



NOTE:
1. For location and depth see Arch. dwgs.

STEP IN SLAB ON GRADE (7)

NO SCALE

GENERAL DETAIL NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. For all top of footing, top of slab, and slab on grade construction, see foundation plan.
5. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
6. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report.
7. For structural framing sizes, bottom of deck and top of steel elevations, see plans.
8. For floor deck size, attachment, span direction,and finish floor elevations, see plans.
9. For typical bearing wall construction, see plans. Coordinate location with plans and architectural.
10. For interior and exterior wall finishes, see architectural.
11. For all typical construction details not shown on this sheet, see all "S5" series drawings.

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CITY OF MOSCOW

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CHECKED BY: KF/CH

PHASE: PERMIT SET

GENERAL SLAB DETAILS

SHEET NO.
S5.02

APPROVAL AREA

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LE JOB #24LOC4042

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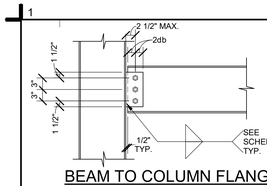
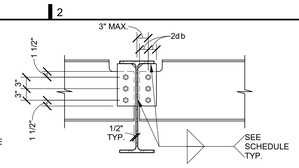
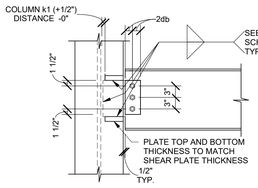


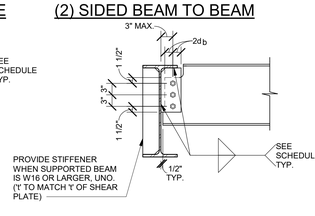
BEAM TO COLUMN FLANGE



(2) SIDED BEAM TO BEAM



BEAM TO COLUMN WEB



(1) SIDED BEAM TO BEAM

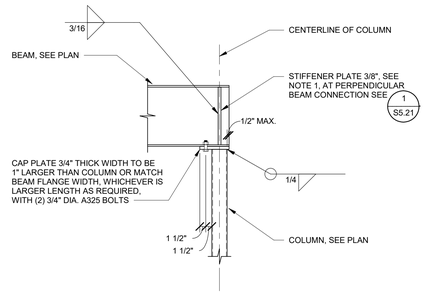
BEAM CONNECTION SCHEDULE

NOMINAL MEMBER DEPTH "D"	BOLT NO. AND SIZE	SHEAR PLATE THICKNESS	SIZE OF FILLET WELD
8" - 10"	(2) 3/4" DIA.	5/16	1/4
12" - 14"	(3) 3/4" DIA.	5/16	1/4
16"	(4) 3/4" DIA.	3/8	1/4
18"	(5) 3/4" DIA.	3/8	1/4
21"	(6) 1" DIA.	1/2	5/16
24" - 27"	(7) 1" DIA.	1/2	5/16
30"	(8) 1" DIA.	1/2	5/16
33"	(9) 1" DIA.	1/2	5/16
36"	(10) 1" DIA.	1/2	5/16
40"	(11) 1" DIA.	1/2	5/16

NOTES:
1. All 3/4" dia. bolts shall be A325-N. All 1" dia. bolts shall be A490-N.
2. Provide larger welds where may be required by AISC.
3. Use larger plates and welds where required by brace frame connections or other specific details.
4. d_b = bolt diameter.
5. Use short slotted holes in one end of beam for field tolerances.
6. "D" = Nominal member depth.
7. Provide horizontal short slotted holes where beam web thickness "t" exceeds d/2-1/16" and number of bolts "n" exceeds 5 per AISC table 10-9.

TYPICAL BEAM CONNECTION SCHEDULE AND DETAILS (1)

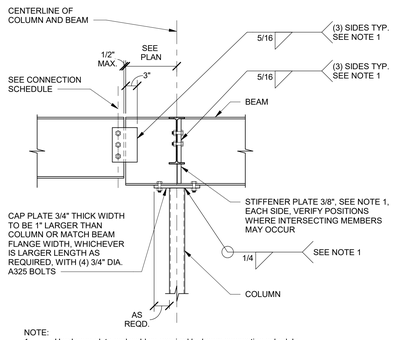
NO SCALE



NOTE:
1. See detail 1 / S5.21 for bolts, welding shear plate, etc.

BEAM TO COLUMN (2)

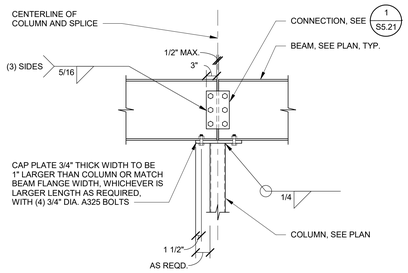
NO SCALE



NOTE:
1. Use larger plate and weld as required by beam connection schedule or by AISC specification section J2 welds.
2. See detail 1 / S5.21 for bolts, welding shear plate, etc.

BEAM TO BEAM AND COLUMN (3)

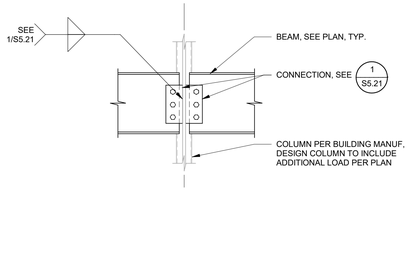
NO SCALE



NOTE:
1. See detail 1 / S5.21 for bolts, welding shear plate, etc.

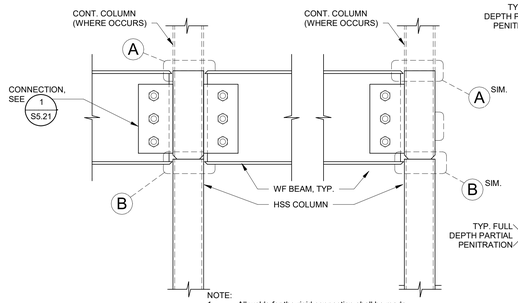
BEAM TO BEAM SPLICE AT COLUMN (4)

NO SCALE

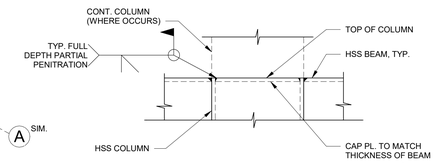


BEAM TO PEMB COLUMN (5)

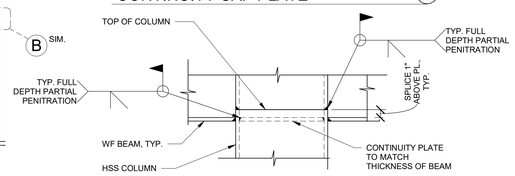
NO SCALE



NOTE:
1. All welds for the rigid connection shall be made with filler material meeting the requirements of the Structural Welding Code - Seismic Supplement AWSK1.8/D1.8M clause 6.3



CONTINUITY CAP PLATE (B)



CONTINUITY PLATE (B)

WF BEAM TO HSS COLUMN MOMENT CONNECTION (6)

NO SCALE

GENERAL DETAIL NOTES

1. For structural design notes, see sheets starting at S0.01.
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7. For structural framing sizes, bottom of deck and top of steel elevations, see plans.
8. For floor deck size, attachment, span direction,and finish floor elevations, see plans.
9. For typical bearing wall construction, see plans. Coordinate location with plans and architectural.
10. For interior and exterior wall finishes, see architectural.
11. For all typical construction details not shown on this sheet, see all "S5" series drawings.

LOMBARD CONRAD ARCHITECTS

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CHECKED BY:	KF/CH

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GENERAL STRUCTURAL STEEL DETAILS

SHEET NO.

S5.21

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Phone (208) 342-7168
LE JOB #24LOC4042

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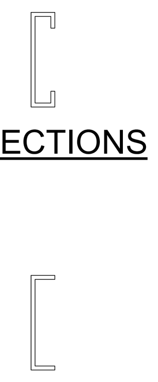


S-SECTIONS

T-SECTIONS

SHAPE	DESIGNATION	FLANGE WIDTH
S-SECTIONS	S125	1.25"
	S137	1.375"
	S162	1.625"
	S200	2"
	S250	2.5"
T-SECTIONS	T125	1.25"
	T150	1.5"
	T200	2"
	T250	2.5"

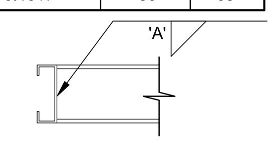
EXAMPLE CALL OUT:

600S162-54

600: SIZE = 6"
S: SECTION DESIGNATION (STYLE) = S STUD
162: 1.625" FLANGE WIDTH
54: .054 THICKNESS

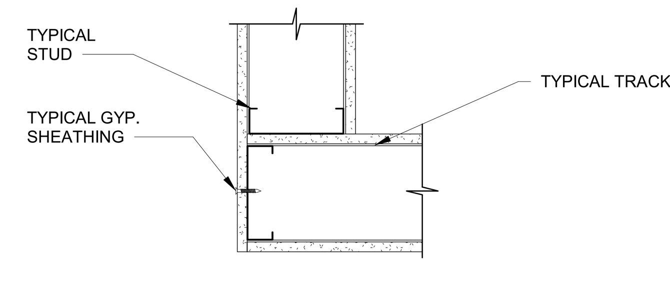
STEEL STUD/JOIST SECTION IDENTIFICATION (1)
NO SCALE

SECTION THICKNESS (mil)	(in.)	(ga.)	'A' WELD SIZE(in.)	Fy (ksi)	Fu (ksi)
33	0.0321	20	N/A	33	45
43	0.0451	18	0.0451	33	45
54	0.0566	16	0.0566	33	45
68	0.0713	14	0.0713	33	45
97	0.1017	12	0.1017	33	45
43	0.0451	18	0.0451	50	65
54	0.0566	16	0.0566	50	65
68	0.0713	14	0.0713	50	65
97	0.1017	12	0.1017	50	65

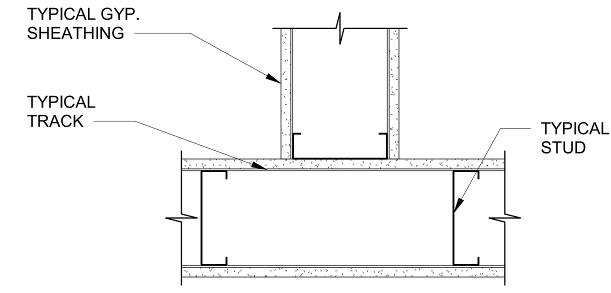


NOTES:
1. Fy = The minimum yield strength of the connected parts. Fu = The minimum tensile strength of the connected parts.
2. When connecting materials of different thickness or tensile strengths, use the weld size for the lighter mil section.
3. Weld procedures are based on Section E2 of the AISI Code and AWS D1.3.
4. Steel stud sections must be at least 43 mil minimum for welding.

STEEL STUD/JOIST WELDING (2)
NO SCALE

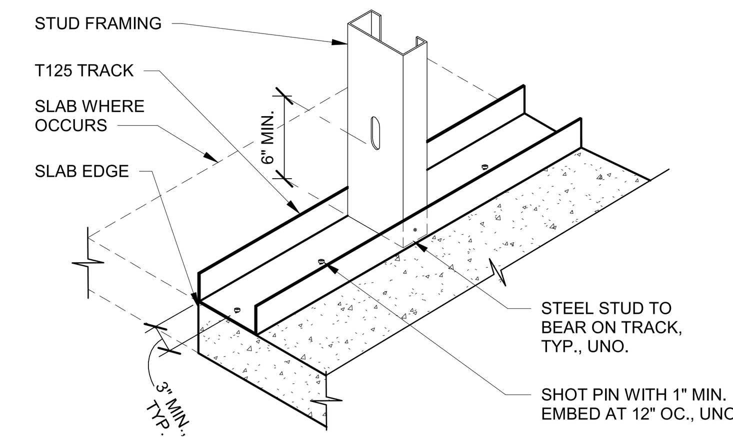


TYPICAL CORNER



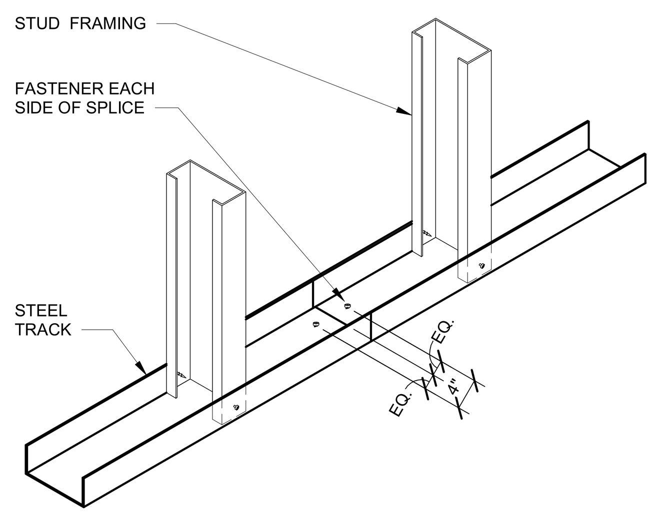
INTERSECTION

PLAN DETAILS AT WALL INTERSECTIONS (3)
NO SCALE

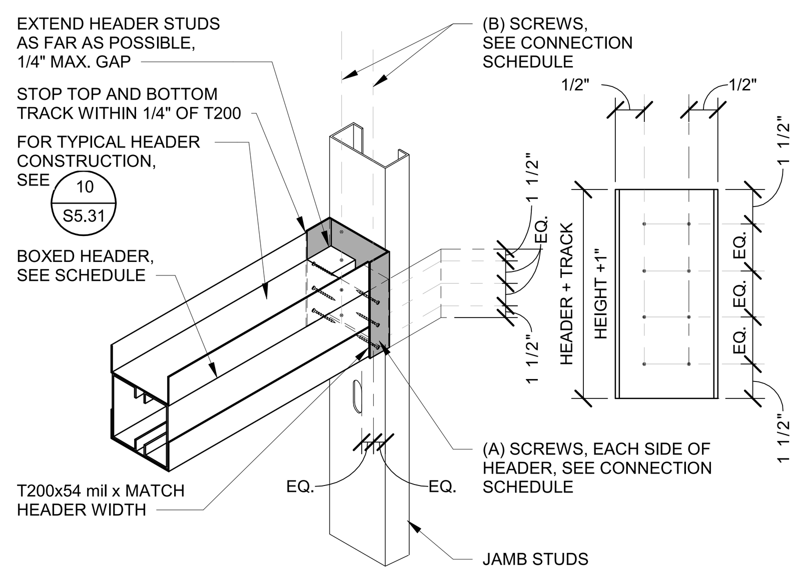


NOTES:
1. For track splice, see 5 / S5.31.
2. For track to concrete curb, see 6 / S5.32 .

TRACK TO STRUCTURE (4)
NO SCALE



TRACK SPLICE AT TRACK TO STRUCTURE (5)
NO SCALE



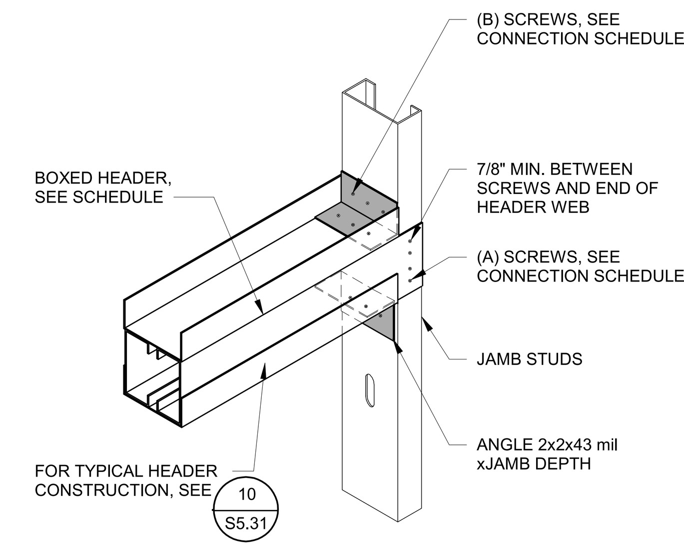
NOTE:
1. For alternate, see 7 / S5.31.

CONNECTION SCHEDULE

DEPTH OF TRACK OR STUDS	(A) SCREWS TO HEADER	(B) SCREWS TO JAMB
12 INCHES	(6) EACH SIDE, (12) TOTAL	(2) ROWS OF (5) SCREWS, (10) TOTAL
10 INCHES	(5) EACH SIDE, (10) TOTAL	(2) ROWS OF (5) SCREWS, (10) TOTAL
8 INCHES	(5) EACH SIDE, (10) TOTAL	(2) ROWS OF (4) SCREWS, (8) TOTAL
6 INCHES	(4) EACH SIDE, (8) TOTAL	(2) ROWS OF (4) SCREWS, (8) TOTAL
3 5/8 INCHES	(3) EACH SIDE, (6) TOTAL	(2) ROWS OF (3) SCREWS, (6) TOTAL

NOTE:
1. All exterior connections are to be made with #10 screws, uno.

BOXED MEMBER TO JAMB CONNECTION (6)
NO SCALE

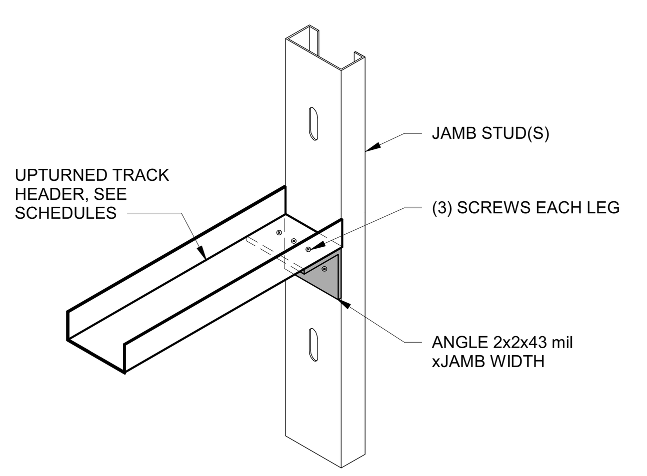


CONNECTION SCHEDULE

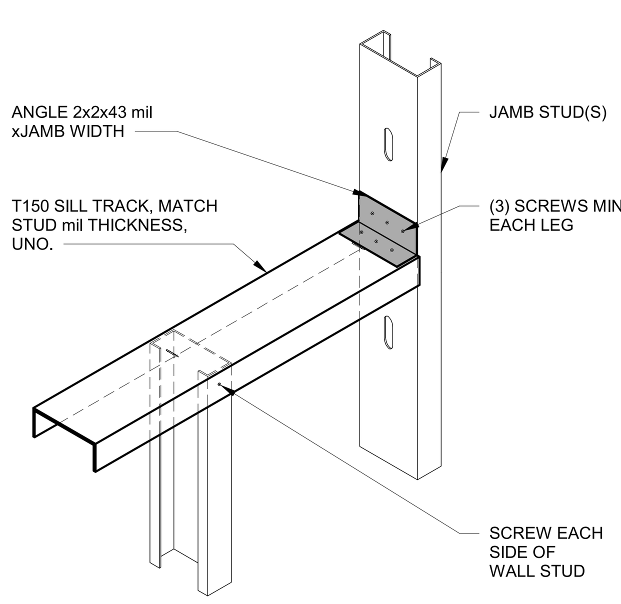
DEPTH OF TRACK OR STUDS	(A) SCREWS TO JAMB	(B) SCREWS AT ANGLE
12 INCHES	(2) ROWS OF (5) EACH SIDE, (20) TOTAL	(6) SCREWS EACH LEG
10 INCHES	(2) ROWS OF (4) EACH SIDE, (16) TOTAL	(5) SCREWS EACH LEG
8 INCHES	(2) ROWS OF (3) EACH SIDE, (12) TOTAL	(4) SCREWS EACH LEG
6 INCHES	(2) ROWS OF (3) EACH SIDE, (12) TOTAL	(4) SCREWS EACH LEG
3 5/8 INCHES	(2) ROWS OF (2) EACH SIDE, (8) TOTAL	(3) SCREWS EACH LEG

NOTE:
1. All exterior connections are to be made with #10 screws, uno.

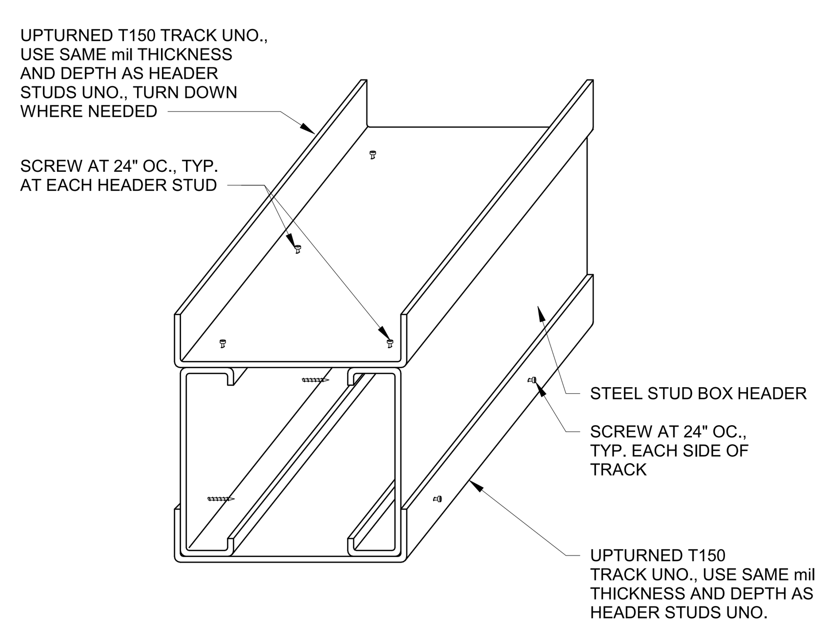
BOXED MEMBER TO JAMB CONNECTION - ALTERNATE (7)
NO SCALE



TRACK HEADER AT JAMB (8)
NO SCALE

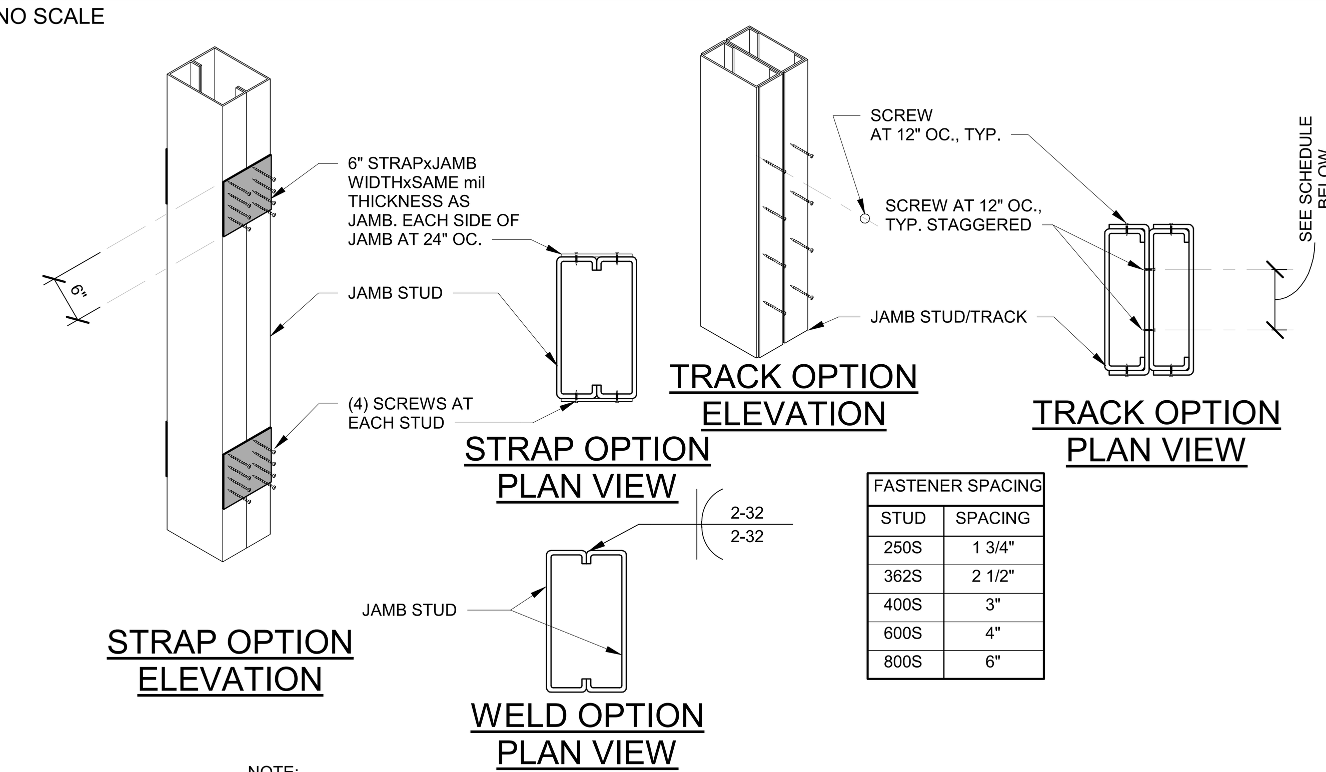


SILL CONNECTION (9)
NO SCALE



NOTES:
1. Contractor to coordinate insulation requirements at built-up sections.
2. For connection to jamb, see 6 / S5.31.

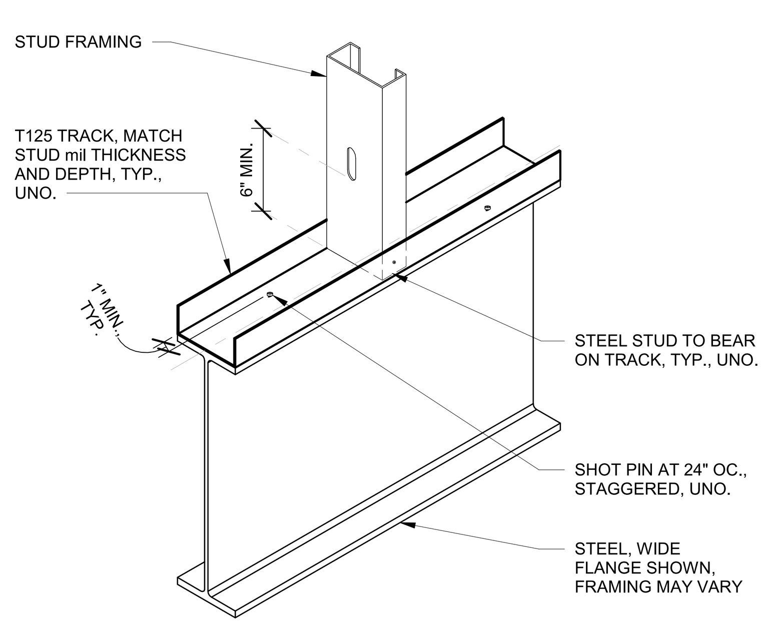
BOXED HEADER CONNECTION (10)
NO SCALE



FASTENER SPACING	
STUD	SPACING
250S	1 3/4"
362S	2 1/2"
400S	3"
600S	4"
800S	6"

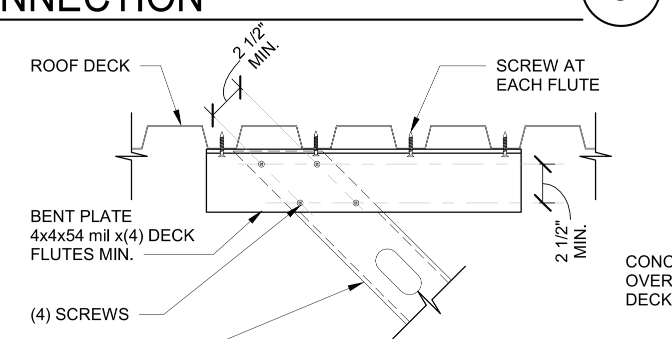
NOTE:
1. Contractor to coordinate insulation requirements at built-up section.

TYPICAL JAMB CONSTRUCTION (11)
NO SCALE

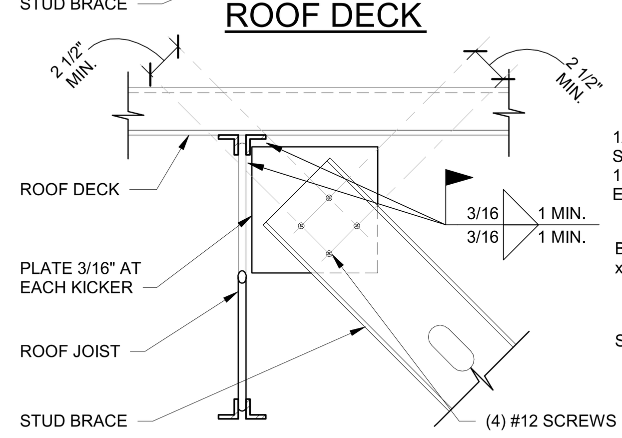


NOTE:
1. Contractor shall notify engineer if track does not sit fully on steel framing.

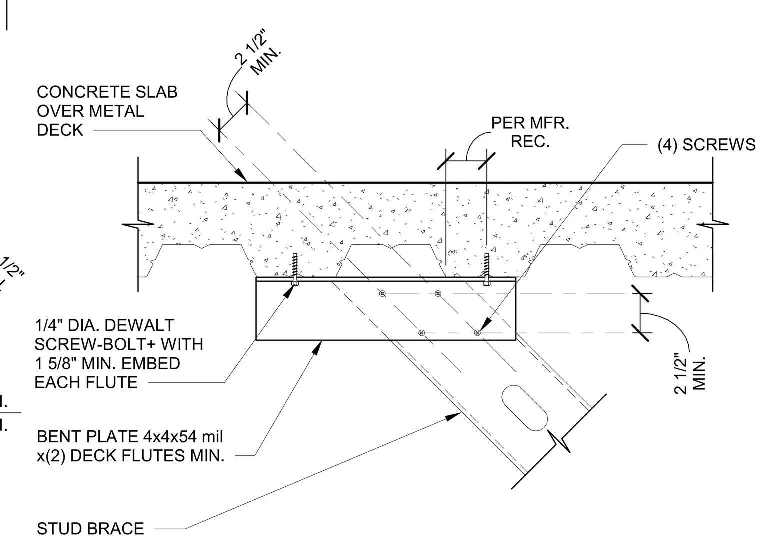
BASE TRACK AT STEEL FRAMING (12)
NO SCALE



ROOF DECK



ROOF DECK AT JOIST



FLOOR DECK

NOTES:
1. Floor deck perpendicular to wall stud framing is similar.
2. Anchors in horizontal leg shall be within 1" of the vertical leg.

KICKER ATTACHMENT (13)
NO SCALE

Lochsa engineering
201 N. Maple Grove Ste. 100
BOISE IDAHO 83704
Phone (208) 342-7168
LE JOB #24LOC4042

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APPROVAL AREA

7/19/2024 9:16:38 AM C:\Users\Kyle.Friederich\OneDrive - Lochsa Engineering\Documents\24LOC4042_Moscow City Shop_R23_kyle.friederich.rvt

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING INTERIOR DESIGN
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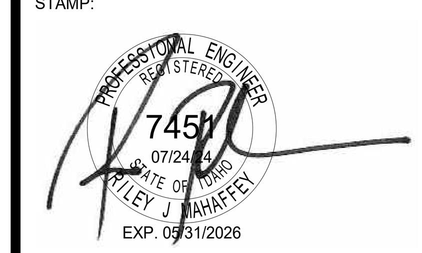

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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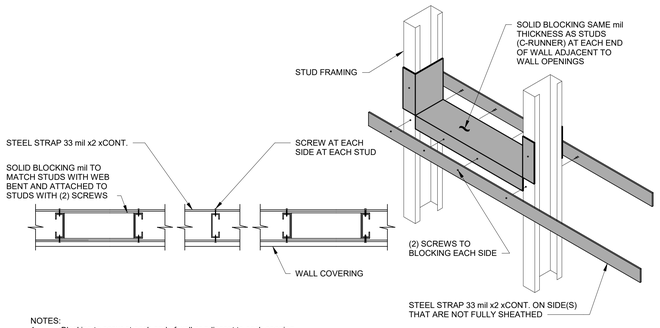
BOISE, IDAHO 83705
(208) 343-3663

MRK	DATE	DESCRIPTION

JOB N0.:	24000.01
DATE:	07/24/2024
DRAWN BY:	JG/CE
CHECKED BY:	KF/CH
PHASE:	PERMIT SET

GENERAL CFS DETAILS

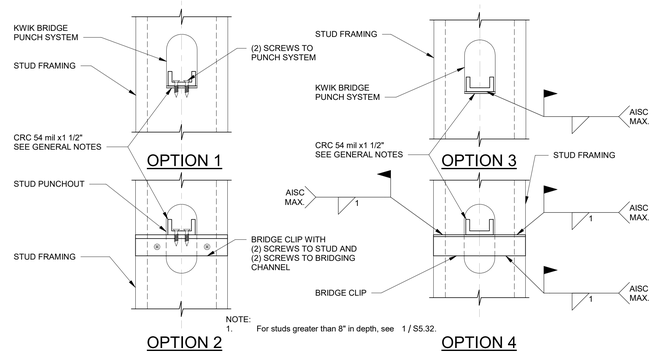
SHEET NO.
S5.31



NOTES:
1. Blocking to occur at each end of wall or adjacent to each opening and at spacing, see general notes.
2. Contractors options: continuous CRC see 2 / S5.32 in lieu of stud and strap bridging.

PLAN DETAILS BLOCKING OR BRIDGING AT STEEL STUD WALLS (1)

NO SCALE



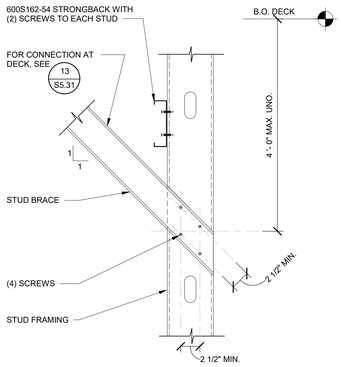
NOTE:
1. For studs greater than 8" in depth, see 1 / S5.32.

SCREW OPTIONS

WELD OPTIONS

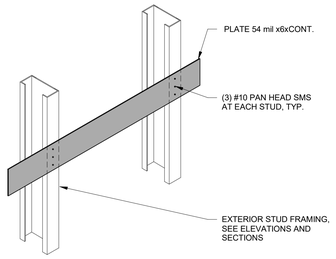
COLD-ROLLED CHANNEL BRIDGING (2)

NO SCALE



KICKER SUPPORT FOR STUD WALL (3)

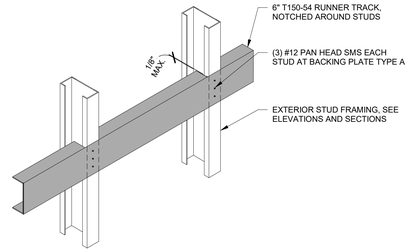
NO SCALE



NOTES:
1. Confirm length, height and location of backing plate and number required with item to be mounted.
2. Backing plate to be used with small, light weight items which weigh or support weight of less than 25 pounds per linear foot. Does not include handrails or grabrails.

BACK PLATE TYPE A (4)

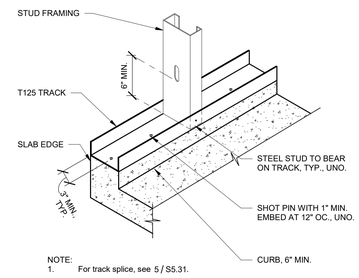
NO SCALE



NOTES:
1. Backing plate to be used with small, light weight items (soap dispensers, door stops, mirrors, clothes hooks, etc. but does not include handrails or grabrails) which weigh or support weight of less than 50 pounds per linear foot.
2. Stud flanges to be continuous.
3. Confirm length, height and location of backing plate and number required with item to be mounted.
4. Design load eccentricity from face of wall 'e' = 8" max.

BACKING PLATE TYPE B (5)

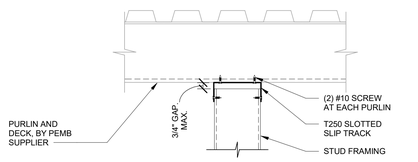
NO SCALE



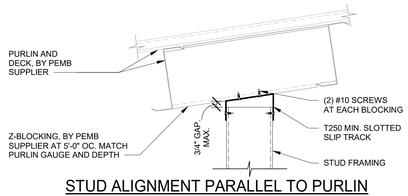
NOTE:
1. For track splice, see 5 / S5.31.

TRACK TO CONCRETE CURB (6)

NO SCALE



STUD ALIGNMENT PERPENDICULAR TO PURLIN



STUD ALIGNMENT PARALLEL TO PURLIN

STUD SLIP CONNECTION AT PURLINS (7)

NO SCALE

APPROVAL AREA

Lochsa engineering
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LE JOB #24LOC4042

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PROFESSIONAL ENGINEER KEITH STEREN 7451 07/24/24 STATE OF IDAHO KYLEY J. FRIEDERICH EXP. 03/31/2026

MOSCOW CITY SHOP

CITY OF MOSCOW

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ELECTRICAL ENGINEER
CATOR RUMA
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MRK	DATE	DESCRIPTION

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	JG/CE
CHECKED BY:	KF/CH

PHASE: **PERMIT SET**

GENERAL CFS DETAILS

SHEET NO.
S5.32

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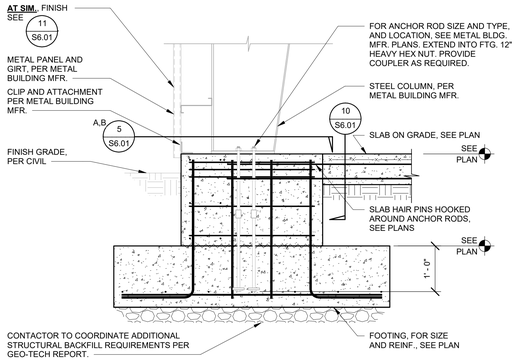
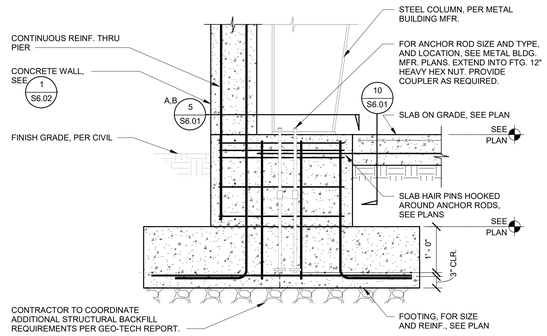


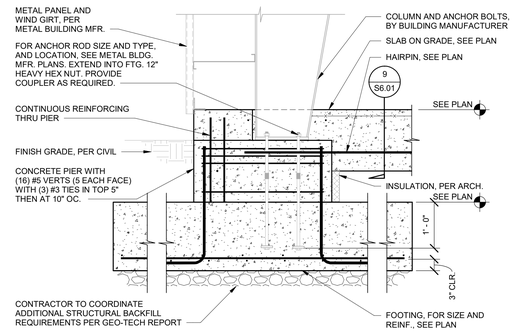
PRE-MANUFACTURED BUILDING COLUMN AT SHOP (1)

3/4" = 1'-0"



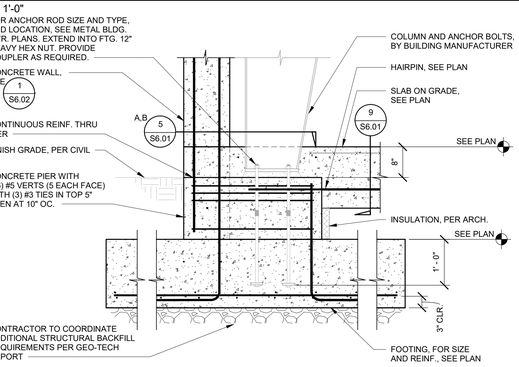
PRE-MANUFACTURED BUILDING COLUMN AT RETAINING WALL (2)

3/4" = 1'-0"



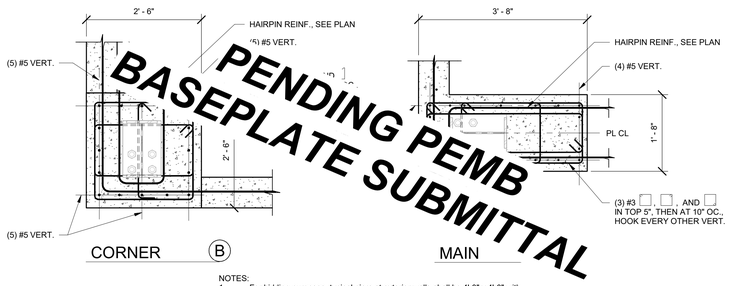
PRE-MANUFACTURED BUILDING COLUMN AT OFFICE AREA (3)

3/4" = 1'-0"



PRE-MANUFACTURED BUILDING COLUMN AT RETAINING WALL (4)

3/4" = 1'-0"

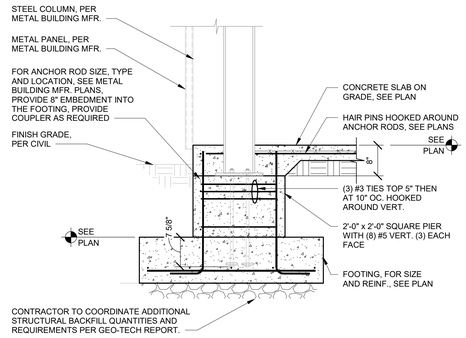


PENDING PEMB BASEPLATE SUBMITTAL

NOTES:
1. For bidding purposes, typical piers at exterior walls shall be 4'-0" x 4'-0" with (16) #5 vertical bars and (3) #3 ties at 3" and 12" oc. below.
2. For bidding purposes, corner piers shall be 3'-0" x 3'-0" with (12) #5 vertical bars and (3) #3 ties at 3" and 12" oc. below.

BUILDING PIER REBAR LAYOUT (5)

3/4" = 1'-0"



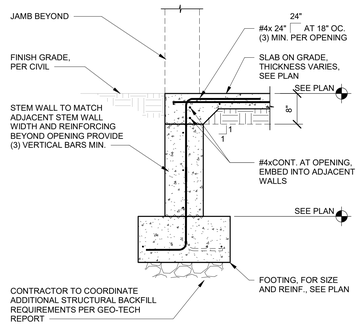
METAL BUILDING COLUMN AT FOOTING (6)

3/4" = 1'-0"

FOUNDATION DETAIL NOTES

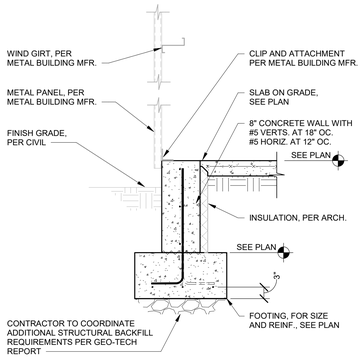
1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the architect and structural engineer before performing alteration work.
4. For concrete and foundation general details, see sheets S5.01 and S5.02.
5. Footing designations are called out on the foundation plans and coordinated on the schedule sheet S4.01.
6. Slab on grade construction is called out on plans. Coordinate slab on grade construction with sheet S5.01.
7. Coordinate top of footing and top of slab elevations with foundation plans.
8. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
9. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report. Coordinate vapor barrier placement below slab with arch and geo-tech report.
10. Contractor to coordinate exterior finish grade with architect and civil.
11. Coordinate non-shrink grout under steel columns with base plate schedule on sheet S4.01.
12. All rebar to maintain clear distances per concrete notes on sheet S0.02.
13. All concrete cold joints are to be roughened and cleaned to 1/4" amplitude, uno.
14. All hooked dowels are shown with 90° std. hook, see 3 / S5.01, uno.
15. All rebar shall maintain tension lap splice, see 2 / S5.01.
16. All dowels shall maintain development lengths, see 1 / S5.01. Concrete wall dowels are to extend to bottom of the footings and face of the footings. for dowels that are centered in wall alternate the hook direction.
17. Concrete strengths are provided in notes on sheet S0.02.
18. All exposed concrete edges shall have a 3/4" chamfer, typ., uno.
19. All cast in place anchor bolts are to be coordinated with the base plate schedule on sheet S4.01.
20. Minimum concrete pier horizontal reinforcing shall be, #3 tie sets at 12" OC. with (3) #3 tie sets at top 5", uno.
21. Provide 3" minimum concrete cover between surrounding soil and all embedded steel including, base plates, anchor bolts, headed anchors, columns, etc., uno.
22. All stem wall and footing reinforcing is to be continued thru column piers and footings, uno.
23. For structural bearing wall construction, see plans. Coordinate location with plans and architectural.
24. For all interior and exterior wall finishes, see architectural.
25. Rigid foundation insulation shown for reference only. Coordinate thickness and placement with arch.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.



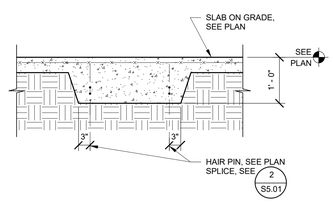
SLAB AT OPENING OR WINDOW SYSTEM (7)

3/4" = 1'-0"



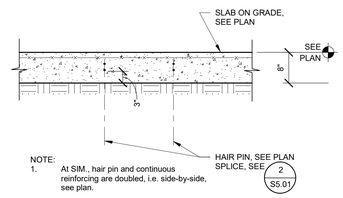
CONCRETE STEM WALL AT FOOTING (8)

3/4" = 1'-0"



THICKENED SLAB AT HAIR PIN (9)

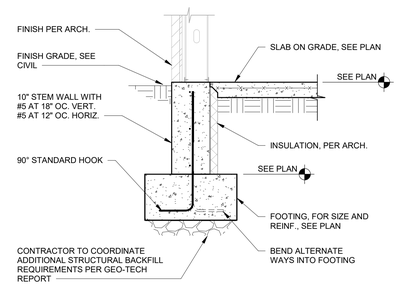
NO SCALE



NOTE:
1. At SIM., hair pin and continuous reinforcing are doubled, i.e. side-by-side, see plan.

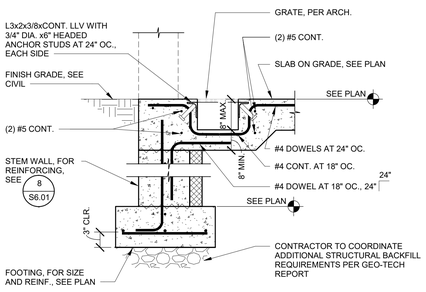
THICKENED SLAB AT HAIR PIN (10)

3/4" = 1'-0"



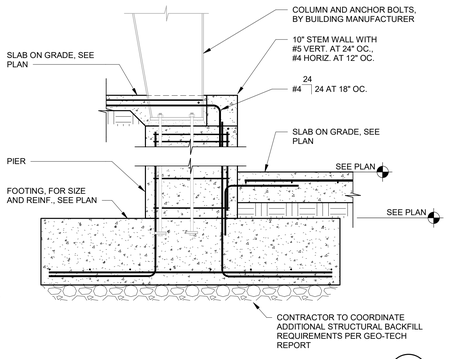
10" EXTERIOR WALL FOOTING (11)

NO SCALE



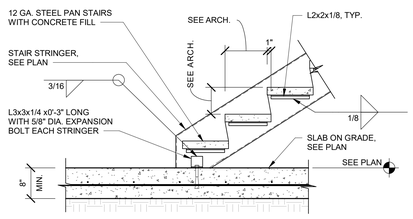
FLOOR TRENCH DETAIL (12)

1" = 1'-0"



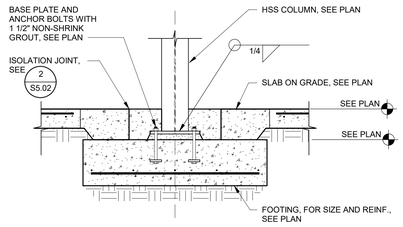
WALL AT STEPPED SLAB (13)

3/4" = 1'-0"



STEEL PAN STAIR AT CONCRETE SLAB ON GRADE (14)

3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.
4. Grout to be placed prior to applying loads to column.

INTERIOR SPREAD FOUNDATION AT COLUMN (15)

3/4" = 1'-0"

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INTERIOR DESIGN
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CITY OF MOSCOW

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MRK	DATE	DESCRIPTION

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DATE:	07/24/2024
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CHECKED BY:	KF/CH

PHASE: **PERMIT SET**

FOUNDATION DETAILS

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S6.01

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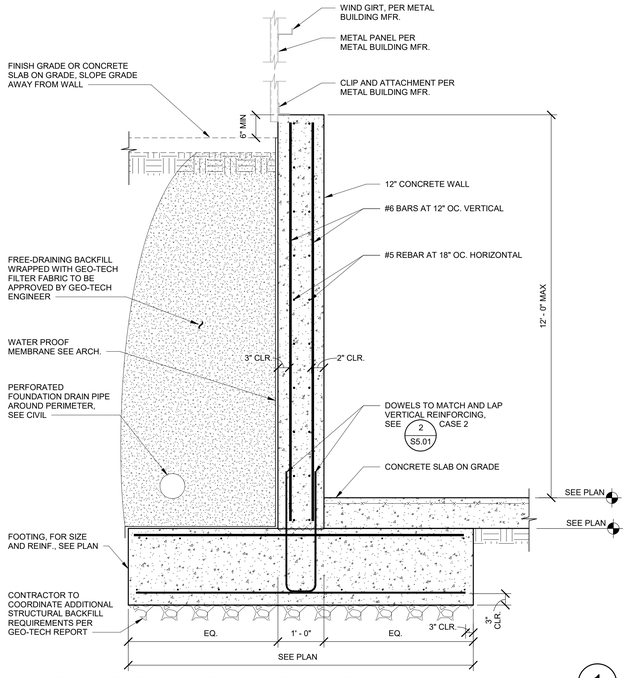
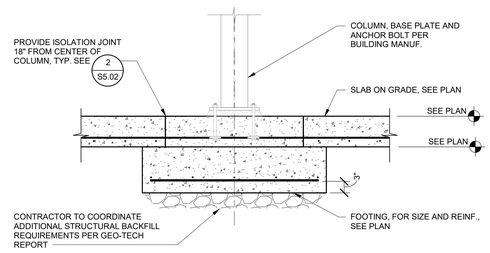


12" CONCRETE BASMENT RETAINING WALL (1)

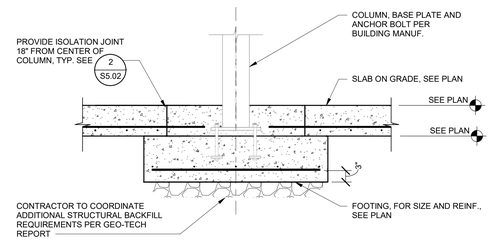
3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.

SURFACE MOUNTED PEMB INTERIOR COLUMN AT FOOTING (2)

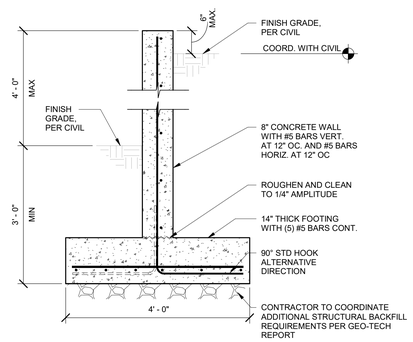
3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.

RECESSED PEMB INTERIOR COLUMN AT FOOTING (3)

3/4" = 1'-0"



NOTE:
1. For location of retaining wall, see civil drawings.

SHORT RETAINING WALL (4)

3/4" = 1'-0"

FOUNDATION DETAIL NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the architect and structural engineer before performing alteration work.
4. For concrete and foundation general details, see sheets S5.01 and S5.02.
5. Footing designations are called out on the foundation plans and coordinated on the schedule sheet S4.01.
6. Slab on grade construction is called out on plans. Coordinate slab on grade construction with sheet S5.01.
7. Coordinate top of footing and top of slab elevations with foundation plans.
8. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
9. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report. Coordinate vapor barrier placement below slab with arch and geo-tech report.
10. Contractor to coordinate exterior finish grade with architect and civil.
11. Coordinate non-shrink grout under steel columns with base plate schedule on sheet S4.01.
12. All rebar to maintain clear distances per concrete notes on sheet S0.02.
13. All concrete cold joints are to be roughened and cleaned to 1/4" amplitude, uno.
14. All hooked dowels are shown with 90° std. hook, see 3 / S5.01, uno.
15. All rebar shall maintain tension lap splice, see 2 / S5.01.
16. All dowels shall maintain development lengths, see 1 / S5.01. Concrete wall dowels are to extend to bottom of the footings and face of the footings. for dowels that are centered in wall alternate the hook direction.
17. Concrete strengths are provided in notes on sheet S0.02.
18. All exposed concrete edges shall have a 3/4" chamfer, typ., uno.
19. All cast in place anchor bolts are to be coordinated with the base plate schedule on sheet S4.01.
20. Minimum concrete pier horizontal reinforcing shall be, #3 tie sets at 12" OC. with (3) #3 tie sets at top 5", uno.
21. Provide 3" minimum concrete cover between surrounding soil and all embedded steel including, base plates, anchor bolts, headed anchors, columns, etc., uno.
22. All stem wall and footing reinforcing is to be continued thru column piers and footings, uno.
23. For structural bearing wall construction, see plans. Coordinate location with plans and architectural.
24. For all interior and exterior wall finishes, see architectural.
25. Rigid foundation insulation shown for reference only. Coordinate thickness and placement with arch.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.

APPROVAL AREA

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FOUNDATION DETAILS

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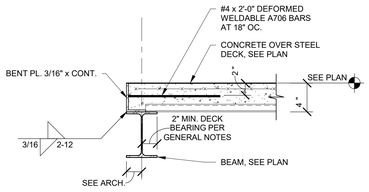
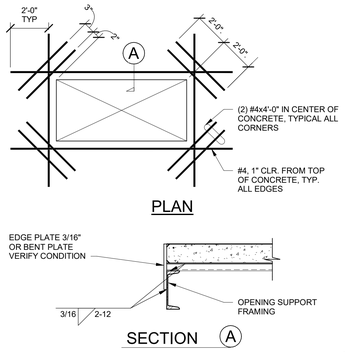


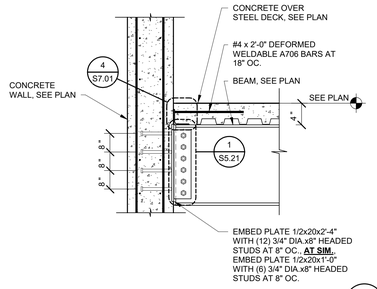
EDGE OF SLAB (1)

3/4" = 1'-0"



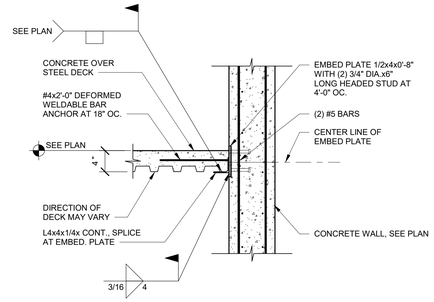
OPENING IN SLAB ON METAL DECK (2)

3/4" = 1'-0"



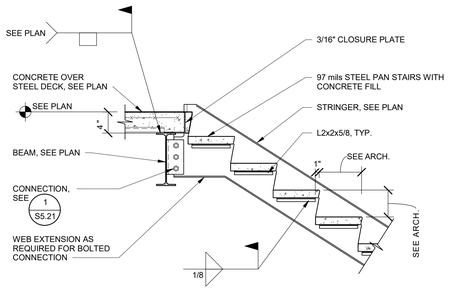
BEAM CONNECTION AT CONCRETE (3)

3/4" = 1'-0"



DECK LEDGER AT FLOOR (4)

3/4" = 1'-0"



CONCRETE/STEEL PAN STAIR DOWN FROM LANDING, WIDE FLANGE (5)

3/4" = 1'-0"

FLOOR FRAMING DETAIL NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the architect and structural engineer before performing alteration work.
4. For structural steel general details, see sheets S5.21 thru S5.22.
5. Columns are called out on foundation or level of origin plans.
6. For structural bearing wall construction, see plans. Coordinate location with plans and architectural.
7. For all top of structural steel, bottom of deck or finish floor elevations, see framing plans.
8. For typical floor deck closure plate connection and construction, see 2 / S7.01.
9. For floor deck size, attachment and span direction, see plans.
10. For interior and exterior wall finishes, see architectural.

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FLOOR FRAMING DETAILS

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S7.01

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MECHANICAL ABBREVIATIONS

A/C or AC	AIR CONDITIONING	KW	KILOWATT
AFF	ABOVE FINISHED FLOOR	KWH	KILOWATT HOUR
AHU	AIR HANDLING UNIT		
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS	LAT	LEAVING AIR TEMPERATURE
		LAV	LAVATORY
BTU	BRITISH THERMAL UNITS	LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
BTUH	BTUS PER HOUR	LWT	LEAVING WATER TEMPERATURE
CA	COMBUSTION AIR	MAX	MAXIMUM
CC	COOLING COIL	MCA	MINIMUM CIRCUIT AMPS
CFM	AIR FLOW RATE (CUBIC FEET PER MINUTE)	MOCP	MAXIMUM OVERCURRENT PROTECTION
CHWR	CHILLED WATER RETURN	MIN	MINIMUM
CHWS	CHILLED WATER SUPPLY		
CLG	CEILING	NC	NOISE CRITERIA
CW	COLD WATER	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
		NTS	NOT TO SCALE
DEG or °	DEGREE		
DIA or Ø	DIAMETER	OSA	OUTSIDE AIR
DB	DRY BULB		
		PD	PRESSURE DROP
EA	EXHAUST AIR	PH or Ø	PHASE
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
EER	ENERGY EFFICIENCY RATIO		
ESP	EXTERNAL STATIC PRESSURE	RA	RETURN AIR
EWT	ENTERING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
		RTU	ROOFTOP UNIT
FCO	FLOOR CLEANOUT		
FD	FIRE DAMPER	SA	SUPPLY AIR
FLA	FULL LOAD AMPS	SEER	SEASONAL ENERGY EFFICIENCY RATIO
FLR	FLOOR	SFD	COMBINATION SMOKE/FIRE DAMPER
FPM	FEET PER MINUTE	SP	STATIC PRESSURE
FT	FEET	SYM	SYMBOL
GA	GAUGE	T & P	TEMPERATURE AND PRESSURE
GCO	GRADE CLEANOUT	TEMP	TEMPERATURE
GPM	WATER FLOW RATE (GALLONS PER MINUTE)	TYP	TYPICAL
HC	HEATING COIL	UMC	UNIFORM MECHANICAL CODE
HP	HORSE POWER	UPC	UNIFORM PLUMBING CODE
HVAC	HEATING, VENTILATING, AIR CONDITIONING	URL	URINAL
HW	HOT WATER		
HWR	HOT WATER RETURN	VTR	VENT THROUGH ROOF
HWS	HOT WATER SUPPLY	V	VOLTS
IBC	INTERNATIONAL BUILDING CODE	W/	WITH
IEEC	INTERNATIONAL ENERGY CONSERVATION CODE	WB	WET-BULB
IFC	INTERNATIONAL FIRE CODE	WC	WATER CLOSET
IFGC	INTERNATIONAL FUEL GAS CODE	WCO	WALL CLEANOUT
IMC	INTERNATIONAL MECHANICAL CODE	WH	WATER HEATER
IPC	INTERNATIONAL PLUMBING CODE		
NOTE:	THIS IS A STANDARD LIST OF COMMONLY USED MECHANICAL ABBREVIATIONS. SOME OF THE ABBREVIATIONS SHOWN ABOVE MAY NOT BE USED IN THIS DRAWING PACKAGE.		

MECHANICAL GENERAL NOTES

1. ALL MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE (IMC) LATEST EDITION, AND ALL APPLICABLE LOCAL AND STATE CODES.
2. ALL PLUMBING EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ADOPTED PLUMBING CODE, AND ALL LOCAL AND STATE CODES.
3. ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
4. MECHANICAL CONTRACTORS SHALL RECEIVE PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER BEFORE MAKING CUTS THROUGH ANY STRUCTURAL MEMBER.
5. MECHANICAL CONTRACTORS SHALL COORDINATE INSTALLATION WITH CONSTRUCTION SUPERVISOR AND WITH ALL OTHER TRADES TO AVOID CONFLICTS.
6. THE MECHANICAL CONTRACTORS SHALL VERIFY MOTOR VOLTAGES WITH THE ELECTRICAL DRAWINGS PRIOR TO ORDERING MOTORIZED EQUIPMENT AND CONTROLS.
7. SEE MECHANICAL SCHEDULE SHEET FOR SCHEDULED CAPACITIES OF ALL MECHANICAL EQUIPMENT AND MATERIALS SPECIFIED.
8. DOMESTIC WATER SERVICE IS PROVIDED WITH AN APPROVED BACKFLOW PREVENTER ASSEMBLY.
9. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL BACKFLOW DEVICES TO INSPECTED BY A CERTIFIED BACKFLOW TECHNICIAN BEFORE THE USE OF THE BUILDING POTABLE WATER SYSTEM.
10. ALL MECHANICAL EQUIPMENT TO BE PROPOSED MUST BE ON THE APPROVED LIST PRIOR TO SUBMITTALS. ALL APPROVED MANUFACTURERS MUST BE CAPABLE OF MEETING THE REQUIREMENTS OF THE SPECIFIED EQUIPMENT.
11. RUNOUT AND HOOKUP SIZES TO INDIVIDUAL PLUMBING FIXTURES CAN BE FOUND ON THE PLUMBING FIXTURE SCHEDULE.
12. PROVIDE REMOTE CEILING ACCESS BALANCE DAMPERS WITH CONCEALED CHROME PLATE COVERS FOR BALANCE DAMPERS LOCATED ABOVE HARD CEILINGS.
13. PAINT VTR'S, FLUES, EXHAUST CAPS, AND OTHER MECHANICAL ITEMS ON THE ROOF TO MATCH THE ROOF COLOR.
14. INSULATED FLEXIBLE DUCTWORK--IN LENGTHS OF 6'-0" OR LESS--MAY BE USED FOR RUNOUTS TO AIR TERMINALS.
15. MAINTAIN MINIMUM 10'-0" DISTANCE BETWEEN ALL FRESH AIR INTAKES AND EXHAUST OR GAS FLUE DISCHARGES.
16. LOCATE ACCESS HATCHCES SO AS TO PROVIDE OPTIMUM SERVICEABILITY TO EQUIPMENT AND/OR VALVING. SEE ARCHITECTURAL SPECIFICATION FOR TYPE AND COLOR. COORDINATE LOCATION WITH ARCHITECTURAL, STRUCTURAL, AND LIGHTING.
17. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT PIPE OR DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO PIPE OR DUCT SIZES.

MECHANICAL AND PLUMBING DRAWINGS LEGEND

Symbol	Description	Symbol	Description
	FLEXIBLE DUCTWORK		THREE WAY CONTROL VALVE
	DUCTWORK		TWO WAY CONTROL VALVE
	DUCTWORK BREAK		PRESSURE REDUCING VALVE
	DUCTWORK OR PIPING RISE		GATE VALVE
	CONCENTRIC SQUARE TO ROUND TRANSITION		REDUCER
M	MOTORIZED DAMPER		GLOBE VALVE
	MANUAL VOLUME DAMPER		BALL VALVE
AIRFLOW	SPIN-IN FITTING W/ AIR EXTRACTOR AND HAND DAMPER		BUTTERFLY VALVE
AIRFLOW	HIGH EFFICIENCY FITTING W/ HAND DAMPER		BALANCE VALVE
$	SWITCH		CHECK VALVE
T	THERMOSTAT	FCO	FLOOR CLEANOUT
H	HUMIDISTAT	WCO	WALL CLEANOUT
S	TEMPERATURE SENSOR	GCO	GRADE CLEANOUT
CO2	CARBON DIOXIDE SENSOR		WATER HAMMER ARRESTOR
CO	CARBON MONOXIDE SENSOR		FLOOR DRAIN
NO	NITROUS OXIDE SENSOR		FLOOR SINK
SD	DUCT SMOKE DETECTOR		GAS PRESSURE REGULATOR W/ GAS COCK
	COMBINATION SMOKE/FIRE DAMPER		PRESSURE RELIEF VALVE
	FIRE DAMPER		VENT-THROUGH-ROOF
	SMOKE DAMPER		VENT
-- #	EQUIPMENT CALLOUT		SOIL, WASTE, OR SANITARY SEWER
	TURNING VANES	AW	ACID WASTE LINE
	INTAKE OR EXHAUST	AV	ACID VENT LINE
	DIRECTION OF AIRFLOW	SD	STORM DRAIN
D-X CFM X"Ø	SUPPLY DIFFUSER	RD	ROOF DRAIN LINE
R-X X"Ø	RETURN GRILLE	OD	OVERFLOW DRAIN LINE
R-X CFM X"Ø	EXHAUST GRILLE	CD	CONDENSATE DRAIN LINE
G-X CFM X"Ø	FLOOR GRILLE		DOMESTIC COLD WATER (CW)
	CEILING EXHAUST FAN		DOMESTIC HOT WATER (HW)
	TEMPERATURE GAUGE		DOMESTIC HOT WATER RETURN (HWR)
	PRESSURE GAUGE (LIQUID FILLED W/ ISOLATION VALVE)	TW	TEMPERED WATER (TW)
TS	TEMPERATURE SENSOR (DUCT OR PIPING)	MPG	MEDIUM PRESSURE NATURAL GAS
FS	FLOW SWITCH	G	LOW PRESSURE NATURAL GAS
	STAINLESS STEEL BRAIDED FLEX CONNECTION	F	FIRE SPRINKLER LINE
	ELASTOMETRIC FLEX CONNECTOR	GWS	GEOTHERMAL WATER SUPPLY
	SUCTION DIFFUSER	GWR	GEOTHERMAL WATER RETURN
	Y TYPE STRAINER (1-1/2" OR LARGER PROVIDED W/ BLOW DOWN VALVE)	CWS	CHILLED WATER SUPPLY
	FLOW DIRECTION	CWR	CHILLED WATER RETURN
	DEMOLITION / EQUIPMENT TO BE REMOVED	CS	CONDENSER WATER SUPPLY
	NEW TO EXISTING CONNECTION POINT	CR	CONDENSER WATER RETURN
(E)	EXISTING	HWS	HEATING WATER SUPPLY
(F)	FUTURE	HWR	HEATING WATER RETURN
(N)	NEW	L	LIQUID REFRIGERANT LINE
	REDUCED PRESSURE BACKFLOW PREVENTER	S	SUCTION REFRIGERANT LINE
	DOUBLE CHECK BACKFLOW PREVENTER		SLOPE PIPE IN DIRECTION OF ARROW
	UNION		PIPE ANCHOR
	AIR VENT		PIPE GUIDE
	TRIPLE DUTY VALVE		CAP
NOTE:	THIS IS A LIST OF COMMONLY USED MECHANICAL AND PLUMBING SYMBOLS. SOME OF THE SYMBOLS SHOWN ABOVE MAY NOT BE USED IN THIS DRAWING PACKAGE.		

ENERGY CODE COMPLIANCE

A. COMPLIANCE WITH THE LATEST ADOPTED EDITION OF THE INTERNATIONAL ENERGY CONSERVATION CODE IS REQUIRED FOR THIS PROJECT. THESE NOTES COVER MANDATORY REQUIREMENTS OF THE CODE. ADDITIONAL REQUIREMENTS ARE NOTED ON THE DRAWINGS AND IN THE SPECIFICATIONS.

B. MINIMUM REQUIREMENTS FOR SUPPLY AND RETURN DUCTWORK INSULATION:

1. R-6: DUCTS LOCATED IN UNCONDITIONED SPACES (SPACE NEITHER HEATED NOR COOLED SUCH AS ABOVE CEILING SPACES, WALL SPACES, DUCT CHASES, SOFFITS, ATTICS, CRAWL SPACES, UNHEATED BASEMENTS, AND UNHEATED GARAGES).
2. R-12: DUCTS LOCATED OUTSIDE OF THE BUILDING'S INSULATION ENVELOPE (SUCH AS ABOVE THE ATTIC INSULATION).

TYPICAL INSULATION THICKNESS REQUIRED TO MEET THESE REQUIREMENTS:

1. FIBERGLASS DUCT WRAP: R-6, R-12.
2. FIBERGLASS DUCT LINER: R-6, R-12.

C. CONTRACTOR SHALL VERIFY THE R-VALUES OF THE ACTUAL INSULATION USED WITH THE MANUFACTURER. R-VALUES SHALL BE INSTALLED VALUES.

D. WHERE DUCTS USED FOR COOLING ARE EXTERNALLY INSULATED, THE INSULATION SHALL BE COVERED WITH A VAPOR RETARDER HAVING A MAXIMUM PERMEANCE OF 0.05 PERM OR ALUMINUM FOIL HAVING A MINIMUM THICKNESS OF 2 MILS. INSULATION HAVING A PERMEANCE OF 0.05 PERMS OR LESS SHALL NOT BE REQUIRED TO BE COVERED. ALL JOINTS AND SEAMS SHALL BE SEALED TO MAINTAIN THE CONTINUITY OF THE VAPOR RETARDER.

E. ALL DUCT JOINTS, SEAMS, AND CONNECTIONS SHALL BE FASTENED AND SEALED WITH WELDS, GASKETS, ADHESIVES, MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, OR TAPES. TAPES AND MASTICS SHALL BE LISTED AND LABELED PER UL181A OR UL181B. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS. DUCT CONNECTIONS TO FLANGES OR EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED.

F. MINIMUM REQUIREMENTS (THICKNESS) FOR PIPING INSULATION SHALL BE AS FOLLOWS:

FLUID	NOMINAL PIPE DIAMETER 1/2" TO < 1-1/2"	1-1/2" TO < 4"	4" AND ABOVE
1. REFRIGERANT		SEE SPECIFICATIONS	

THE ABOVE INSULATION IS BASED ON HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU-INCH/HOUR-FT2-°F.

G. DOMESTIC HOT WATER PIPING SYSTEMS SHALL BE INSULATED WITH 1" INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU-INCH/HOUR-FT2-°F.

H. DOMESTIC WATER HEATERS WHICH ARE NOT PROVIDED WITH INTEGRAL HEAT TRAPS AND SERVE NONCIRCULATING SYSTEMS SHALL BE PROVIDED WITH HEAT TRAPS ON THE SUPPLY AND DISCHARGE PIPING AT THE WATER HEATER.

I. DOMESTIC HOT WATER SYSTEMS WITH RECIRCULATION PUMPS OR ELECTRIC HEAT TRACE SHALL BE CONTROLLED WITH 7-DAY TIME CLOCKS.

J. AN OPERATING AND MAINTENANCE MANUAL SHALL BE PROVIDED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY. THE O&M MANUAL SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM:

1. EQUIPMENT CAPACITY (INPUT & OUTPUT).
2. EQUIPMENT OPERATING AND MAINTENANCE INSTRUCTIONS.
3. CONTROL SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCES.
4. CONTROL SYSTEM SETPOINTS SHALL BE SHOWN ON CONTROL DRAWINGS, AT CONTROL DEVICES, OR IN PROGRAMMING COMMENT ON DDC SYSTEMS.
5. A COMPLETE WRITTEN NARRATIVE ON HOW EACH MECHANICAL SYSTEM IS INTENDED TO OPERATE.

COM*check* Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: 24052 Moscow City Shop
Location: Moscow, Idaho
Climate Zone: 5b
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)
Credits: 1.0 Required 0.0 Proposed

Mechanical Systems List

Quantity	System Type & Description
1	HVAC System 3 Ton Furnace (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 66 kBtu/h Proposed Efficiency = 90.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE Cooling: 1 each - Split System, Capacity = 33 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 15.50 SEER, Required Efficiency = 13.00 SEER Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00 Fan System: FAN SYSTEM 1 | Breakroom 140 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 1 Supply, Constant Volume, 1200 CFM, 0.5 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
2	HVAC System 3.5 Ton Furnace (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 88 kBtu/h Proposed Efficiency = 90.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE Cooling: 1 each - Split System, Capacity = 37 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 16.00 SEER, Required Efficiency = 13.00 SEER Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00 Fan System: FAN SYSTEM 2 | Reception 122, Reception 100 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 2 Supply, Constant Volume, 1600 CFM, 0.8 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
1	HVAC System 5 Ton Furnace (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 88 kBtu/h Proposed Efficiency = 90.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE Cooling: 1 each - Split System, Capacity = 53 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 14.50 SEER, Required Efficiency = 13.00 SEER Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00 Fan System: FAN SYSTEM 3 | Training 101 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 3 Supply, Constant Volume, 2000 CFM, 0.5 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
1	HVAC System (Single Zone): Heating: 1 each - Other, Electric, Capacity = 13 kBtu/h No minimum efficiency requirement applies Fan System: FAN SYSTEM 4 | Fire Riser 147 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans:

Quantity	System Type & Description
	FAN 4 Supply, Constant Volume, 245 CFM, 0.1 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
5	HVAC System (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Gas, Capacity = 110 kBtu/h Proposed Efficiency = 80.00% Ec, Required Efficiency: 80.00 % Ec Fan System: FAN SYSTEM 5 | Finish Shop 144, Mech. Shop 142, Overflow Bay 141, Wash Bay 121, Storage Bay 120. -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 5 Supply, Constant Volume, 1800 CFM, 0.2 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
3	HVAC System (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Gas, Capacity = 130 kBtu/h Proposed Efficiency = 80.00% Ec, Required Efficiency: 80.00 % Ec Fan System: FAN SYSTEM 6 | Welding 143, FAB Shop 118-119 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 6 Supply, Constant Volume, 2260 CFM, 0.3 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
4	HVAC System (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Gas, Capacity = 175 kBtu/h Proposed Efficiency = 80.00% Ec, Required Efficiency: 80.00 % Ec Fan System: FAN SYSTEM 7 | Service Bay 117/116/115 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 7 Supply, Constant Volume, 2460 CFM, 0.3 motor nameplate hp, 80.0 fan efficiency grade, 80.0 total fan efficiency, 80.0 design fan efficiency
2	Water Heater: Electric Storage Water Heater, Capacity: 50 gallons w/ Circulation Pump No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Jake David (Name - Title) — [Signature] — 07/15/24 (Date)

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7/22/2024
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TODD NELSON

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CITY OF MOSCOW

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MRK	DATE	DESCRIPTION

JOB N0.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **JD**
CHECKED BY: **TN**

PHASE: **PERMIT SET**

MECHANICAL COVER SHEET

SHEET NO.
M0.00

MUSGROVE ENGINEERING, PA

234 S. WHISPERWOOD WAY BOISE, IDAHO 83709

Zone Summary

PROJECT:	*Moscow City Shop*	Design Conditions	Winter	0	Summer	92.4
COMPUTED BY:	*JD*	DATE: 12-Jul-24	CHK BY: TN			

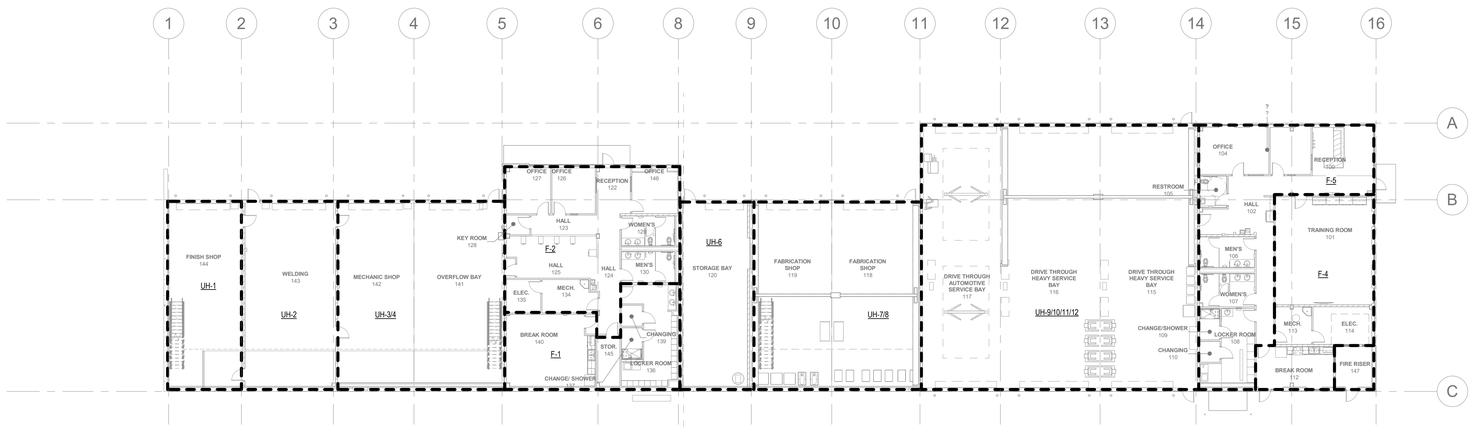
	Zone Reference	FLOOR SQ. FT.	Heating Load BTUH	Heating Load kW	Sensible Cooling Load BTUH	Total Cooling Load BTUH	NOMINAL TON (12000-BTUH/TON)	SQ. FT PER NOMINAL TON	NUMBER OF PEOPLE	OSA	EXHAUST	Unit Selection Size TONS
1	FINISH SHOP 144	890	95,473	28.0	25,967	25,967	2.2	411.3	0	750	668	
2	WELDING 143	1180	124,434	36.4	34,287	34,287	2.9	413.0	0	1150	885	
3	MECHANIC SHOP/OVERFLOW 142/1	2085	192,959	56.5	52,962	52,962	4.4	472.4	0	1620	1564	
4	OFFICE 127	140	9,441	2.8	6,902	7,183	0.6	233.9	1	17	0	
5	OFFICE 126	140	5,595	1.6	5,798	6,079	0.5	276.4	1	17	0	
6	RECEPTION/HALL 122/125	655	13,263	3.9	13,275	14,397	1.2	545.9	4	74	0	
7	OFFICE 146	150	8,798	2.6	6,487	6,768	0.6	266.0	1	18	0	
8	RESTROOMS 129/130	235	1,747	0.5	1,403	1,403	0.1	2009.7	0	0	#VALUE!	
9	MECH/ELEC 134/135	185	1,376	0.4	1,105	1,105	0.1	2009.7	0	0	#VALUE!	
10	BREAKROOM 140	630	29,463	8.6	22,034	32,132	2.7	235.3	36	272	0	
11	LOCKERROOM 138	445	6,516	1.9	4,234	4,234	0.4	1261.2	0	0	111	
12	WASH BAY 121	920	98,480	28.8	27,391	27,391	2.3	403.1	0	900	690	
13	STORAGE BAY 120	900	82,163	24.1	22,677	22,677	1.9	476.3	0	675	675	
14	FABRICATION 119/118	2095	228,368	66.9	63,674	63,674	5.3	394.8	0	2150	1571	
15	SERVICE BAYS 117/116/115	4890	565,941	165.8	145,645	145,645	12.1	402.9	0	4900	3668	
16	OFFICE 104	160	5,449	1.6	5,726	6,007	0.5	319.6	1	18	0	
17	OFFICE 103	160	5,449	1.6	5,726	6,007	0.5	319.6	1	18	0	
18	RECEPTION/ HALL 100/102	870	29,810	8.7	25,955	28,479	2.4	366.6	9	122	0	
19	TRAINING ROOM 101	680	47,266	13.8	33,859	42,835	3.6	190.5	32	502	0	
20	RESTROOMS 106/107	235	2,152	0.6	1,403	1,403	0.1	2009.7	0	0	#VALUE!	
21	LOCKERROOM 108	280	4,244	1.2	2,782	2,782	0.2	1207.9	0	0	70	
22	MECH/ELEC 113/114	185	2,513	0.7	1,434	1,434	0.1	1548.2	0	0	46	
23	BREAKROOM 112	255	11,069	3.2	7,230	9,474	0.8	323.0	8	69	0	
	Total Loads =	18365	1,571,968	460.4	517,957	544,324	45.4	404.9	94	13272	#VALUE!	

Energy Compliance Calculations *(Not Equipment Schedule)*

Equipment is selected based on next available size

Load calculations based on ASHRAE CLTD/CLF - Cooling Load Temperature Difference/Cooling Load Factor Methods

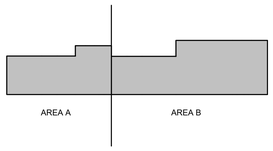
1



E1 HVAC ZONE PLAN

1/16" = 1'-0"

KEY PLAN



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HVAC ZONE PLAN

SHEET NO.

M0.01

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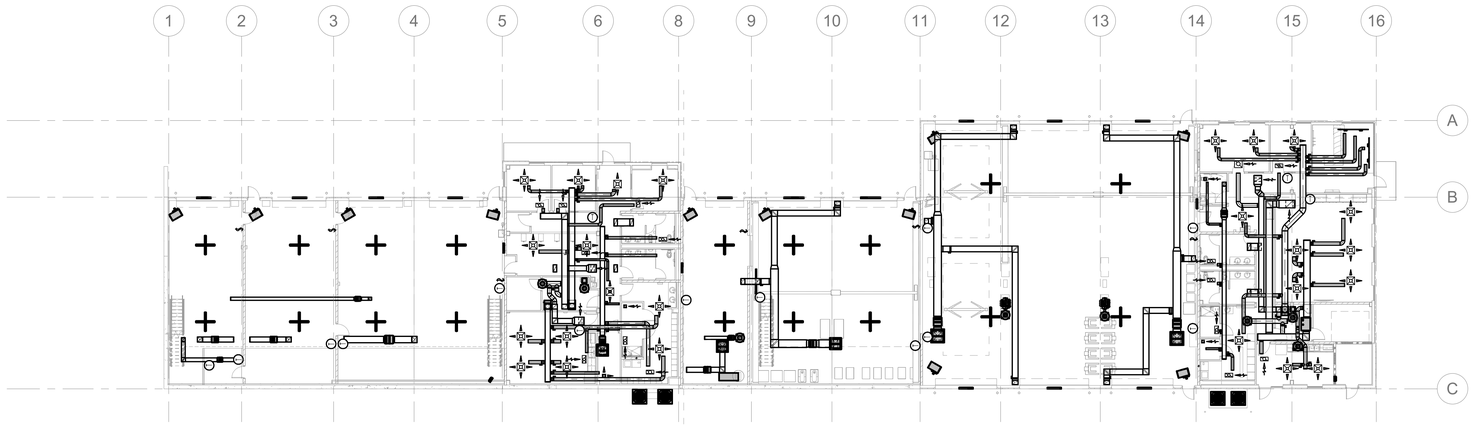
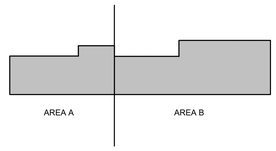


E1 HVAC OVERALL PLAN
1/16" = 1'-0"

N

KEY PLAN



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HVAC OVERALL PLAN

SHEET NO.
M1.10

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GENERAL NOTES:

A. ALL EQUIPMENT LOCATIONS IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

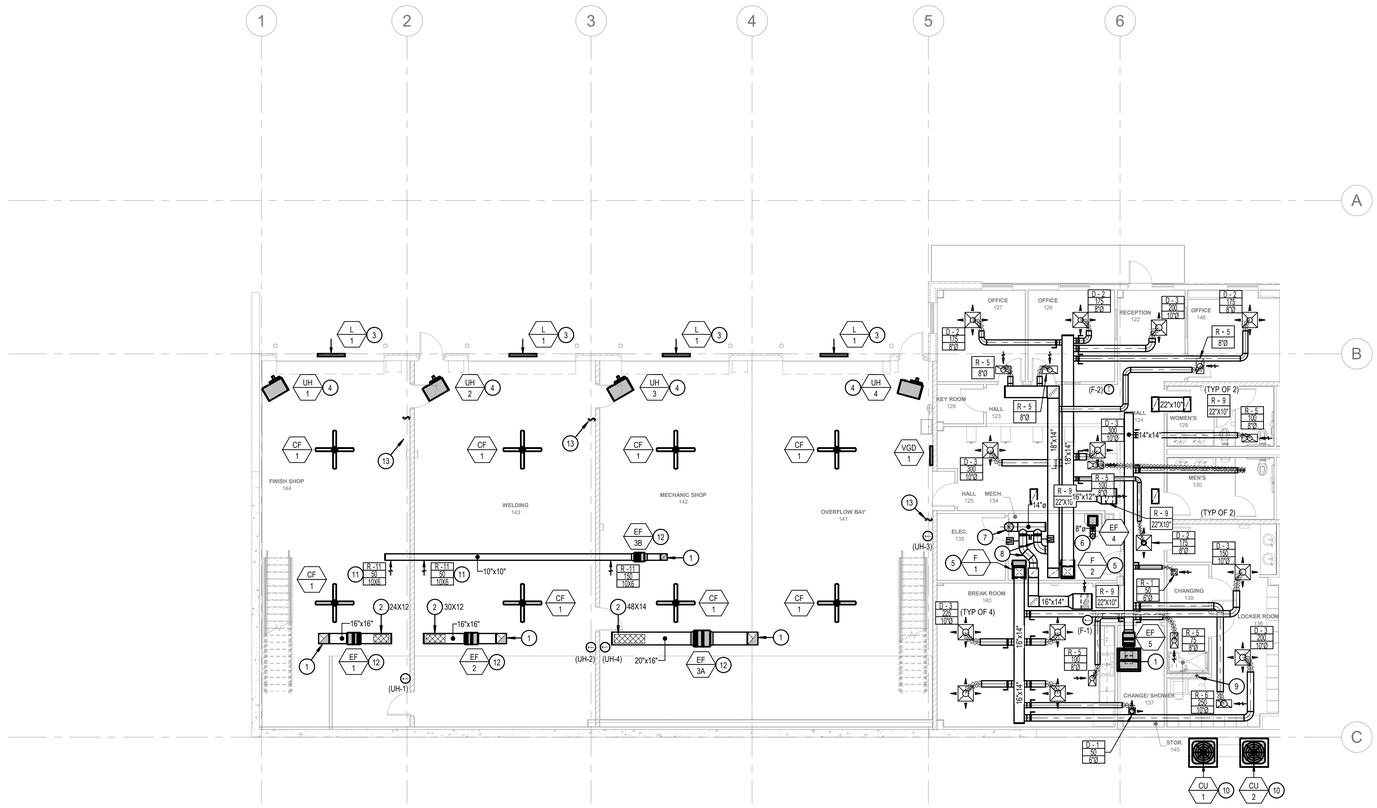
B. ALL EXHAUST DUCTWORK INSTALLED IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

C. EXHAUST DUCTWORK IN MAINTANCE BAYS SHALL BE INSTALLED ABOVE CRANE. COORDINATE FINAL CRANE HEIGHT IN FIELD.

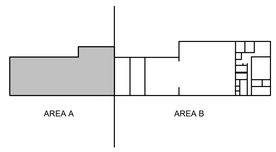
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. ROUTE DUCT UP THROUGH ROOF TO PENTHOUSE ON ROOF.
2. CUT OPENING ON BOTTOM OF DUCT. COVER OPENING WITH EXPANDED METAL MESH. OPENING SHALL BE SIZED AS INDICATED ON PLAN.
3. LOUVER TO BE INSTALLED ABOVE GARAGE DOOR.
4. BOTTOM OF UNIT HEATER TO BE INSTALLED NO LOWER THEN GARAGE DOOR HEIGHT. ROUTE COMBUSTION AIR AND FLUE UP THROUGH ROOF. SEE DETAIL FOR REQUIREMENTS.
5. SEE FURNACE DETAIL FOR REQUIREMENTS. ROUTE COMBUSTION AIR AND FLUE UP THROUGH ROOF. SEE DETAIL FOR REQUIREMENTS.
6. ROUTE EXHAUST DUCT UP THROUGH ROOF. TERMINATE WITH MANUFACTURERS ROOF CAP.
7. ROUTE OSA SUPPLY DUCT UP TO PENTHOUSE. TRANSTION TO PENTHOUSE AS REQUIRED.
8. CONNECT 12"Ø OSA DUCT TO RETURN SIDE OF FURNACE. SEE FURNACE DETAIL FOR ADDITIONAL REQUIREMENTS.
9. ROUTE 4"Ø DRYER DUCT UP THROUGH ROOF. SEE DRYER DUCT DETAIL FOR TERMINATION REQUIREMENTS.
10. PROVIDE 6-INCH THICK CONCRETE HOUSEKEEPING PAD. CONCRETE PAD SHALL EXTEND AT LEAST 6-INCHES BEYOND THE EQUIPMENT ON ALL SIDES. REINFORCE CONCRETE PAD WITH WIRE MESH HELD MIDWAY.
11. MOUNT GRILLE TO BOTTOM OF DUCT.
12. EXHAUST FANS SHALL BE MOUNTED NO LOWER THEN HEIGHT OF GARAGE DOOR.
13. CEILING FAN CONTROLLER. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.



KEY PLAN



E2 HVAC PLAN - AREA A
1/8" = 1'-0"

N

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JOB NO.: **24000.01**
DATE: **07/24/2024**
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CHECKED BY: **TN**

PHASE: **PERMIT SET**

HVAC PLAN - AREA A

SHEET NO.
M1.11

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GENERAL NOTES:

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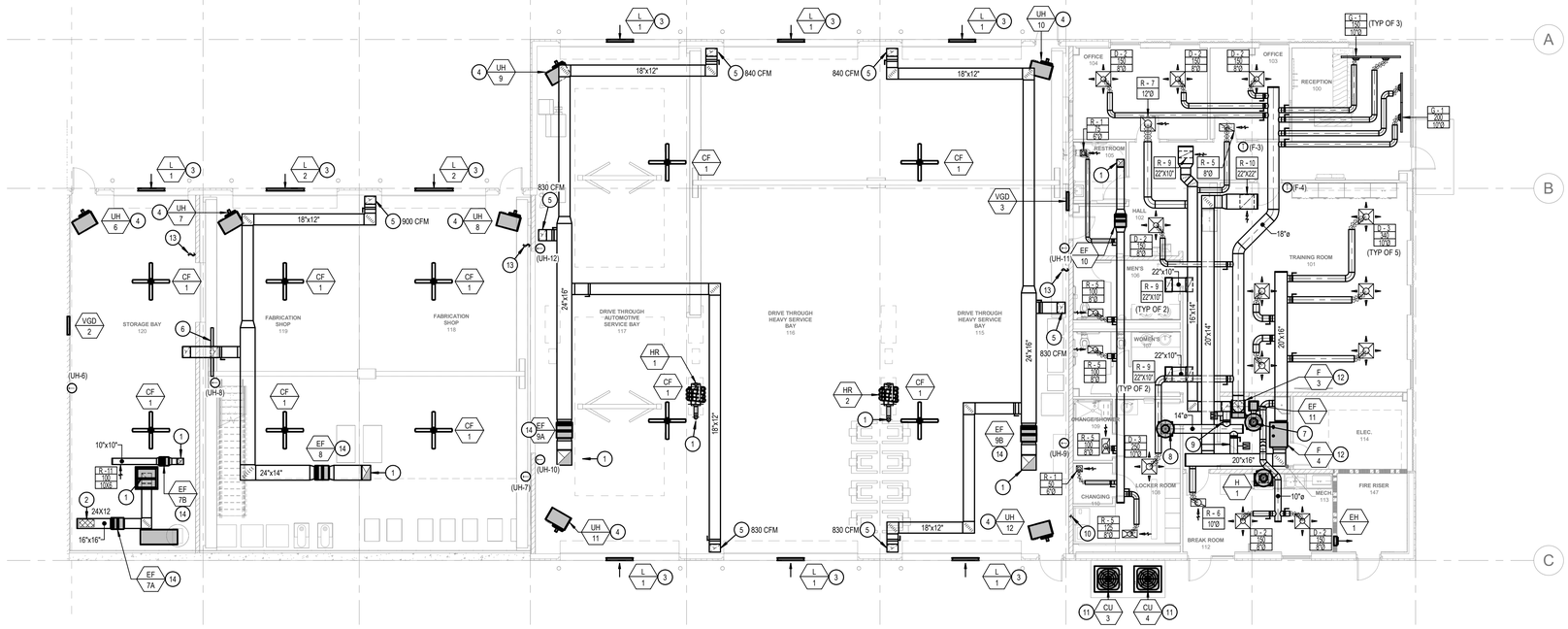
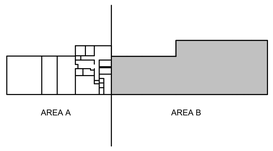
(#) SYMBOL USED FOR CALLOUT

1. ROUTE DUCT UP THROUGH ROOF TO PENTHOUSE ON ROOF.
2. CUT OPENING ON BOTTOM OF DUCT. COVER OPENING WITH EXPANDED METAL MESH. OPENING SHALL BE SIZED AS INDICATED ON PLAN.
3. LOUVER TO BE INSTALLED ABOVE GARAGE DOOR.
4. <varies>
5. ROUTE 18X12 EXHAUST DOWN AND TERMINATE 6" ABOVE FINISHED FLOOR. INSTALL EXPANDED METAL MESH ON BOTTOM OF DUCT. BALANCE DUCT TO CFM INDICATED.
6. SEE FABRICATION DUCT DETAIL FOR REQUIREMENTS.
7. ROUTE EXHAUST DUCT UP THROUGH ROOF. TERMINATE WITH MANUFACTURERS ROOF CAP.
8. ROUTE OSA SUPPLY DUCT UP TO PENTHOUSE. TRANSTION TO PENTHOUSE AS REQUIRED.
9. CONNECT 12"Ø OSA DUCT TO RETURN SIDE OF FURNACE. SEE FURNACE DETAIL FOR ADDITIONAL REQUIREMENTS.
10. ROUTE 4"Ø DRYER DUCT UP THROUGH ROOF. SEE DRYER DUCT DETAIL FOR TERMINATION REQUIREMENTS.
11. PROVIDE 6-INCH THICK CONCRETE HOUSEKEEPING PAD. CONCRETE PAD SHALL EXTEND AT LEAST 6-INCHES BEYOND THE EQUIPMENT ON ALL SIDES. REINFORCE CONCRETE PAD WITH WIRE MESH HELD MIDWAY.
12. SEE FURNACE DETAIL FOR REQUIREMENTS. ROUTE COMBUSTION AIR AND FLUE UP THROUGH ROOF. SEE DETAIL FOR REQUIREMENTS.
13. CEILING FAN CONTROLLER. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.
14. EXHAUST FANS SHALL BE MOUNTED NO LOWER THEN HEIGHT OF GARAGE DOOR.



KEY PLAN



E1 HVAC PLAN - AREA B
1/8" = 1'-0"

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ELECTRICAL ENGINEER
CATOR RUMA
420 S. ORCHARD ST.
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(208) 343-3663

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HVAC PLAN - AREA B

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M1.12

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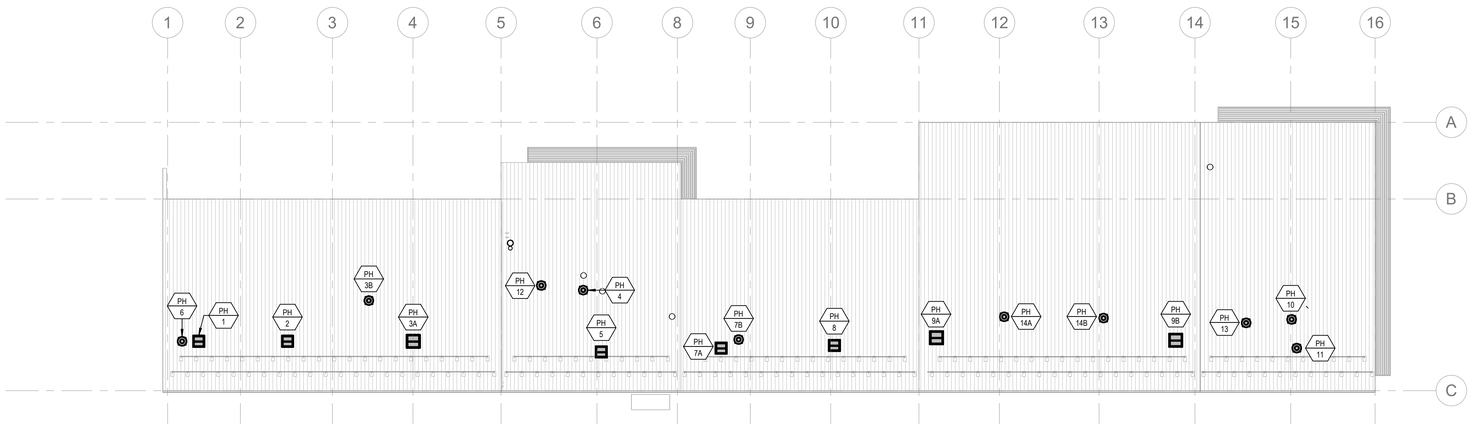
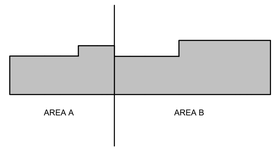


E1 HVAC OVERALL ROOF PLAN
1/16" = 1'-0"

N

KEY PLAN



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HVAC ROOF PLAN

SHEET NO.
M1.13

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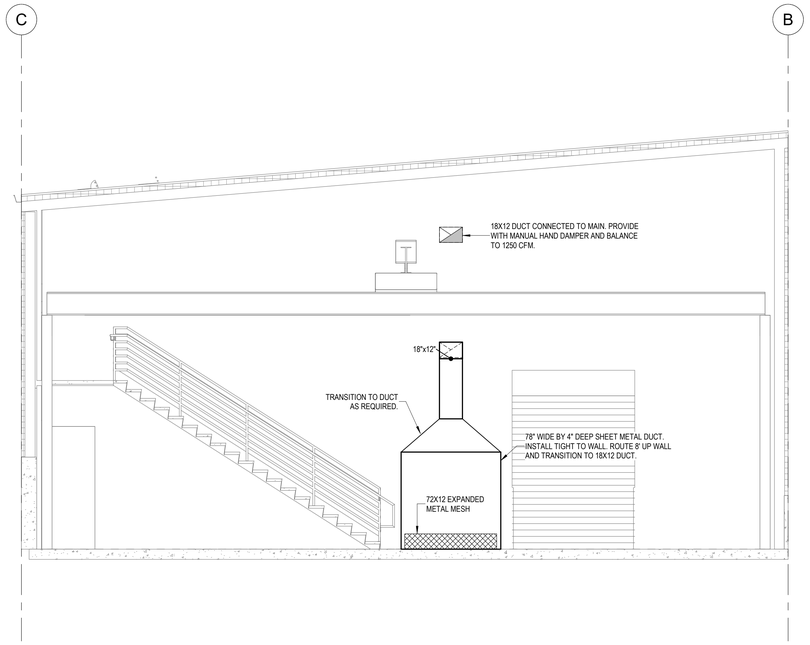
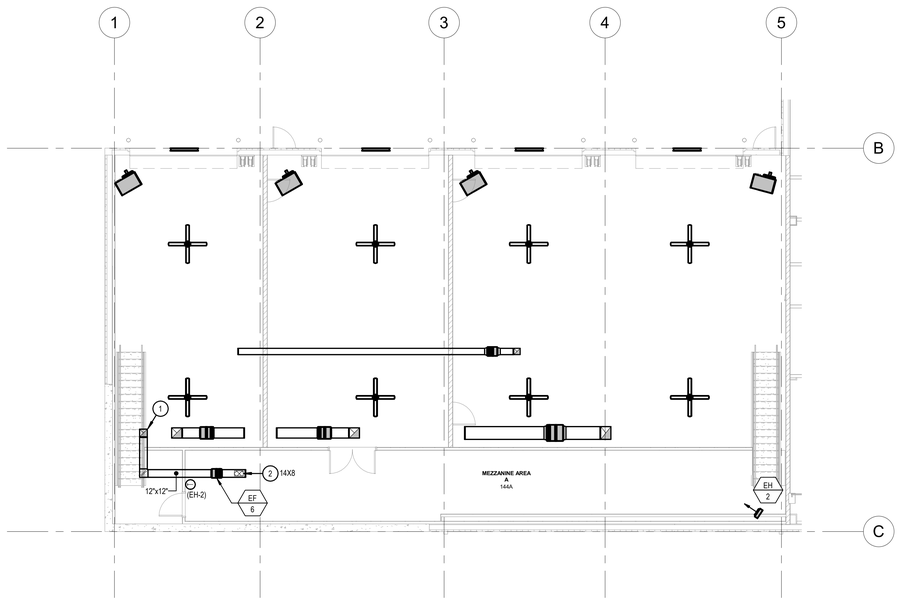


C1 FABRICATION DUCT SECTION
1/4" = 1'-0"



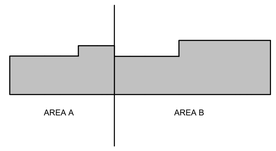
E1 HVAC PLAN - MEZZANINE AREA A
1/8" = 1'-0"

KEYED NOTES:

8 SYMBOL USED FOR CALLOUT

1. ROUTE DUCT UP THROUGH ROOF TO PENTHOUSE ON ROOF.
2. CUT OPENING ON BOTTOM OF DUCT. COVER OPENING WITH EXPANDED METAL MESH. OPENING SHALL BE SIZED AS INDICATED ON PLAN.

KEY PLAN



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HVAC ENLARGED PLANS & SECTIONS.

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M1.14

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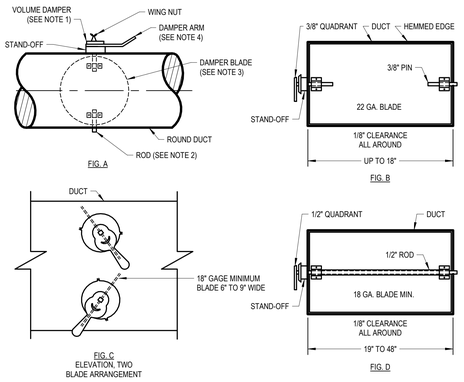
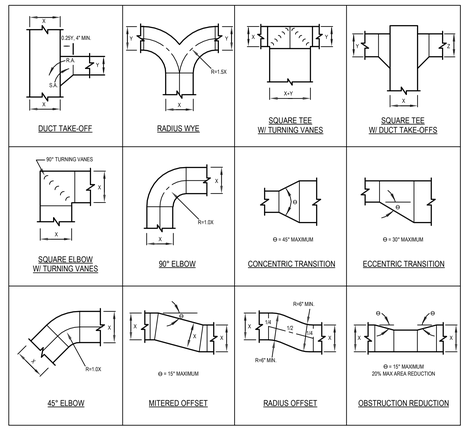
NOTES:
1. FOR TAKE-OFFS LARGER THAN 12" DIAMETER, USE A FACTORY MANUFACTURED DAMPER. LOUVERS & DAMPERS, INC. MODEL CD-600 WITH A LOCKING HAND QUADRANT OR EQUAL.
2. ROD CONTINUOUS ON 2" W.G. CLASS AND ON ALL DAMPERS OVER 12" DIAMETER.
3. BLADE 22 GAGE MIN., BUT NOT LESS THAN TWO GAGES MORE THAN THE DUCT GAGE.
4. PROVIDE REMOTE CEILING OPERATOR WHERE DAMPER IS INACCESSIBLE.
5. FOR DUCTS OVER 12" HIGH USE MULTIPLE BLADE DAMPERS (SEE FIG. C).
6. ALTERNATE MANUFACTURERS INCLUDE: AMERICAN WARMING, SAFE-AIR/DOWCO, J&J, LOUVERS & DAMPERS, RUSKIN, NAILOR, ARROW UNITED, POTTORFF, & CESCO.
7. PROVIDE STAND-OFF FOR DAMPER ARMS LOCATED W/EXTERNAL INSULATION.

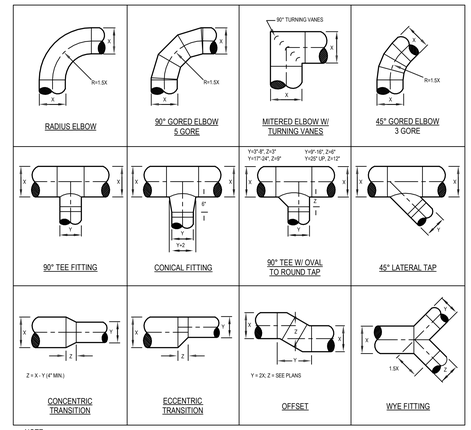


C1 BALANCE DAMPER DETAIL
NOT TO SCALE



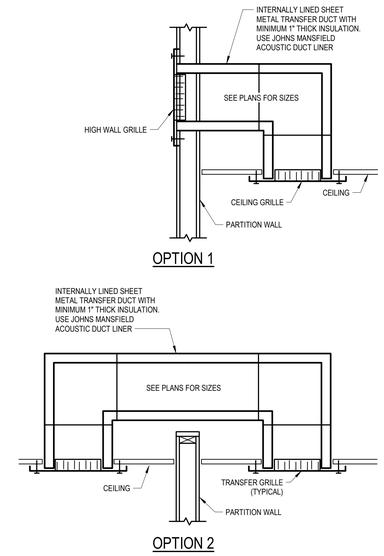
NOTE:
1. ALL DUCTWORK TRANSITIONS SHALL BE CONSTRUCTED AND INSTALLED TO SMACNA, SPECIFICATIONS AND THE ABOVE NOTED STANDARDS. ANY DEVIATIONS SHALL BE COORDINATED WITH THE ENGINEER.

C2 RECTANGULAR DUCT FITTING DETAILS
NOT TO SCALE

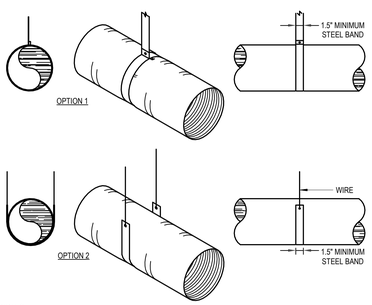


NOTE:
1. ALL DUCTWORK TRANSITIONS SHALL BE CONSTRUCTED AND INSTALLED TO SMACNA, SPECIFICATIONS, AND THE ABOVE NOTED STANDARDS. ANY DEVIATIONS SHALL BE COORDINATED WITH THE ENGINEER.

C4 ROUND DUCT FITTING DETAILS
NOT TO SCALE

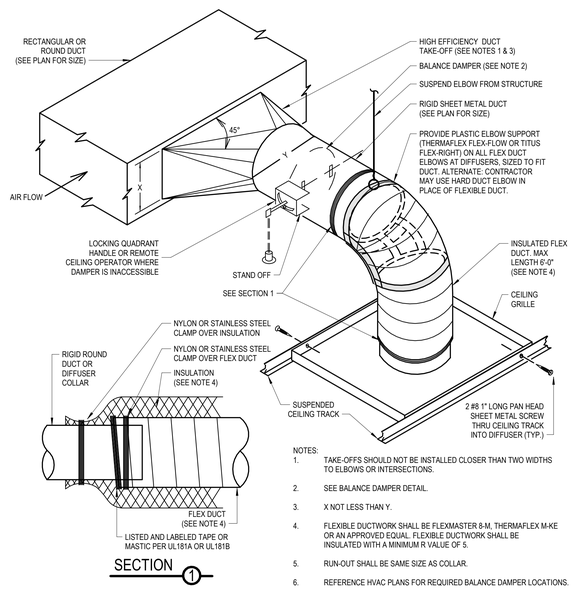


C6 TRANSFER DUCT DETAIL
NOT TO SCALE



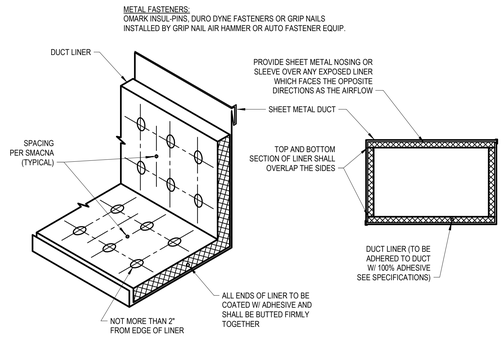
NOTES:
1. SUPPORT SYSTEM SHALL NOT DAMAGE, CRIMP, OR INHIBIT DUCT FREE AREA IN ANY WAY.
2. FLEXIBLE DUCT MUST NOT EXCEED 6'-0" FROM CONNECTION TO TERMINATION.
3. MAXIMUM LENGTH BETWEEN SUPPORTS MUST NOT EXCEED 3'-0" ON CENTER.
4. ATTACH BANDS OR WIRES TO SUPPORT STRUCTURE ABOVE.
5. FLEXIBLE DUCTWORK SHALL BE FLEXMASTER 1-M OR APPROVED EQUAL.
6. FLEXIBLE DUCTWORK SHALL BE INSULATED WITH A MINIMUM R-VALUE OF 6.0.
7. FLEXIBLE DUCTWORK IS FOR INDOOR USE ONLY. DO NOT INSTALL OR STORE PRODUCT WHERE EXPOSURE TO DIRECT SUNLIGHT CAN OCCUR. PROLONGED EXPOSURE TO SUNLIGHT MAY CAUSE DETERIORATION OF VAPOR BARRIER.
8. TERMINAL DEVICES SHALL BE SUPPORTED INDEPENDENTLY OF THE FLEXIBLE DUCTWORK.
9. REPAIR TURN OR DAMAGED VAPOR BARRIER/JACKET WITH DUCT TAPE LISTED AND LABELED TO UL 181B. IF INTERNAL CORE IS PENETRATED, REPLACE FLEXIBLE DUCTWORK.
10. AVOID BENDING DUCT ACROSS SHARP CORNERS OR INCIDENTAL CONTACT WITH METAL FIXTURES, PIPES, OR CONDUITS.
11. FLEXIBLE DUCTWORK SHALL NOT BE INSTALLED WITHIN 4 INCHES OF HOT EQUIPMENT (FURNACES, BOILERS, STEAM PIPES, ETC.) THAT IS ABOVE 250°F.
12. FLEXIBLE DUCTWORK SHALL NOT BE INSTALLED IN CONCRETE, BURIED BELOW GRADE, OR IN CONTACT WITH THE GROUND.
13. DO NOT INSTALL FLEXIBLE DUCTWORK IN EXPOSED CEILING AREA.

E1 FLEXIBLE DUCT SUPPORT DETAIL
NOT TO SCALE



NOTES:
1. TAKE-OFFS SHOULD NOT BE INSTALLED CLOSER THAN TWO WIDTHS TO ELBOWS OR INTERSECTIONS.
2. SEE BALANCE DAMPER DETAIL.
3. X NOT LESS THAN Y.
4. FLEXIBLE DUCTWORK SHALL BE FLEXMASTER 8-M, THERMAFLEX M-KE OR AN APPROVED EQUAL. FLEXIBLE DUCTWORK SHALL BE INSULATED WITH A MINIMUM R VALUE OF 5.
5. RUN-OUT SHALL BE SAME SIZE AS COLLAR.
6. REFERENCE HVAC PLANS FOR REQUIRED BALANCE DAMPER LOCATIONS.

E2 DUCT TAKEOFF DETAIL - HIGH EFFICIENT
NOT TO SCALE



E5 DUCT LINER DETAIL
NOT TO SCALE

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HVAC DETAILS

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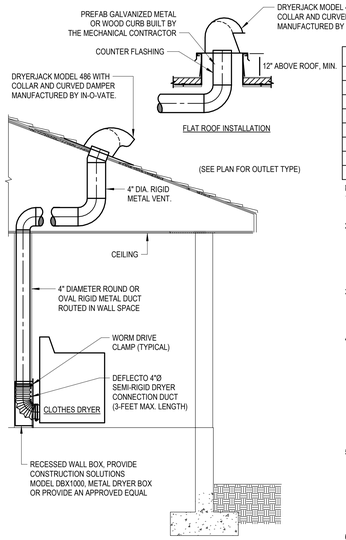


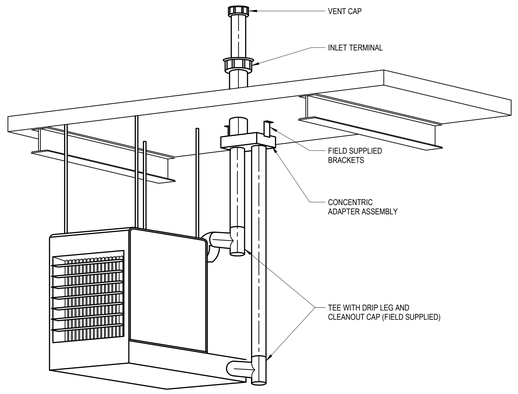
TABLE 504.6.4.1
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH
4" RADIUS MITERED 45-DEGREE ELBOW	2 FEET 6 INCHES
4" RADIUS MITERED 90-DEGREE ELBOW	5 FEET
6" RADIUS SMOOTH 45-DEGREE ELBOW	1 FEET
6" RADIUS SMOOTH 90-DEGREE ELBOW	1 FEET 9 INCHES
8" RADIUS SMOOTH 45-DEGREE ELBOW	1 FEET
8" RADIUS SMOOTH 90-DEGREE ELBOW	1 FEET 7 INCHES
10" RADIUS SMOOTH 45-DEGREE ELBOW	9 INCHES
10" RADIUS SMOOTH 90-DEGREE ELBOW	1 FEET 6 INCHES

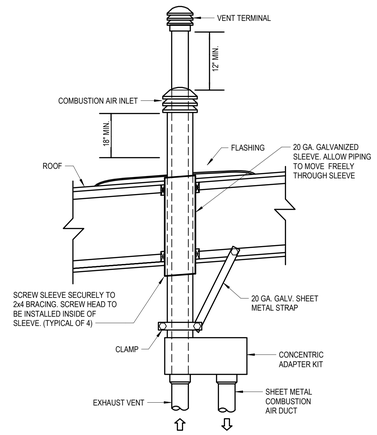
NOTES:

1. EACH VERTICAL RISER SHALL BE PROVIDED WITH A MEANS FOR CLEANOUT.
2. THE SPECIFIED MAXIMUM LENGTH OF THE EXHAUST DUCT SHALL BE 35 FEET FROM THE CONNECTION TO THE TRANSITION DUCT FROM THE DRYER TO THE OUTLET TERMINAL. WHERE FITTINGS ARE USED, THE MAXIMUM LENGTH OF EXHAUST DUCT SHALL BE REDUCED IN ACCORDANCE WITH TABLE 504.6.4.1.
3. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND SHALL BE CONSTRUCTED OF METAL A MINIMUM 0.016 INCH (0.4 MM) THICK. THE EXHAUST DUCT SIZE SHALL BE 4-INCHES IN DIAMETER.
4. DRYER EXHAUST DUCTS FOR CLOTHES DRYERS SHALL TERMINATE ON THE OUTSIDE OF THE BUILDING AND SHALL BE EQUIPPED WITH A BACKDRAFT DAMPER. SCREENS SHALL NOT BE INSTALLED AT THE DUCT TERMINATION. DUCTS SHALL NOT BE CONNECTED OR INSTALLED WITH SHEET METAL SCREWS OR OTHER FASTENERS THAT WILL OBSTRUCT THE EXHAUST FLOW. CLOTHES DRYER EXHAUST DUCTS SHALL NOT BE CONNECTED TO A VENT CONNECTOR, VENT OR CHIMNEY. CLOTHES DRYER EXHAUST DUCTS SHALL NOT EXTEND INTO OR THROUGH DUCTS OR PLENUMS.
5. INSTALL DRYER VENT TERMINATION PER THE MANUFACTURER'S RECOMMENDATIONS. THE EXHAUST DUCT LENGTH CAN EXCEED THE 35-FEET SPECIFIED LENGTH IF APPROVED BY THE DRYER MANUFACTURER. WHERE THE EXHAUST DUCT EQUIVALENT LENGTH EXCEEDS 35 FEET, THE EQUIVALENT LENGTH OF THE EXHAUST DUCT SHALL BE IDENTIFIED ON A PERMANENT LABEL OR TAG.
6. DRYER DUCTS LOCATED IN UNHEATED SPACES, SUCH AS ATTICS, CRAWL SPACES, UNHEATED BASEMENTS, AND UNHEATED GARAGES OR IN AREAS ABOVE UNHEATED OR EXTERIOR CONDITIONS, SHALL BE INSULATED. SEE SPECIFICATIONS FOR INSULATION R-VALUE REQUIREMENTS.

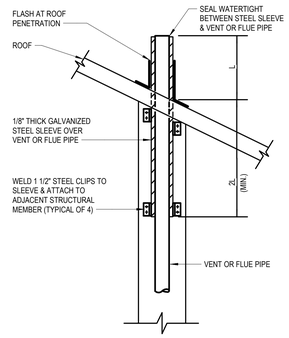
C1 CLOTHES DRYER INSTALLATION DETAIL
NOT TO SCALE



C3 UNIT HEATER CONCENTRIC VENT DETAIL
NOT TO SCALE

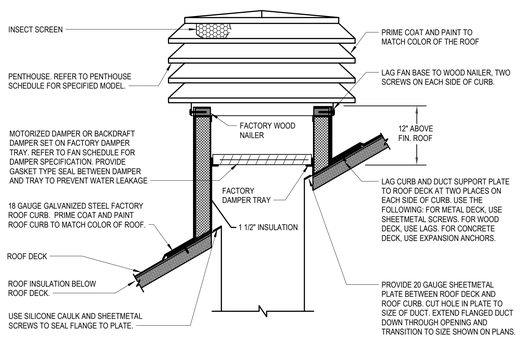


C5 CONCENTRIC VENT DETAIL
NOT TO SCALE

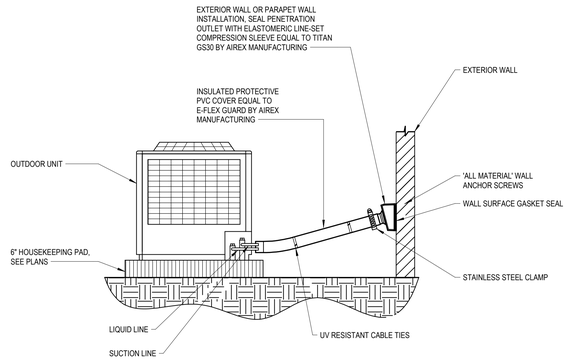


NOTE:
1. LOCATE ALL VENT AND FLUE PIPES AS CLOSE TO THE ROOF RIDGE LINE AS POSSIBLE.

C6 SNOW PROTECTION SLEEVE DETAIL
NOT TO SCALE



E1 PENTHOUSE MOUNTING DETAIL
NOT TO SCALE



E3 REFRIGERANT PIPING DETAIL
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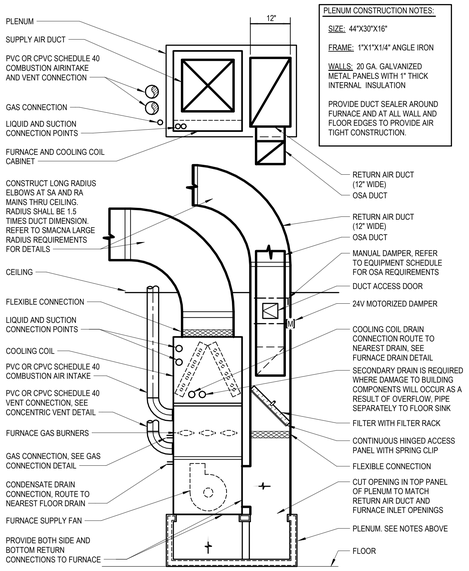


PLENUM CONSTRUCTION NOTES:

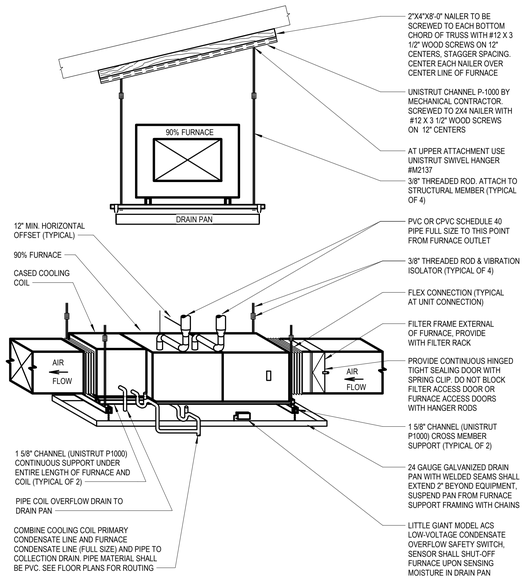
SIZE: 44"X30"X16"

FRAME: 1"X1"X1/4" ANGLE IRON

WALLS: 20 GA. GALVANIZED METAL PANELS WITH 1" THICK INTERNAL INSULATION

PROVIDE DUCT SEALER AROUND FURNACE AND AT ALL WALL AND FLOOR EDGES TO PROVIDE AIR TIGHT CONSTRUCTION.

C1 FURNACE INSTALLATION DETAIL (90%)
NOT TO SCALE



C3 FURNACE INSTALLATION DETAIL (90% - HORIZONTAL)
NOT TO SCALE

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

472 W. Washington St. | Boise, ID 83702
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PROFESSIONAL ENGINEER LICENSED 13789 7/22/2024 STATE OF IDAHO TODD NELSON

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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ELECTRICAL ENGINEER
CATOR RUMA
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MRK	DATE	DESCRIPTION

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	JD
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PHASE: **PERMIT SET**

HVAC DETAILS

SHEET NO.
M2.02

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PENTHOUSE SCHEDULE

SYMBOL	AREA SERVED	TYPE	NUMBER OF TIERS	THROAT SIZE	MINIMUM FREE AREA (ft^2)	FINISH	MANUFACTURER AND MODEL	REMARKS
PH-1	FINISH SHOP 144	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-2	WELDING 143	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-3A	MECHANIC SHOP 142/141	TIERED	2	18X30	3.62	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-3B	PARK	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-4	MECH 134	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-5	RESTROOMS/BREAKROOM 129/130/140	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-6	AREA A MEZZANINE	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-7A	STORAGE BAY 120	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-7B	FLEET	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-8	FAB SHOP 119/118	TIERED	3	24X24	5.42	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-9A	SERVICE BAYS 117/116/115	TIERED	3	24X30	5.92	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-9B	SERVICE BAYS 117/116/115	TIERED	3	24X30	5.92	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-10	MECH 113	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-11	BREAKROOM 112	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-12	F-1/2 OSA	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-13	F-3/4 OSA	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-14A	MAINTENANCE BAY	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-14B	MAINTENANCE BAY	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: UNITED ENERTECH, GREENHECK, CARNES, AIROLITE, LOUVERS & DAMPERS, AIR-RITE MANUFACTURING, RUSKIN, NCA, AND CESCO.
2. COLOR TO BE SELECTED BY ARCHITECT.
3. EXHAUST AND O.S.A. - PROVIDE WITH BIRD SCREEN, BACKDRAFT DAMPER, AND ROOF CURB.

DIFFUSER SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
D-1 CFM 6"Ø	6X6	6"Ø	0 - 90	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-2 CFM 8"Ø	9X9	8"Ø	90 - 200	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-3 CFM 10"Ø	12X12	10"Ø	200 - 350	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-4 CFM 12"Ø	15X15	12"Ø	300 - 500	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-5 CFM 14"Ø	15X15	14"Ø	400 - 650	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-6 CFM 16"Ø	18X18	16"Ø	600 - 900	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-7 CFM 21X21	21X21	21X21	900 - 1400	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

REMARKS:

1. ALTERNATE MANUFACTURERS: ANEMOSTAT, J&J REGISTER, NAILOR, METAL-AIRE, TUTTLE & BAILEY, KRUEGER, PRICE, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL TDC SERIES.
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. ALL DIFFUSERS LOCATED IN LAY-IN CEILING AREAS SHALL BE BORDER TYPE 3 AND BE MOUNTED IN MANUFACTURER PROVIDED 24"x24" PANELS. ALL DIFFUSERS LOCATED IN HARD CEILING AREAS SHALL BE BORDER TYPE 6 (BEVELED) SURFACE MOUNTED. SEE ARCHITECTURAL PLANS FOR LOCATIONS OF VARIOUS CEILING TYPES.
5. SEE HVAC FLOOR PLANS FOR DIRECTIONAL THROW REQUIREMENTS FOR EACH DIFFUSER.
6. ALL OF THE DIFFUSERS SHOWN IN THIS SCHEDULE MAY NOT BE USED. REFERENCE THE HVAC PLAN FOR DIFFUSER CALL-OUTS AND THE QUANTITY OF EACH SIZE REQUIRED.
7. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.
8. COLOR TO BE SELECTED BY ARCHITECT.

SUPPLY GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
S-1 CFM SIZE	48" 3/4" SLOT	8"Ø 10" OVAL	0-250	1 , 2 , 3 , 4

REMARKS:

1. APPROVED MANUFACTURERS: ANEMOSTAT, J&J REGISTER, TUTTLE & BAILEY, NAILOR, METAL-AIRE, KRUEGER, PRICE, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL ML-38 WITH MPI PLENUM AND BORDER TYPE LT. LINEAR DIFFUSER TO HAVE 2 SLOTS WITH A SLOT THICKNESS OF 3/4"
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.

RETURN & EXHAUST GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
R-1 6"Ø	8X8	6"Ø	0-80	1 , 2 , 3 , 4 , 5 , 6 , 7
R-2 8"Ø	10X10	8"Ø	80-180	1 , 2 , 3 , 4 , 5 , 6 , 7
R-3 10"Ø	12X12	10"Ø	180-300	1 , 2 , 3 , 4 , 5 , 6 , 7
R-4 6"Ø	22X10	6"Ø	0-80	1 , 2 , 3 , 4 , 5 , 6 , 7
R-5 8"Ø	22X10	8"Ø	80-180	1 , 2 , 3 , 4 , 5 , 6 , 7
R-6 10"Ø	22X10	10"Ø	180-300	1 , 2 , 3 , 4 , 5 , 6 , 7
R-7 12"Ø	22X22	12"Ø	300-500	1 , 2 , 3 , 4 , 5 , 6 , 7
R-8 14"Ø	22X22	14"Ø	500-750	1 , 2 , 3 , 4 , 5 , 6 , 7
R-9 22X10	22X10	22X10	500-1100	1 , 2 , 3 , 4 , 5 , 6 , 7
R-10 22X22	22X22	22X22	1100-2000	1 , 2 , 3 , 4 , 5 , 6 , 7
R-11 10X6	10X6	10X6	0-225	1 , 3 , 5 , 6 , 7 , 8

REMARKS:

1. ALTERNATE MANUFACTURERS: ANEMOSTAT, CARNES, PRICE, NAILOR, METAL-AIRE, TUTTLE & BAILEY, KRUEGER, J&J REGISTER, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL 50F, ALUMINUM EGGCRATE RETURN GRILLE, 1/2" x 1/2" x 1" SPACING (SINGLE CORE). PROVIDE SQUARE TO ROUND TRANSITION (WHERE ROUND RUN-OUT INDICATED).
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. ALL GRILLES LOCATED IN LAY-IN CEILING AREAS SHALL HAVE BORDER #3, UNLESS OTHERWISE INDICATED. ALL GRILLES LOCATED IN HARD CEILING AREAS SHALL HAVE BORDER #1, UNLESS OTHERWISE INDICATED. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF VARIOUS CEILING TYPES. SHEET METAL DUCTWORK VISIBLE BEHIND GRILLE SHALL BE PAINTED FLAT BLACK.
5. ALL OF THE GRILLES SHOWN IN THIS SCHEDULE MAY NOT BE USED. REFERENCE THE HVAC PLAN FOR GRILLE CALL-OUTS AND THE QUANTITY OF EACH SIZE REQUIRED.
6. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.
7. COLOR TO BE SELECTED BY ARCHITECT.
8. HIGH WALL GRILLE SIZES BASED ON TITUS MODEL 355 RL, STEEL BAR GRILLE, FIXED BLADES, 1/2" SPACING, 35° DEFLECTION, ADJUSTABLE OPPOSED BLADE DAMPER.

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE (95%+ GAS)

SYMBOL	AREA SERVED	NOMINAL TONS	SUPPLY FAN				COOLING CAPACITY AT 95° OSA, 80° EDB, 62° EWB		GAS HEATING CAPACITY		ELECTRICAL FOR CONDENSING UNIT			OSA CFM	MIN. SEER	FURNACE OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
			CFM	ESP	HP	V/Ø	TOTAL MBH	SENSIBLE MBH	INPUT MBH	OUTPUT MBH	MCA	MOCP	V/Ø					
F-1 , CU-1	BREAKROOM 140	3.0	1300	0.5	0.5	120/1	33.4	32.7	66	64	19	30	208/1	340	15.5	190	LENNOX EL296 - FURNACE LENNOX ML14 - CONDENSING UNIT	1 , 2 , 3 , 4
F-2 , CU-2	RECEPTION 122	3.5	1500	0.5	0.75	120/1	37.0	36.0	88	85	19	30	208/1	400	16	225	LENNOX EL296 - FURNACE LENNOX ML14 - CONDENSING UNIT	1 , 2 , 3 , 4
F-3 , CU-3	RECEPTION 100	3.5	1500	0.5	0.75	120/1	37.0	36.0	88	85	19	30	208/1	200	16	225	LENNOX EL296 - FURNACE LENNOX ML14 - CONDENSING UNIT	1 , 2 , 3 , 4
F-4 , CU-4	TRAINING 101	5.0	2000	5.0	0.5	120/1	58.6	57.5	88	85	30	50	208/1	570	14.5	240	LENNOX EL296 - FURNACE LENNOX ML14 - CONDENSING UNIT	1 , 2 , 3 , 5

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: BRYANT, TRANE, LENNOX, DAIKIN AND YORK.
2. PROVIDE UNIT WITH SEVEN-DAY PROGRAMMABLE AUTO-CHANGEOVER WITH 5 DEGREE DEADBAND, ADAPTIVE INTELLIGENT AUTOMATIC START CONTROL, 2 STAGE HEAT, 2 STAGE COOLING THERMOSTAT HONEYWELL VISIONPRO MODEL TH8321R100, THERMOSTAT SHALL BE POWERED BY A 24VAC WIRE CONNECTION.
3. PROVIDE UNIT WITH MATCHING MULTIPOISE COOLING COIL, FIELD INSTALLED HARD START FOR SINGLE PHASE UNITS, SHORT CYCLING DEVICE, CRANKCASE HEATER, EXPANSION VALVE, HIGH/LOW PRESSURE SWITCH, NEUTRALIZING KIT - 3/4" LINE SIZE, LOW AMBIENT CONTROLS (TO 0°F) & CONCENTRIC VENT KIT. SET FAN MOTOR ON FURNACE TO MAINTAIN A CONSTANT SPEED. ELECTRICAL SHALL PROVIDE SEPARATE CIRCUIT AND DISCONNECT FOR CONDENSING UNIT
4. PROVIDE UNIT WITH MANUFACTURER'S LONG LINE SET AND ACCESSORIES 0-175FT, SIZED BY MANUFACTURER AND TAMPER PROOF PORT CAPS.
5. PROVIDE UNIT WITH SEVEN-DAY PROGRAMMABLE AUTO-CHANGEOVER WITH 5 DEGREE DEADBAND, ADAPTIVE INTELLIGENT AUTOMATIC START CONTROL, 2 STAGE HEAT, 2 STAGE COOLING THERMOSTAT HONEYWELL VISIONPRO MODEL TH8321R100, THERMOSTAT SHALL BE POWERED BY A 24VAC WIRE CONNECTION. THERMOSTAT SHALL HAVE INTEGRAL CO2 SENSOR. SEE CONTROL SCHEMATIC FOR ADDITIONAL INFORMATION.

EXHAUST FAN SCHEDULE

SYMBOL	AREA SERVED	UNIT TYPE	BLOWER				ELECTRICAL		MAXIMUM SONES	OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
			CFM	ESP	MAXIMUM RPM	DRIVE	HP/W	V/Ø				
EF-1	FINISH SHOP 144	INLINE	750	0.375	1725	DIRECT ECM	1/6 HP	115/1	8.6	65	COOK MODEL 100-SQND	1 , 3 , 7
EF-2	WELDING 143	INLINE	1150	0.375	1725	DIRECT ECM	1/4 HP	115/1	9.9	75	COOK MODEL 120-SQND	1 , 3 , 7
EF-3A	MECHANIC SHOP 142/141	INLINE	1620	0.375	1725	DIRECT ECM	1/4 HP	115/1	9.3	110	COOK MODEL 150-SQND	1 , 3 , 7
EF-3B	PARK	INLINE	250	0.375	1725	DIRECT ECM	1/6	115/1	6.4	60	COOK MODEL 90-SQND	1 , 3 , 6
EF-4	MECH 134	CEILING CABINET	100	0.375	1075	DIRECT	46.5 W	115/1	2.5	15	COOK MODEL GC-148	1 , 2 , 4
EF-5	RESTROOMS/BREAKROOM 129/130/140	INLINE	675	0.5	2800	DIRECT ECM	1/3 HP	115/1	9.3	70	COOK MODEL 100-SQND	1 , 3 , 5
EF-6	MEZZANINE AREA A	INLINE	300	0.375	1725	DIRECT ECM	1/6 HP	115/1	7.5	60	COOK MODEL 90-SQND	1 , 3 , 4
EF-7A	STORAGE BAY 120	INLINE	675	0.375	1725	DIRECT ECM	1/6 HP	115/1	7.6	65	COOK MODEL 100-SQND	1 , 3 , 7
EF-7B	FLEET	INLINE	200	0.375	1725	DIRECT ECM	1/6	115/1	6.4	60	COOK MODEL 90-SQND	1 , 3 , 6
EF-8	FAB SHOP 119/118	INLINE	2150	0.5	1725	DIRECT ECM	1/2 HP	115/1	13.0	110	COOK MODEL 150-SQND	1 , 3 , 8
EF-9A	SERVICE BAYS 117/116/115	INLINE	2500	0.5	1725	DIRECT ECM	1 1/4 HP	208/3	9.9	210	COOK MODEL 185-SQND	1 , 3 , 8
EF-9B	SERVICE BAYS 117/116/115	INLINE	2500	0.5	1725	DIRECT ECM	1 1/4 HP	208/3	9.9	210	COOK MODEL 185-SQND	1 , 3 , 8
EF-10	RESTROOMS/BREAKROOM 107/108/112	INLINE	550	0.375	1725	DIRECT ECM	1/4 HP	115/1	7.9	60	COOK MODEL 100-SQND	1 , 3 , 5
EF-11	MECH 113	CEILING CABINET	100	0.375	1075	DIRECT	46.5 W	115/1	2.5	15	COOK MODEL GC-148	1 , 2 , 4

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: ACME, GREENHECK, PENNBARRY, TWIN CITY FAN COMPANY, SOLER & PALAU.
2. PROVIDE UNIT WITH MANUFACTURER'S STEEL ROOF JACK (SLOPED ROOF) EQUAL TO COOK MODEL RJ (W/ INTEGRAL BIRD SCREEN, FLASHING FLANGE AND BLACK EPOXY FINISH), BACKDRAFT DAMPER, OUTLET FLEX DUCT CONNECTION, STANDARD PLUG DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, THERMAL OVERLOAD PROTECTION, HANGING VIBRATION ISOLATORS, AND WHITE ALUMINUM GRILLE.
3. PROVIDE UNIT WITH MANUFACTURER'S BACKDRAFT DAMPER, INLET AND OUTLET FLEX DUCT CONNECTIONS, PRE-WIRED ELECTRICAL DISCONNECT SWITCH, OSHA BELT GUARD MOTOR COVER, THERMAL OVERLOAD PROTECTION (120 VOLT ONLY), POWDER COAT STANDARD GRAY FINISH, AND HANGING VIBRATION ISOLATORS.
4. CONTROL FAN WITH SEPARATE PILOT LIGHT WALL SWITCH.
5. CONTROL FAN WITH 7-DAY PROGRAMMABLE TIMER SWITCH.
6. FAN TO RUN CONTINOUSLY.
7. FAN TO BE CONTROLLED BY VEHICLE GAS DETECTION SYSTEM. PROVIDE WITH OVERRIDE SWITCH. SEE CONTROL DRAWING FOR ADDITIONAL INFORMATION.
8. CONTROL FAN WITH SEPARATE WALL SWITCH. PROVIDE PLAQUE ABOVE SWITCH STATING "FAN TO RUN DURING OCCUPIED HOUR AND IF A VEHICLE IS PARKED INSIDE. INTERLOCK FAN WITH VEHICLE GAS DETECTION SYSTEM. SEE CONTROL DRAWING FOR ADDITIONAL INFORMATION.

VEHICLE EXHAUST HOSE REEL SCHEDULE

SYMBOL	LOCATION	VEHICLE TYPE SERVED	DESIGN AIRFLOW (CFM)	HOSE REEL			TUBING				DRUM ELECTRICAL		FAN ELECTRCIAL		OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
				DRUM DIAMETER	LENGTH	HEIGHT	TYPE	DIAMETER	LENGTH	MODEL	HP	V/□	FLA	V/□			
HR-1	AUTOMOTIVE SERVICE BAY	DIESEL	600	18"□	3'-4"	2'-10"	LOW TEMPERATURE	6"□	24'-0"	SERIES 4000	1/2	120/1	4.0	208/3	500	MONOXIVENT MODEL 9000-W-TMTR	1 , 2 , 3 , 4 , 5
HR-2	HEAVY SERVICE BAY	DIESEL	600	18"□	3'-4"	2'-10"	LOW TEMPERATURE	6"□	24'-0"	SERIES 4000	1/2	120/1	4.0	208/3	500	MONOXIVENT MODEL 9000-W-TMTR	1 , 2 , 3 , 4 , 5

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: MONOXIVENT, NEDERMAN
2. PROVIDE MANUFACTURER'S 4-BUTTON PENDULUM SWITCH FOR UP / DOWN CONTROL OF THE HOSE REEL AND ON / OFF CONTROL OF FAN, POLYESTER POWDER COATING, MANUAL OVERRIDE.
3. TUBING SHALL BE RATED FOR A TEMPERATURE RANGE OF -80°F UP TO 600°F AND FOR AN INTERMITTENT TEMPERATURE OF 1250°F.
4. ADAPTER SHALL BE CUSTOM MANUFACTURED TO PROVIDE A NO-SCRATCH, HEAT RESISTANT, EPDM 12"□ INLET FUNNEL THAT CAN BE EASILY MANUFACTURED ONTO THE DIESEL EXHAUST TAILPIPE USING A TELESCOPIC POLE EQUAL TO MONOXIVENT MODEL LP-10-ADJ W/ PULL DOWN HOOK. CUSTOM FUNNEL TO HAVE LIFTING SLEEVE SIMILAR TO MANUFACTURERS.
5. PROVIDE WITH MANUFACTURERS FAN MOUNTED TO DRUM AND CONTROL BOX STARTER. COORDINATE CONTROL BOX STARTER LOCATION WITH ELECTRICIAN.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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MOSCOW CITY SHOP

CITY OF MOSCOW

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CATOR RUMA
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BOISE, IDAHO 83705
(208) 343-3663

MRK	DATE	DESCRIPTION

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **JD**
CHECKED BY: **TN**

PHASE: **PERMIT SET**

HVAC SCHEDULES

SHEET NO.

M3.00

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LOUVER SCHEDULE

SYMBOL	SERVICE	TYPE	NOMINAL SIZE	MINIMUM FREE AREA (SQ.FT.)	FINISH	MANUFACTURER AND MODEL	REMARKS
L-1	MAKE-UP AIR	FIXED DRAINABLE	42X18	2.44	AAMA 2604	RUSKIN ELF375DX	1 , 2 , 3
L-2	MAKE-UP AIR	FIXED DRAINABLE	60X24	5.11	AAMA2604	RUSKIN ELF375DX	1 , 2 , 3

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: GREENHECK, AMERICAN WARMING, AIROLITE, SAFE-AIR/DOWCO, LOUVERS & DAMPERS, ARROW UNITED, CESCO, NCA MANUFACTURING, NAILOR, POTTORFF, AND UNITED ENERTECH.
2. COLOR TO BE SELECTED BY ARCHITECT.
3. PROVIDE WITH FLANGED FRAME AND BIRD SCREEN, AND 120V/Ø LOW LEAKAGE MOTORIZED DAMPER.

LARGE DIAMETER CEILING FAN SCHEDULE

SYMBOL	AREA SERVED	BLOWER			ELECTRICAL		OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
		FAN DIAMETER	CFM	MAX RPM	HP/W	V/Ø			
CF-1	GARAGE BAYS	60"	8074	287	97.8 W	120/1	24	ENVIROFAN 260F-7	1 , 2 , 3

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: DAYTON, BIG ASS, GREENHECK.
2. PROVIDE WITH 10 TEC AIRFOIL BLADES, DIRECT DRIVE MOTOR, FULLY ADJUSTABLE SPEED CONTROLLER, 10 YEAR WARRANTY, 36" DOWN ROD, AND GUIDEWIRES.
3. PROVIDE WITH MANUFACTURERS ADJUSTABLE SPEED CONTROLLER MODEL 105F. PROVIDE (1) CONTROLLER PER BAY.

ELECTRIC HEATER SCHEDULE

SYMBOL	AREA SERVED	UNIT TYPE	FAN			ELECTRICAL				MANUFACTURER AND MODEL	REMARKS
			CFM	RPM	HP	KW	STEPS	V/Ø	AMPS		
EH-1	FIRE RISER 147	SURFACE MOUNTED	245	1400	1/8	4.0	---	208/1	19.2	QMARK MODEL AWH	1 , 2 , 3
EH-2	MEZZANINE AREA A	WALL MOUNTED	350	1400	--	5.0	1	208/1	24	QMARK MODEL MUH	1 , 4

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: BRASCH, QMARK, INDEECO, OUELLET, AND CHROMALOX.
2. MOUNT BOTTOM OF HEATER 24" ABOVE FINISH FLOOR.
3. PROVIDE UNIT WITH AN INTEGRAL THERMOSTAT. THERMOSTAT SHALL BE COVERED WITH A TAMPER-PROOF ACCESS COVER.
4. PROVIDE HEATER WITH MANUFACTURERS REMOTE T-STAT, 24VAC TRANSFORMER, AND WALL MOUNTING BRACKET.

VEHICLE EXHAUST GAS DETECTION SYSTEM SCHEDULE

SYMBOL	AREA SERVED	EXHAUST FAN INTERLOCK	PRODUCT TYPE	GAS DETECTION RANGE		ELECTRICAL		MANUFACTURER AND MODEL	REMARKS
				CO (PPM)	NO2 (PPM)	SENSORS	CONTROL PANEL		
				LOW / HIGH	LOW / HIGH	VOLTS	V / □		
VGD-1	PARKS BAYS	EF-1, EF-2, EF-3A	MACURCO GAS VENTILATION CONTROL SYSTEM	0-200	0-20	24V	120 / 1	MACURCO CONTROL PANEL MODEL: DVP-1200 MACURCO SENSOR MODEL: CX-6	1 , 2 , 4
VGD-2	WASH/STORAGE BAYS	EF-7A	MACURCO GAS VENTILATION CONTROL SYSTEM	0-200	0-20	24V	120 / 1	MACURCO CONTROL PANEL MODEL: DVP-120 MACURCO SENSOR MODEL: CX-6	1 , 3 , 4
VGD-3	FLEET FAB/MAINTENACE BAYS	EF-8, EF-9A, EF-9B	MACURCO GAS VENTILATION CONTROL SYSTEM	0-200	0-20	24V	120 / 1	MACURCO CONTROL PANEL MODEL: DVP-120 MACURCO SENSOR MODEL: CX-6	1 , 3 , 4

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: SUBMIT FOR PRIOR APPROVAL.
2. PROVIDE WITH MANUFACTURER'S CONTROL PANEL, (8) 10-AMP RELAYS, (4) HORNS, (4) STROBE DRIVERS, (12) ANALOG (DVP-120). PANEL INCLUDES TIMED DAY SELECTIONS, ALARMS, WARNINGS, AND TROUBLE INDICATIONS.
3. PROVIDE WITH MANUFACTURER'S CONTROL PANEL, (4) 10-AMP RELAYS, (2) HORNS, (2) STROBE DRIVERS, (12) ANALOG (DVP-120). PANEL INCLUDES TIMED DAY SELECTIONS, ALARMS, WARNINGS, AND TROUBLE INDICATIONS.
4. INSTALL MANUFACTURER SENSORS TO COVER ENTIRE SPACE. MANUFACTURER TO SUBMIT SENSOR LAYOUT FOR FINAL APPROVAL.

RESIDENTIAL HOOD SCHEDULE

SYMBOL	AREA SERVED	UNIT TYPE	HOOD DIMENSIONS			EXHAUST AIR			ELECTRICAL		MAXIMUM SONES	MANUFACTURER AND MODEL	REMARKS
			LENGTH	HEIGHT	DEPTH	CFM	MAX.S.P.	CONNECTION	V/ø	AMPS			
H-1	BREAKROOM 112	UNDER CABINET MOUNTED / DUCTED	30"	6"	18"	100	0.25	7"□	120/1	2.5	7.0	BROAN HOOD MODEL BXT130WW	1 , 2 , 3

REMARKS:

1. APPROVED ALTERNATES: ACCUREX, AND DENLAR.
2. UNIT TO BE PROVIDED WITH STANDARD LED LIGHTING, OPEN MESH FILTERS.
3. PROVIDE WITH WALL MOUNTED 2-SPEED ROCKER STYLE CONTROLLER. MOUNT AT ADA COMPLIANT HEIGHT AND LOCATION.

GAS-FIRED UNIT HEATER SCHEDULE

SYMBOL	AREA SERVED	UNIT TYPE	FAN			ELECTRICAL		GAS HEATING		OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
			CFM	RPM	HP	V/Ø	AMPS	INPUT (MBH)	OUTPUT (MBH)			
UH-1	FINISH SHOP 144	HORIZONTAL / SEPARATED COMBUSTION	1800	1050	1/6	115/1	4.4	110	102	150	REZNOR MODEL UEZ	1 , 2
UH-2	WELDING 143	HORIZONTAL / SEPARATED COMBUSTION	2260	1050	1/4	115/1	6.3	130	121	230	REZNOR MODEL UEZ	1 , 2
UH-3	MECHANICAL SHOP 142	HORIZONTAL / SEPARATED COMBUSTION	1800	1050	1/6	115/1	4.4	110	102	150	REZNOR MODEL UEZ	1 , 2
UH-4	OVERFLOW BAY 141	HORIZONTAL / SEPARATED COMBUSTION	1800	1050	1/6	115/1	4.4	110	102	150	REZNOR MODEL UEZ	1 , 2
UH-5	NOT USED	---	--	--	--	--	--	--	--	--	--	--
UH-6	STORAGE BAY 120	HORIZONTAL / SEPARATED COMBUSTION	1800	1050	1/6	115/1	4.4	110	102	150	REZNOR MODEL UEZ	1 , 2
UH-7	FAB SHOP 119	HORIZONTAL / SEPARATED COMBUSTION	2260	1050	1/4	115/1	6.3	130	121	230	REZNOR MODEL UEZ	1 , 2
UH-8	FAB SHOP 118	HORIZONTAL / SEPARATED COMBUSTION	2260	1050	1/4	115/1	6.3	130	121	230	REZNOR MODEL UEZ	1 , 2
UH-9	SERVICE BAY 117/116/115	HORIZONTAL / SEPARATED COMBUSTION	2460	1050	1/4	115/1	6.3	175	159	250	REZNOR MODEL UEZ	1 , 2
UH-10	SERVICE BAY 117/116/115	HORIZONTAL / SEPARATED COMBUSTION	2460	1050	1/4	115/1	6.3	175	159	250	REZNOR MODEL UEZ	1 , 2
UH-11	SERVICE BAY 117/116/115	HORIZONTAL / SEPARATED COMBUSTION	2460	1050	1/4	115/1	6.3	175	159	250	REZNOR MODEL UEZ	1 , 2
UH-12	SERVICE BAY 117/116/115	HORIZONTAL / SEPARATED COMBUSTION	2460	1050	1/4	115/1	6.3	175	159	250	REZNOR MODEL UEZ	1 , 2

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: HASTINGS, TRANE, MODINE, AND STERLING.
2. PROVIDE UNIT WITH MANUAL SUMMER/WINTER SWITCH, THERMOSTAT AND RELAY KIT, 25°-65° DOWNTURN NOZZLE WITH HORIZONTAL LOUVERS, AND 4-POINT SUSPENSION KIT.

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MRK	DATE	DESCRIPTION

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CHECKED BY: **TN**

PHASE: **PERMIT SET**

HVAC SCHEDULES

SHEET NO.
M3.01

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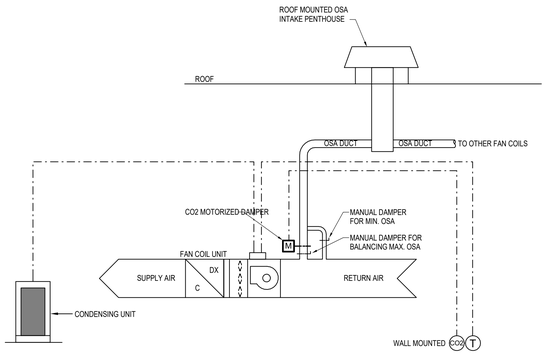
SEQUENCE OF OPERATIONS

FAN COIL UNITS

THE OPEN-CLOSE ROOF PENTHOUSE MOTORIZED DAMPER SHALL OPEN DURING OCCUPIED PERIODS BY TIME CLOCK OR DRY CONTACT. THE FAN COIL UNIT SUPPLY FAN SHALL START DURING OCCUPIED PERIODS AS SET BY THE PROGRAMMABLE THERMOSTAT. IF COOLING IS REQUIRED THE PROGRAMMABLE THERMOSTAT WILL START THE COMPRESSORIZED COOLING SYSTEM TO MAINTAIN THE USER ADJUSTABLE COOLING SPACE SETPOINT. IF HEATING IS REQUIRED THE UNIT WILL ENERGIZE THE HEATING SYSTEM AND CYCLING THE HEATING STAGE(S) AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE HEATING SETPOINT. IF THE SPACE TEMPERATURE IS BETWEEN THE HEATING AND COOLING SETPOINT, THE SUPPLY FAN WILL CONTINUE TO OPERATE, BUT NEITHER HEATING NOR COOLING WILL BE ENABLED.

IN THE UNOCCUPIED MODE THE FAN COIL UNIT SUPPLY FAN WILL BE STOPPED AND THE OPEN-CLOSE PENTHOUSE MOTORIZED DAMPER SHALL CLOSE. IF SPACE TEMPERATURE WERE TO RISE ABOVE OR FALL BELOW THE UNOCCUPIED SPACE SET POINTS THE FAN COIL UNIT SUPPLY FAN WILL START AND HEATING OR COOLING WILL BE ENABLED TO MAINTAIN THE SPACE TEMPERATURE AT THE UNOCCUPIED SPACE TEMPERATURE SETPOINT. THE OPEN-CLOSE ROOF PENTHOUSE MOTORIZED OUTSIDE AIR DAMPER SHALL REMAIN CLOSED DURING UNOCCUPIED MODE.

THE CO2 MOTORIZED OUTSIDE AIR DAMPER SHALL OPEN WHEN THE CO2 LEVEL RISES ABOVE SETPOINT, WHEN THE CO2 LEVEL FALLS BELOW SETPOINT, THE DAMPER SHALL CLOSE, THE CO2 SETPOINT SHALL BE 800PPM ADJUSTABLE.



SPLIT SYSTEM CONTROL SYSTEM SCHEMATIC W/CO2

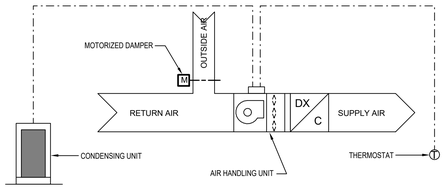
NTS

SEQUENCE OF OPERATIONS

AIR HANDLING UNITS WITHOUT ECONOMIZERS:

THE AIR HANDLING UNIT SUPPLY FAN WILL START DURING OCCUPIED PERIODS AS SET BY THE PROGRAMMABLE THERMOSTAT. IF COOLING IS REQUIRED THE PROGRAMMABLE THERMOSTAT WILL START THE COMPRESSORIZED COOLING SYSTEM TO MAINTAIN THE USER ADJUSTABLE COOLING SPACE SETPOINT. IF HEATING IS REQUIRED THE UNIT WILL ENERGIZE THE HEATING SYSTEM AND CYCLING THE HEATING STAGE(S) AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE HEATING SETPOINT. IF THE SPACE TEMPERATURE IS BETWEEN THE HEATING AND COOLING SETPOINT, THE SUPPLY FAN WILL CONTINUE TO OPERATE, BUT NEITHER HEATING NOR COOLING WILL BE ENABLED. THE MOTORIZED OUTSIDE AIR DAMPER SHALL FULLY OPEN DURING OCCUPIED PERIODS.

IN THE UNOCCUPIED MODE THE AIR HANDLING UNIT SUPPLY FAN WILL BE STOPPED. IF SPACE TEMPERATURE WERE TO RISE ABOVE OR FALL BELOW THE UNOCCUPIED SPACE SET POINTS THE AIR HANDLING UNIT SUPPLY FAN WILL START AND HEATING OR COOLING WILL BE ENABLED TO MAINTAIN THE SPACE TEMPERATURE AT THE UNOCCUPIED SPACE TEMPERATURE SETPOINT. THE MOTORIZED OUTSIDE AIR DAMPER SHALL FULLY CLOSE IN THE UNOCCUPIED MODE.



SPLIT SYSTEM CONTROL SYSTEM SCHEMATIC

NTS

SEQUENCE OF OPERATIONS

GENERAL :
THE VEHICLE EXHAUST GAS DETECTION SYSTEM SHALL CONSIST OF A CONTROL PANEL, CARBON MONOXIDE SENSORS, NITROGEN DIOXIDE SENSORS, EXHAUST FANS WITH ON / OFF SWITCHES AND MOTORIZED INTAKE LOUVERS.

OPERATION :

THE EXHAUST SYSTEM SHALL BE ENABLED WHENEVER ONE OF THE FOLLOWING CONDITIONS EXISTS:

1. THE NITROGEN DIOXIDE LEVEL IS ABOVE THE NITROGEN DIOXIDE ENABLE SET POINT OF 3 PPM (ADJUSTABLE).
2. THE CARBON MONOXIDE LEVEL IS ABOVE THE CARBON MONOXIDE ENABLE SET POINT OF 10 PPM (ADJUSTABLE).

WHEN ONE OF THE ABOVE CONDITIONS IS MET, THE VEHICLE GAS DETECTION SYSTEM CONTROLLER SHALL SEQUENCE THE FOLLOWING:

1. SEND POWER TO THE FAN OF THE BAY THAT HAS THE ASSOCIATED TRIGGERED ALARM. LOUVER OF THE ASSOCIATED BAY SHALL BE INTERLOCKED WITH FAN AND OPEN.

THE EXHAUST FANS SHALL CONTINUE TO OPERATE UNTIL ALL OF THE FOLLOWING CONDITIONS EXIST:

1. THE NITROGEN DIOXIDE LEVEL DROPS BELOW THE NITROGEN DIOXIDE ENABLE SET POINT. THE MINIMUM RUN TIME FOR THE EXHAUST FAN SHALL BE SET FOR A PERIOD OF 5 CONSECUTIVE MINUTES (ADJUSTABLE).
2. THE CARBON MONOXIDE LEVEL DROPS BELOW THE CARBON MONOXIDE ENABLE SET POINT. THE MINIMUM RUN TIME FOR THE EXHAUST FAN SHALL BE SET FOR A PERIOD OF 5 CONSECUTIVE MINUTES (ADJUSTABLE).

WHEN ALL OF THE ABOVE CONDITIONS ARE MET, THE VEHICLE GAS DETECTION SYSTEM CONTROLLER SHALL SEQUENCE THE FOLLOWING:

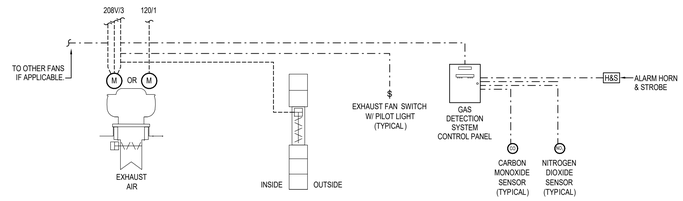
1. DISABLE POWER TO FAN.

EXHAUST FAN OVERRIDE MODE :
THE EXHAUST FAN OVERRIDE MODE SHALL BE ENABLED WHENEVER THE FOLLOWING CONDITION EXISTS:

1. THE ASSOCIATED WALL MOUNTED SWITCH IS SET TO THE "ON" POSITION.

THE EXHAUST FAN SHALL CONTINUE TO OPERATE UNTIL ALL OF THE FOLLOWING CONDITIONS EXIST:

1. THE ASSOCIATED WALL MOUNTED SWITCH IS SET TO THE "OFF" POSITION.



VEHICLE EXHAUST GAS DETECTION SYSTEM CONTROL SCHEMATIC

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HVAC CONTROLS

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M4.00

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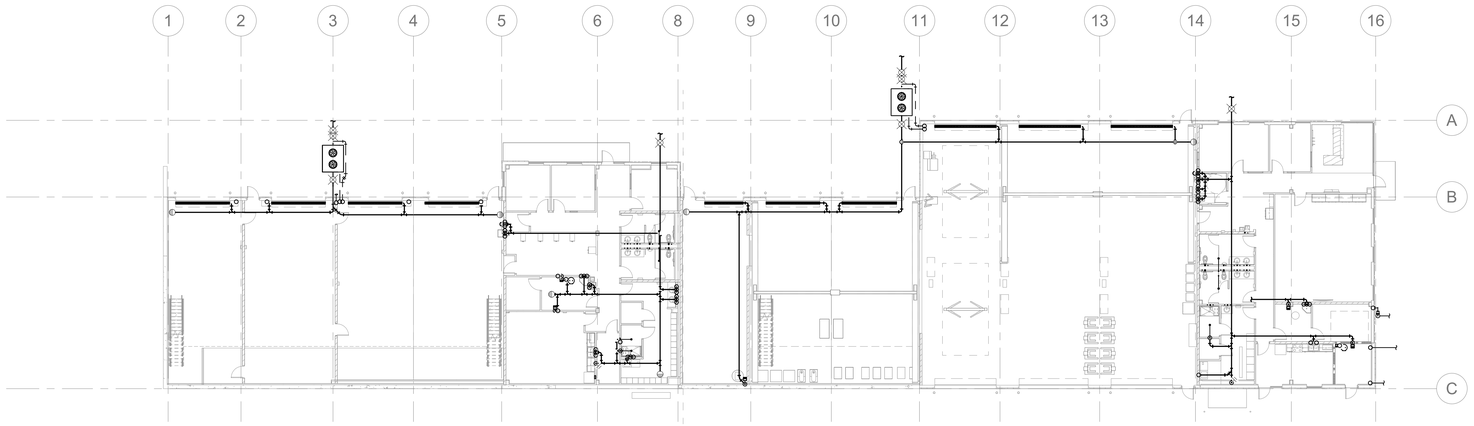
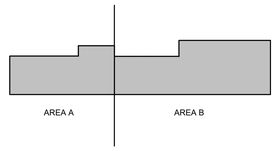


E1 FOUNDATION OVERALL PLAN
1/16" = 1'-0"

N

KEY PLAN



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FOUNDATION OVERALL PLAN

SHEET NO.
P1.10

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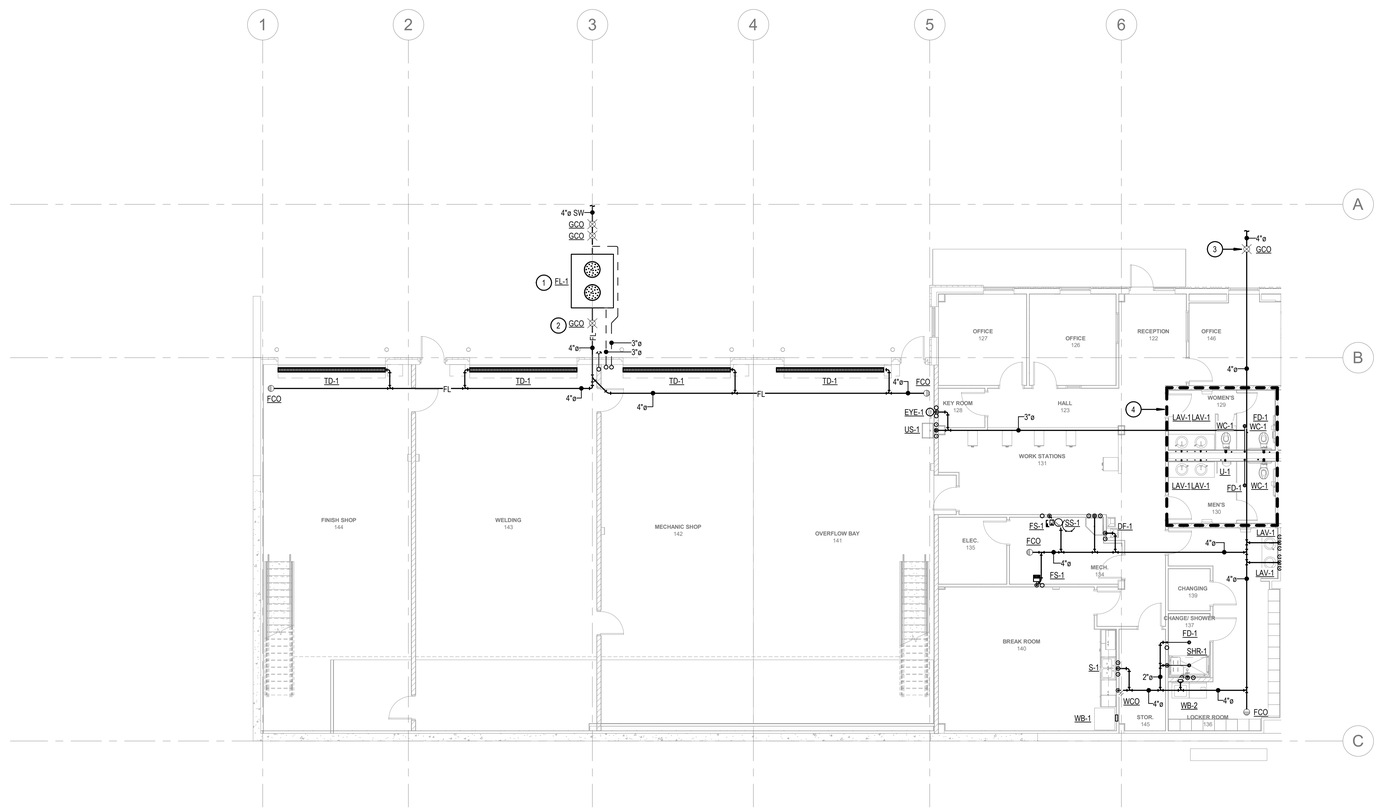
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE FLAMMABLE LIQUIDS INTERCEPTOR DETAIL FOR REQUIREMENTS.
2. INVERT ELEVATION AT GCO IS 32" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
3. INVERT ELEVATION AT GCO IS 34" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
4. SEE RISER DIAGRAM FOR CONTINUATION.



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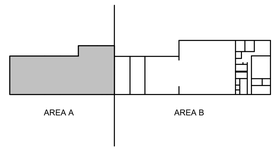

E2 FOUNDATION PLAN - AREA A

1/8" = 1'-0"

N

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FOUNDATION PLAN - AREA A

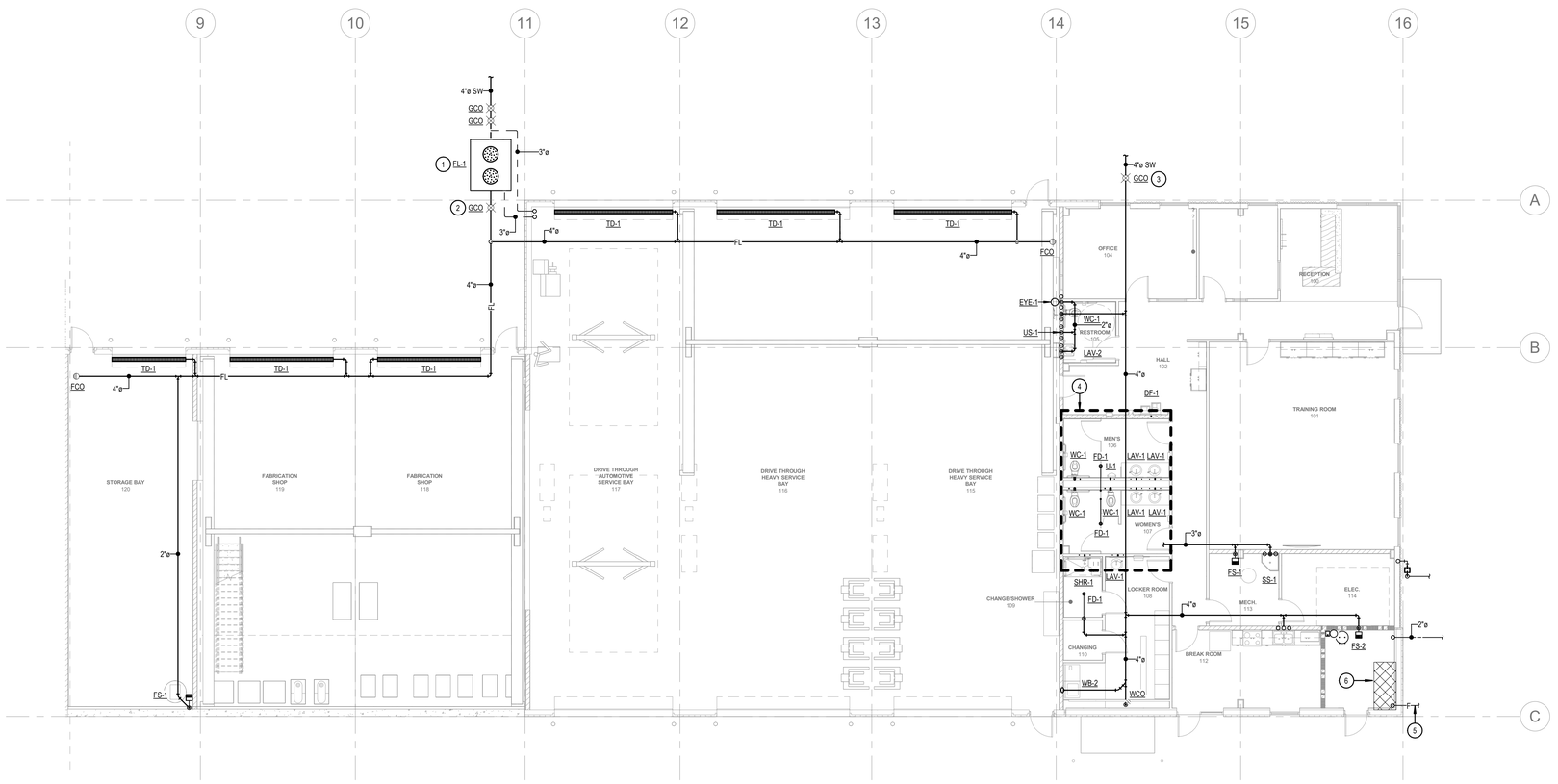
SHEET NO.

P1.11

KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE FLAMMABLE LIQUIDS INTERCEPTOR DETAIL FOR REQUIREMENTS.
2. INVERT ELEVATION AT GCO IS 54" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
3. INVERT ELEVATION AT GCO IS 36" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
4. SEE RISER DIAGRAM FOR CONTINUATION.
5. FIRE SPRINKLER LINE TO BE SIZED AND INSTALLED BY FIRE SPRINKLER CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL FIRE SPRINKLER SYSTEM REQUIREMENTS.
6. AREA RESERVED FOR FIRE SPRINKLER RISER SYSTEM. FIRE SPRINKLER RISER SYSTEM SHALL INCLUDE A TAMPER SWITCH, FLOW SWITCH, ALARM BELL, FIRE DEPARTMENT CONNECTION, AND POST INDICATOR VALVE (PIV).



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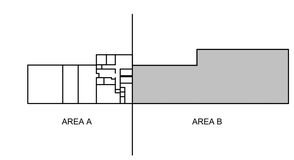

E1 FOUNDATION PLAN - AREA B
1/8" = 1'-0"

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FOUNDATION PLAN - AREA B

SHEET NO.
P1.12

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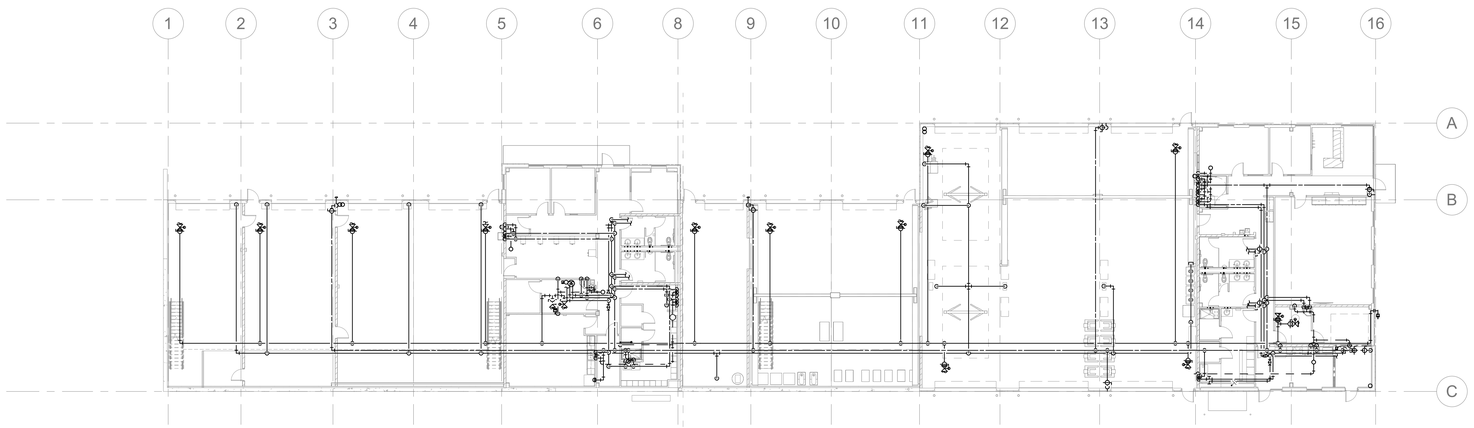
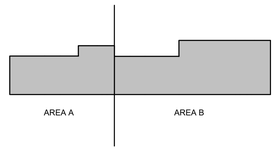


E1 PLUMBING OVERALL PLAN
1/16" = 1'-0"

N

KEY PLAN



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LICENSED
13789
7/22/2024
STATE OF IDAHO
TODD NELSON

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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HODGE & ASSOCIATES
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ELECTRICAL ENGINEER
CATOR RUMA
420 S. ORCHARD ST.
BOISE, IDAHO 83705
(208) 343-3663

MRK	DATE	DESCRIPTION

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**JD**
CHECKED BY:	**TN**

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PLUMBING OVERALL PLAN

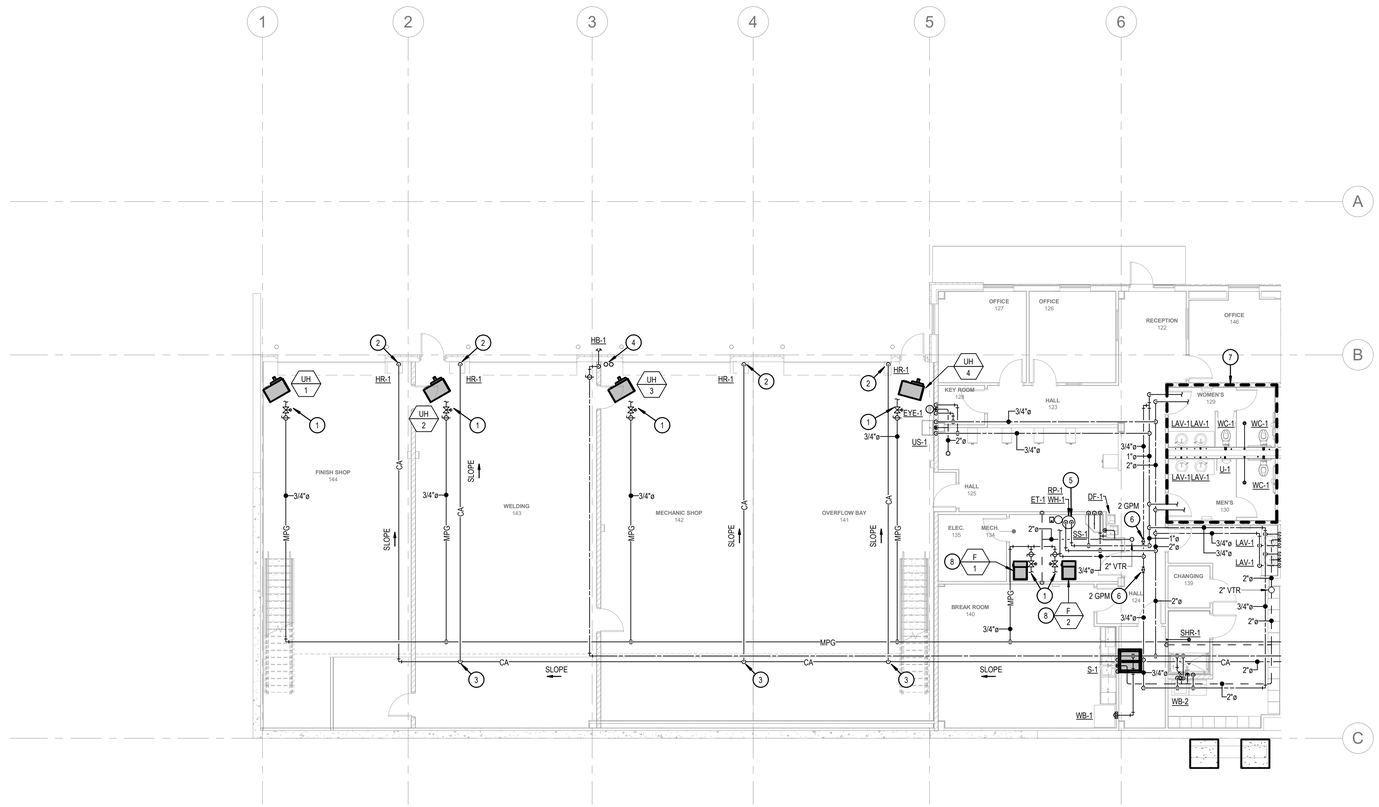
SHEET NO.
P2.10

7/19/2024 4:28:47 PM C:\Users\jakod\Documents\24052_Moscow City Shop_Mech Central Model_R23_JakeDSTBDJ.rvt

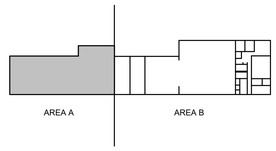
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE GAS REGULATOR DETAIL AND GAS EQUIPMENT CONNECTION DETAIL FOR REQUIREMENTS.
2. SEE COMPRESSED AIR HOSE REEL DETAIL FOR REQUIREMENTS.
3. BRANCH LINE TO BE TAPPED OFF OF THE TOP OF THE MAIN. SEE COMPRESSED AIR DETAIL FOR REQUIREMENTS.
4. ROUTE (2) 3" VENT LINES UP THROUGH ROOF.
5. SEE WATER HEATER DETAIL FOR REQUIREMENTS.
6. SET BALANCE VALVE TO GPM NOTED.
7. SEE RISER DIAGRAM FOR CONTINUATION.
8. SEE FURNACE CONDENSATE DETAIL FOR REQUIREMENTS.



KEY PLAN



E2 PLUMBING PLAN - AREA A

1/8" = 1'-0"

N

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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PLUMBING PLAN - AREA A

SHEET NO.

P2.11

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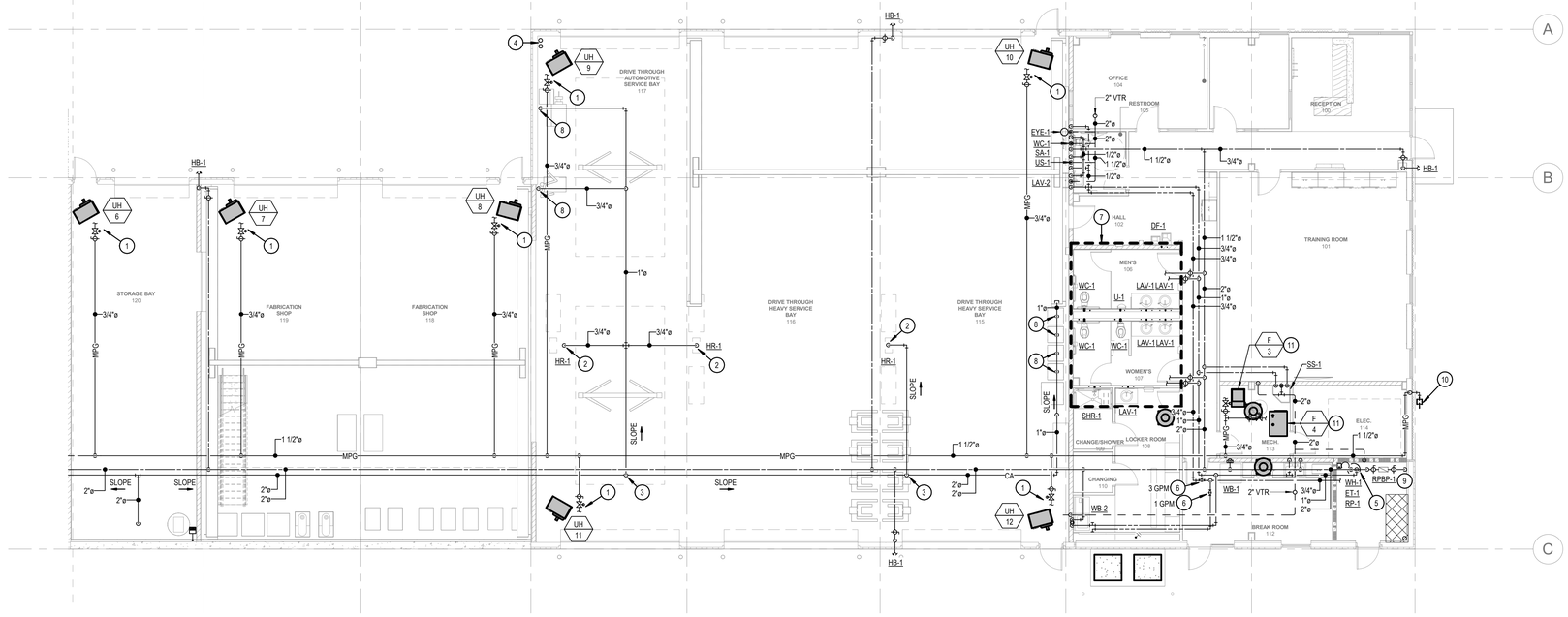
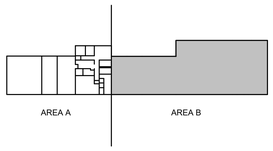
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE GAS REGULATOR DETAIL AND GAS EQUIPMENT CONNECTION DETAIL FOR REQUIREMENTS.
2. SEE COMPRESSED AIR HOSE REEL DETAIL FOR REQUIREMENTS.
3. BRANCH LINE TO BE TAPPED OFF OF THE TOP OF THE MAIN. SEE COMPRESSED AIR DETAIL FOR REQUIREMENTS.
4. ROUTE (2) 3" VENT LINES UP THROUGH ROOF.
5. SEE WATER HEATER DETAIL FOR REQUIREMENTS.
6. SET BALANCE VALVE TO GPM NOTED.
7. SEE RISER DIAGRAM FOR CONTINUATION.
8. ROUTE COMPRESSED AIR LINE DOWN WALL AND TERMINATE WITH CAP AND BALL VALVE. COORDINATE TERMINATION HEIGHT WITH OWNER.
9. SEE BUILDING WATER SERVICE DETIAL FOR REQUIREMENTS.
10. GAS METER FURNISED AND INSTALLED BY LOCAL GAS COMPANY. REFER TO GAS SIZING CHART FOR ADDITIONAL INFORMATION.
11. SEE FURNACE CONDENSATE DETAIL FOR REQUIREMENTS.



KEY PLAN



E1 PLUMBING PLAN - AREA B
1/8" = 1'-0"

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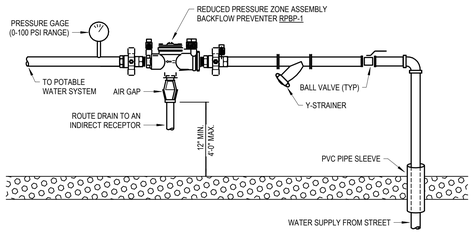
PLUMBING PLAN - AREA B

SHEET NO.
P2.12

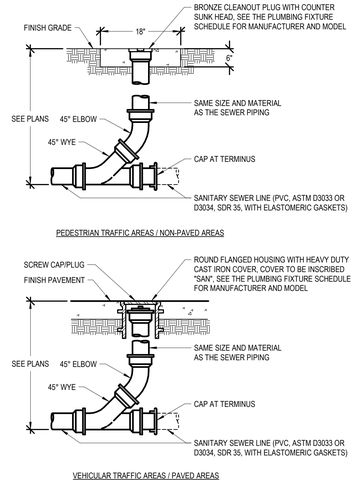
7/19/2024 4:26:52 PM C:\Users\jaked\Documents\24052_Moscow City Shop_Mech Central Model_R23_JakeDSTBDJ.rvt

NOTE:

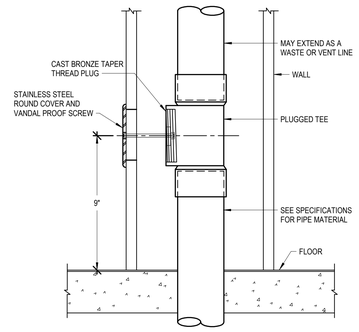
1. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL BACKFLOW DEVICES TO BE INSPECTED BY A CERTIFIED BACKFLOW TECHNICIAN BEFORE THE USE OF THE BUILDING POTABLE WATER SYSTEM.
2. THIS SYSTEM IS FOR INDOOR INSTALLATIONS ONLY. THIS VALVE SHALL BE EASILY ACCESSIBLE TO FACILITATE TESTING AND SERVICING. DO NOT INSTALL IN A CONCEALED LOCATION.



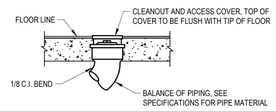
B1 BUILDING WATER SERVICE DETAIL
NOT TO SCALE



B3 GRADE CLEANOUT (GCO) DETAIL
NOT TO SCALE

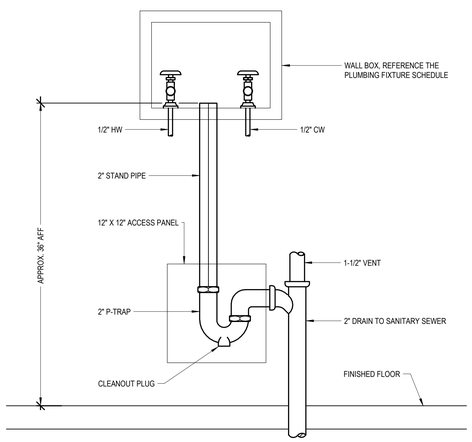


B4 WALL CLEANOUT (WCO) DETAIL
NOT TO SCALE



NOTE:
1. CLEANOUTS SHALL BE PROVIDED AT EACH HORIZONTAL DRAINAGE PIPE AT ITS UPPER TERMINAL, AND EACH RUN OF PIPING WHICH IS MORE THAN 100 FEET, AND SHALL BE PROVIDED FOR EACH 100 FEET DEVELOPED LENGTH, OR FRACTION THEREOF OF SUCH PIPING. AN ADDITIONAL CLEANOUT SHALL BE PROVIDED FOR EACH AGGREGATE HORIZONTAL CHANGE OF DIRECTION EXCEEDING ONE HUNDRED THIRTY-FIVE DEGREES, PER APPLICABLE PLUMBING CODE. THIS SHALL BE PROVIDED REGARDLESS OF WHAT IS SHOWN ON THE DRAWINGS.

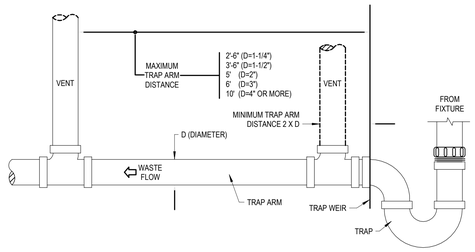
B6 FLOOR CLEANOUT (FCO) DETAIL
NOT TO SCALE



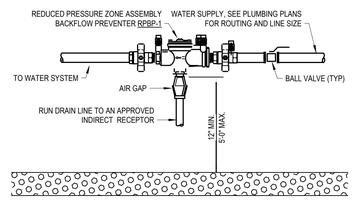
D1 WASHING MACHINE HOOK-UP DETAIL
NOT TO SCALE

NOTES:

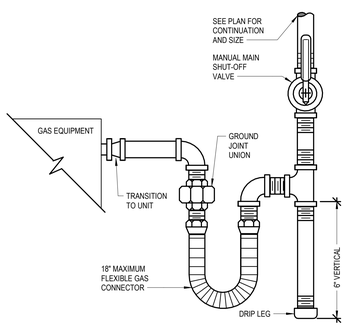
1. MAINTAIN ONE-FOURTH (1/4) INCH PER FOOT SLOPE.
2. THE DEVELOPED LENGTH BETWEEN THE TRAP OF A WATER CLOSET OR SIMILAR FIXTURE (MEASURED FROM THE TOP OF THE CLOSET FLANGE TO THE INNER EDGE OF THE VENT) AND IT'S VENT SHALL NOT EXCEED SIX (6) FEET.
3. ALL PLUMBING EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ADOPTED PLUMBING CODE, AND ALL LOCAL AND STATE CODES.



D3 TRAP ARM DETAIL
NOT TO SCALE



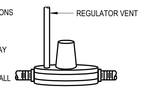
D5 REDUCED PRESSURE BACKFLOW PREVENTER DETAIL
NOT TO SCALE

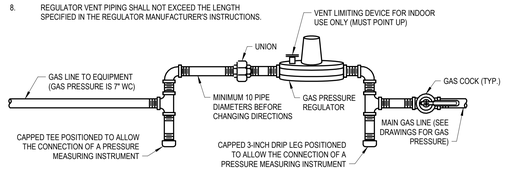


E1 GAS EQUIPMENT CONNECTION DETAIL
NOT TO SCALE

VENTING NOTES:

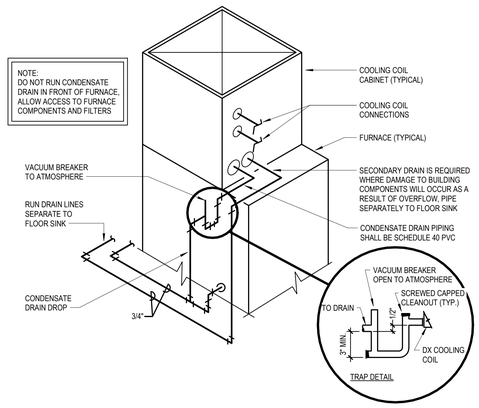
1. VENT REGULATORS PER MANUFACTURER'S AND LOCAL GAS COMPANY'S REQUIREMENTS.
2. DO NOT REDUCE THE VENT PIPE SIZE FROM THE REGULATOR.
3. TO LIMIT THE CONSEQUENCES OF RAIN, SNOW OR DEBRIS GETTING INTO THE VENT, ALWAYS TURN THE OUTLET OF THE VENT DOWN AND ABOVE POTENTIAL WATER OR SNOW LINES.
4. PROVIDE A BUG SCREEN ON THE VENT OUTLET TO DETER INSECTS FROM NESTING IN THE LINE. NEVER PAINT OVER THE BUG SCREEN.
5. A VENT LINE PROTECTOR MAY BE USED IN OUTDOOR APPLICATIONS TO PREVENT ENTRY OF WATER, INSECTS OR OTHER FOREIGN MATERIALS THAT COULD CAUSE BLOCKAGE.
6. VENT MUST BE PIPED A MINIMUM 3 FEET ABOVE OR 10 FEET AWAY FROM ALL FRESH AIR INTAKES.
7. VENTS SHALL RUN INDEPENDENTLY TO THE OUTDOORS AND SHALL SERVE ONLY A SINGLE DEVICE VENT.
8. REGULATOR VENT PIPING SHALL NOT EXCEED THE LENGTH SPECIFIED IN THE REGULATOR MANUFACTURER'S INSTRUCTIONS.





E3 GAS PRESSURE REGULATOR DETAIL
NOT TO SCALE

NOTE:
DO NOT RUN CONDENSATE DRAIN IN FRONT OF FURNACE. ALLOW ACCESS TO FURNACE COMPONENTS AND FILTERS



E5 CONDENSATE DRAIN DETAIL - 90% FURNACE
NOT TO SCALE

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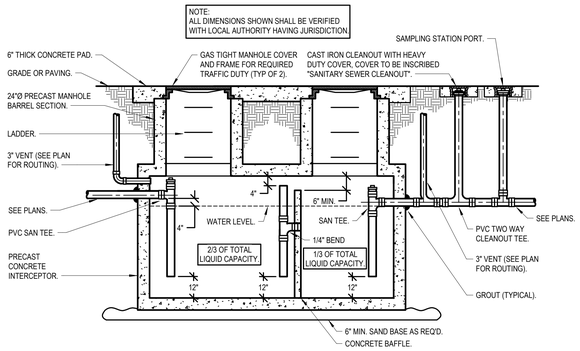


B1 FLAMMABLE LIQUIDS INTERCEPTOR DETAIL (1500 GALLONS)

NOT TO SCALE

FLUSH VALVE TRAP PRIMER NOTES:

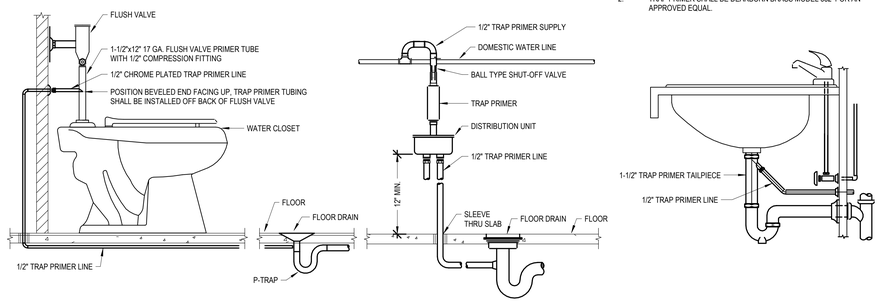
1. THE FLUSH VALVE PRIMER IS DESIGNED TO PRIME ONE FLOOR DRAIN TRAP AT A DISTANCE NOT TO EXCEED 20 FEET FROM POINT OF INSTALLATION.
2. THE FLUSH VALVE PRIMER SHALL BE INSTALLED WITH A VACUUM BREAKER.
3. FLUSH VALVE PRIMER IS INTENDED FOR USE WITH WATER CLOSETS CONSUMING 3.5 TO 1.0 GAL/FLUSH.
4. TRAP PRIMER SHALL BE PRECISION PLUMBING PRODUCTS MODEL FVP-1VB WITH VACUUM BREAKER. APPROVED ALTERNATES: MIFAB, SIOUX CHIEF, AND ZURN.

PRESSSURE ACTIVATED TRAP PRIMER NOTES:

1. THE PRIMING VALVE MUST BE INSTALLED ON A FRESH COLD WATER LINE OF 1/2" TO 1-1/2" DIAMETER.
2. DISTRIBUTION UNIT MUST BE INSTALLED LEVEL WITH AN ACCESS DOOR FOR PERIODIC INSPECTION.
3. DO NOT SUBJECT TRAP PRIMER VALVE TO ROUGH-IN PRESSURE TEST.
4. DISTANCE FROM DISTRIBUTION UNIT TO FLOOR MUST BE 12" FOR EVERY 20' HORIZONTALLY.
5. TRAP PRIMER SHALL BE PRECISION PLUMBING PRODUCTS MODEL CPO-500 WITH DU DISTRIBUTION UNIT IF REQUIRED. APPROVED ALTERNATES: MIFAB, SIOUX CHIEF, AND ZURN.

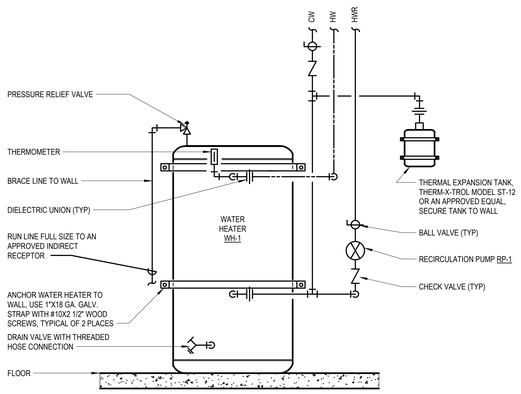
TAILPIECE TRAP PRIMER NOTES:

1. THE TAILPIECE PRIMER IS DESIGNED TO PRIME ONE FLOOR DRAIN TRAP AT A DISTANCE NOT TO EXCEED 20 FEET FROM POINT OF INSTALLATION.
2. TRAP PRIMER SHALL BE DEARBORN BRASS MODEL 832-1 OR AN APPROVED EQUAL.



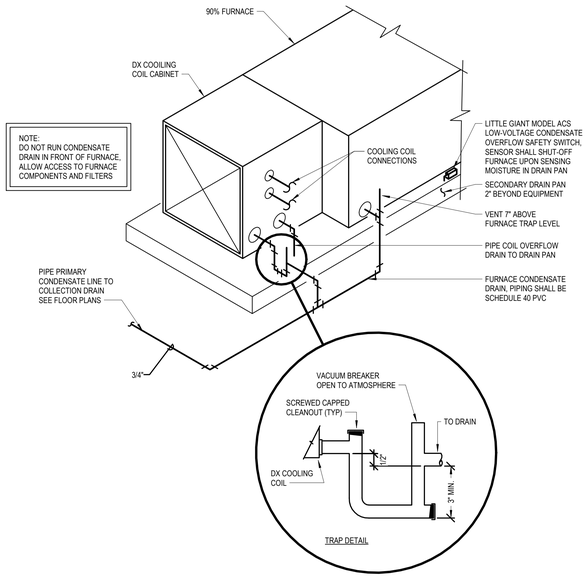
B3 TRAP PRIMER CONNECTION DETAIL

NOT TO SCALE



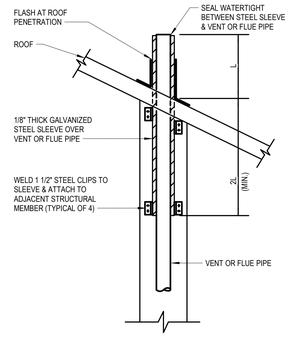
D1 ELECTRIC WATER HEATER DETAIL

NOT TO SCALE



D3 CONDENSATE DRAIN DETAIL - 90% FURNACE

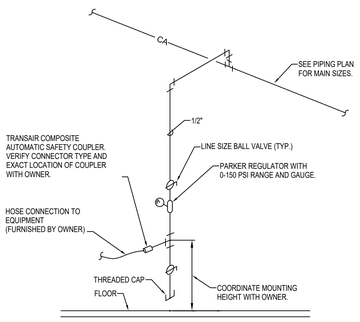
NOT TO SCALE



NOTE:
1. LOCATE ALL VENT AND FLUE PIPES AS CLOSE TO THE ROOF RIDGE LINE AS POSSIBLE.

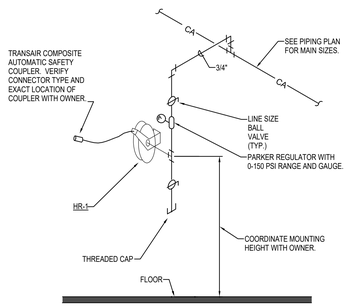
D6 SNOW PROTECTION SLEEVE DETAIL-VTR

NOT TO SCALE



E1 COMPRESSED AIR CONNECTION DETAIL

NOT TO SCALE



E3 COMPRESSED AIR HOSE REEL DETAIL

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GAS SIZING CHART

SYMBOL	INPUT (MBH)	RUNOUT SIZE (5-PSI) (INCHES)	EQUIPMENT CONNECTION SIZES (7" WC) (INCHES)
F-1	66	3/4	3/4
F-2	88	3/4	3/4
F-3	88	3/4	3/4
F-4	88	3/4	3/4
UH-1	110	3/4	3/4
UH-2	130	3/4	3/4
UH-3	110	3/4	3/4
UH-4	110	3/4	3/4
UH-5	NOT USED	NOT USED	NOT USED
UH-6	110	3/4	3/4
UH-7	130	3/4	3/4
UH-8	130	3/4	3/4
UH-9	175	3/4	3/4
UH-10	175	3/4	3/4
UH-11	175	3/4	3/4
UH-12	175	3/4	3/4
TOTAL	1860	EQUIVALENT LENGTH = 565 FT PRESSURE = 5 PSI MAIN SIZE = 1 1/2"Ø	

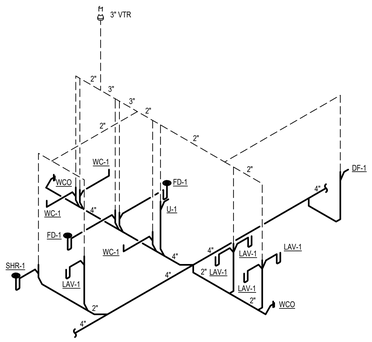
NOTE: GAS SIZES TO EQUIPMENT ARE AS NOTED IN SCHEDULE ABOVE. ROUTE NOTED (5-PSI) GAS LINE TO GAS EQUIPMENT. PROVIDE GAS COCK AND PRESSURE REGULATOR (5-PSI TO 7" WC) SIZED FOR GAS LOAD AT EACH PIECE OF EQUIPMENT. VENT TO ATMOSPHERE PER MANUFACTURERS RECOMMENDATIONS. ROUTE NOTED (7" WC) GAS LINE TO GAS FIRED EQUIPMENT WITH GAS COCK AND FLEX CONNECTOR AT UNIT. SEE GAS CONNECTION DETAILS.

PLUMBING FIXTURE SCHEDULE

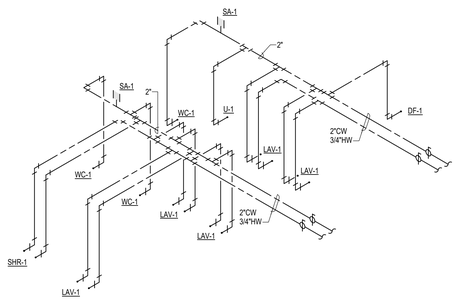
SYMBOL	FIXTURE DESCRIPTION	CONNECTION SIZE					MANUFACTURER / MODEL NUMBER / DESCRIPTION / ADDITIONAL COMMENTS
		WASTE	VENT	TRAP	CW	HW	
DF-1	DRINKING FOUNTAIN WITH BOTTLE FILLING STATION (INTERIOR DUAL BUBBLERS) (ELECTRIC WATER COOLER) (ADA COMPLIANT) (HIGH/LOW)	1 1/2	1 1/2	1 1/2	1/2	--	ELKAY MODEL EZSTL8WSVRSK, BI-LEVEL ADA COOLER WITH BOTTLE FILLING STATION FURNISHED WITH FLEXI-GUARD SAFETY BUBBLER. BUBBLER ACTIVATED BY PUSHBAR. BOTTLE FILLER ACTIVATED BY ELECTRONIC SENSOR WITH AUTOMATIC 30-SECOND SHUT-OFF TIMER. 115 VOLT, 5.0 AMPS, 60 HERTZ. PROVIDE WITH JAY R. SMITH 0834 FLOOR MOUNTED SUPPORT CARRIER. CANE APRON TO BE INSTALLED ON HIGH COOLER.
ET-1	EXPANSION TANK	--	--	--	3/4	--	AMTROL THERM-X-TROL ST-12, OR APPROVED EQUAL, NON-ASME SERIES THERMAL EXPANSION ABSORBER, ANTI-MICROBIAL LINER, AND 5 YEAR WARRANTY.
EYE-1	EMERGENCY EYE WASH (WALL MOUNTED w/ BOWL) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	ACORN SAFETY MODEL 50440-CS1, BARRIER-FREE, WALL MOUNTED EYE/FACE WASH, STAINLESS STEEL BOWL WITH A "CLAM-SHELL" STAINLESS STEEL COVER, AND ACORN MODEL ET71-1-BVS-OTG LEAD-FREE EMERGENCY THERMOSTATIC MIXING VALVE WITH 1/2" NPT INLETS & OUTLET, 4 GPM @ 5 PSID. PROVIDE WITH LOCKABLE INLET BALL VALVES, STANDARD OUTLET TEMPERATURE GAUGE, AND SELECTABLE TEMPERATURE RANGE FROM 60°F TO 95°F.
FCO	FLOOR CLEANOUT	SEE PLANS	--	--	--	--	JAY R. SMITH 4020 SERIES WITH ADJUSTABLE, ROUND NICKEL BRONZE TOP AND ABS PLUG.
FD-1	FLOOR DRAIN (PVC BODY) (CONCRETE FLOOR)	2	2	2	--	--	SIOUX CHIEF SERIES NUMBER 832-2PNR, POST- CONSTRUCTION LEVELING FLOOR DRAIN, NO-HUB OUTLET, 6-1/2" ROUND, ADJUSTABLE NICKEL BRONZE STRAINER AND TRAP PRIMER PORT. INSTALL TOP OF DRAIN 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
FL-1	FLAMMABLE LIQUIDS INTERCEPTOR (1500 GALLONS)	4	3	--	--	--	PRE-CAST CONCRETE, 1500 GALLON CAPACITY, FLAMMABLE LIQUIDS INTERCEPTOR. SEE DRAWING FOR DETAILS. NO SPLIT DESIGN VAULTS WITH GASKETS BELOW FLUID LEVEL ALLOWED.
FS-1	FLOOR SINK (6" DEEP) (HALF GRATE, FOOT TRAFFIC RATED)	2	2	2	--	--	JAY R. SMITH FIGURE NUMBER 3100X-12, CAST IRON RECEPTOR, ALUMINUM DOME STRAINER, NICKEL BRONZE GRATE, AND TRAP PRIMER. INSTALL TOP OF SINK 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
FS-2	FLOOR SINK (10" DEEP) (HALF GRATE, FOOT TRAFFIC RATED)	4	2	4	--	--	JAY R. SMITH FIGURE NUMBER 3160X-12, CAST IRON RECEPTOR, ALUMINUM DOME STRAINER, NICKEL BRONZE GRATE, AND TRAP PRIMER. INSTALL TOP OF SINK 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
GCO	GRADE CLEANOUT (NON-PAVED AREAS)	SEE PLANS	--	--	--	--	JAY R. SMITH 4220 SERIES, ROUND EXTRA HEAVY DUTY CAST IRON TOP. FURNISH WITH WITH ABS PLUG. COVER TO BE INSCRIBED "SAN".
GCO	GRADE CLEANOUT (PAVED AREAS) (VEHICULAR TRAFFIC)	SEE PLANS	--	--	--	--	JAY R. SMITH 4250 SERIES, ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER. FURNISH WITH ABS PLUG. COVER TO BE INSCRIBED "SAN".
HB-1	HOSE BIBB (EXTERIOR) (NON-FREEZE)	--	--	--	3/4	--	WOODFORD MODEL 67 - EXPOSED STYLE WITH MODEL 50HA BACKFLOW PREVENTER, 3/4" INLET , AND CHROME PLATED. PROVIDE WITH TEE KEY AND INSTALL AT 18" ABOVE FINISH GRADE.
HR-1	COMPRESSED AIR HOSE REEL	--	--	--	--	--	PROVIDED MY OWNER, INSTALLED BY CONTRACTOR.
LAV-1	LAVATORY (COUNTERTOP / CABINET MOUNTED) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	LAV INTEGRAL TO COUNTERTOP. PROVIDE LAV BASIN WITH GRID STRAINER. KOHLER CORALAIS MODEL K-15198-4RA, 4-1/2" LONG, SINGLE LEVER FAUCET WITH 0.5 GPM AERATOR. PROVIDE WITH WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRASS BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F. PROVIDE WITH PIPING INSULATION, TRUEBRO LAV GUARD, PLUMBEREX HANDI-SHIELD, OR EQUAL.
LAV-2	LAVATORY (WALL MOUNTED) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	KOHLER KINGSTON MODEL K-2005. VITREOUS CHINA, WALL MOUNTED, HOLES ON 4" CENTERS, AND GRID STRAINER. KOHLER CORALAIS MODEL K-15198 4-1/2" LONG, SINGLE LEVER FAUCET WITH 0.5 GPM AERATOR. PROVIDE WITH JAY R. SMITH FIGURE NUMBER 0700-Z SUPPORT WITH CONCEALED ARMS AND WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F. PROVIDE WITH LS-1 LAV SHIELD.
LS-1	LAVATORY SHIELD (WALL MOUNTED SHIELD FOR CONCEALING PIPING, VALVES, AND INSTANTANEOUS WATER HEATERS)	--	--	--	--	--	TRUEBRO "LAV SHIELD", ADA COMPLIANT, TOTAL ENCLOSURE. SINGLE-PIECE CONSTRUCTION AND PRE-CUT TO MATCH LAVATORY FURNISHED BY CONTRACTOR.
RP-1	RECIRCULATION PUMP (HOT WATER RETURN SYSTEM) (SMALL SYSTEM)	--	--	--	--	3/4	BELL AND GOSSETT BRONZE MODEL NBF-10SLW, 115 VOLT, 0.46 AMPS, 55 WATTS, AND SHALL PROVIDE 4 GPM AT 7 FEET HEAD. INCLUDE 7-DAY PROGRAMMABLE ELECTRONIC TIME CLOCK WITH BATTERY BACKUP, INTERMATIC MODEL GM40AVE-RD89. APPROVED ALTERNATE: ARMSTRONG, TACO, GRUNDFOS.
RPBP-1	REDUCED PRESSURE BACKFLOW PREVENTER	INDIRECT			--	--	WATTS SERIES LF009 LEAD-FREE REDUCED PRESSURE ZONE ASSEMBLY WITH QUARTER-TURN BALL VALVES, STRAINER, AND AIR GAP. CAST COPPER BODY CONSTRUCTION - 1/2" THRU 2". PROVIDE SERIES 957 FOR SIZES 2 1/2" THRU 10".
S-1	SINK - DOUBLE COMPARTMENT (14" X 14" X 6 1/2" - EACH) (ADA COMPLIANT)	2	1 1/2	1 1/2	1/2	1/2	ELKAY LUSTERTONE MODEL LRAD331965 6-1/2" DEEP, STAINLESS STEEL SINK. PROVIDE AND INSTALL ELKAY MODEL LK300 CR SINGLE LEVER CHROME FAUCET WITH SWING SPOUT AND HOSE SPRAY, ELKAY MODEL LK35 STAINLESS STEEL STRAINER BASKET AND TAILPIECE, AND WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F.
SA-1	SHOCK ABSORBER (WATER HAMMER ARRESTOR)	--	--	--	--	--	JAY R. SMITH FIGURE NUMBER 5005 TO 5050, SIZED PER FIXTURES SERVED. PROVIDE AN ACCESS PANEL AND A BALL TYPE SHUT-OFF VALVE UPSTREAM OF SHOCK ABSORBER.
SHR-1	SHOWER PACKAGE (60" X 36" X 77") (INSERT STYLE - ROLL-IN) (ADA / ANSI 117.1 COMPLIANT)	2	1 1/2	2	1/2	1/2	AQUATIC MODEL 16036TRCOL WITH A 1/2" BEVELED THRESHOLD, ADA / FHA APPROVED, ONE PIECE MODULE WITH ACRYLX APPLIED ACRYLIC SURFACE, INTEGRAL REINFORCEMENT BACKING, AND CUSTOMIZED INSTALLATION OF ACCESSORIES. ADA MINIMUM INSIDE DIMENSIONS OF 60" X 30" FOR ROLL IN SHOWERS, 1/2" BEVELED THRESHOLD ELIMINATES THE NEED TO RECESS FOR ADA COMPLIANCE IF A 1/2" MINIMUM FLOORING IS USED. INCLUDE: SAFETY GRAB BARS, (1) 32"X16" PHENOLIC SLAB OFF WHITE PHENOLIC SWING DOWN ADA COMPLIANT SEAT WITH LEGS, (1) SIOUX CHIEF CAULKLESS BRASS DRAIN #827-2B WITH CHROME SCREEN. MOEN 8346 HANDHELD SHOWER SYSTEM WITH 2.5 GPM FLOW RESTRICTOR, POSI-TEMP WITHOUT VOLUME CONTROL, ADJUSTABLE TEMPERATURE LIMIT STOP, 1/4" TURN STOPS, 4 PORT CYCLING VALVE, HANDHELD SHOWER, 69" DOUBLE SWIVEL HOSE ASSEMBLY, 30" SLIDE BAR, VACUUM BREAKER, DROP ELL, 5 FT. WATER STOPPER, TAPE-WEIGHTED SHOWER CURTAIN, AND STAINLESS STEEL CURTAIN ROD. SEE NOTES 6 AND 7. (60"X36"X77" INTERIOR DIMENSIONS, 66"X38-1/8"X79" EXTERIOR DIMENSIONS).
SS-1	SERVICE SINK (28" RADIUS CORNER X 12") (FLOOR MOUNTED)	3	2	3	1/2	1/2	ACORN TERRAZZO-WARE MODEL TCR-28: PROVIDE AND INSTALL WITH MODEL KFC CHROME UTILITY FAUCET, STAINLESS STEEL BUMPER GUARD, DRAIN GASKET, 36" HOSE AND WALL HANGER, MOP HANGER, AND (2) STAINLESS STEEL WALL GUARDS. MOUNT FAUCET 36" AFF.
TD-1	TRENCH DRAIN (6" WIDE) (HEAVY TRAFFIC RATED)	2	2	2	--	--	JAY R. SMITH FIGURE NUMBER 9895, 6" WIDE TRENCH DRAIN SYSTEM WITH INTEGRAL METAL RAIL. PROVIDE WITH END CAPS, OUTLETS, 25" DEEP CATCH BASIN, AND 3/8" SLOTTED, HEAVY DUTY GRATE. RAPID TRENCH C1000 COMMERCIAL SERIES, TRENCH DRAIN INSTALLATION SYSTEM, COMPOSED OF 3-METER TONGUE AND GROOVE STEEL ALIGNMENT FRAME AND SUPPORT BRACKET WITH HORIZONTAL ADJUSTMENT. REFER TO ARCHITECTURAL PLAN FOR EXACT LENGTH REQUIREMENTS.
TP-1	TRAP PRIMER (PRESSURE ACTIVATED) (1 TO 4 TRAPS)	--	--	--	1/2"	--	PRECISION PLUMBING PRODUCTS MODEL CPO-500 WITH DU DISTRIBUTION UNIT IF REQUIRED FOR SERVING MORE THAN ONE TRAP.
TP-1	TRAP PRIMER (FLUSH VALVE PRIMER) (1 TRAP)	--	--	--	1/2"	--	PRECISION PLUMBING PRODUCTS MODEL FVP-1VB WITH VACUUM BREAKER. TRAP PRIMER TUBING SHALL BE INSTALLED OFF BACK OF FLUSH VALVE.
TP-1	TRAP PRIMER (LAVATORY TAILPIECE PRIMER) (1 TRAP)	--	--	--	1/2"	--	DEARBORN BRASS 1-1/2" TRAP PRIMER TAILPIECE WITH COMPRESSION CONNECTION.
U-1	URINAL (FLUSH VALVE) (SEE ARCH. FOR MOUNTING HEIGHT)	2	1 1/2	INT.	3/4	--	KOHLER BARDON MODEL K-4991-ET WALL MOUNTED URINAL WITH 3/4" TOP SPUD. SLOAN REGAL MODEL 186-0.5 FLUSHOMETER, 0.5 GPF. INCLUDE BEEHIVE STRAINER AND JAY R. SMITH FIGURE NUMBER 0637 ADJUSTABLE FIXTURE SUPPORT.
US-1	UTILITY SINK (23" X 21" X 13") (FLOOR MOUNTED)	2	1 1/2	1 1/2	1/2	1/2	FIAT MOLDED STONE MODEL FL-1 FLOOR MOUNTED SINK WITH EASY LEVELING LEGS, DRAIN ASSEMBLY AND STOPPER WITH FIAT A1 CHROME FAUCET, DECK MOUNTED, 4" O.C. WITH 4" WRISTBLADES, 6-3/4" SWING SPOUT, AND WATTS SERIES LFUSG-B L.F. THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F.
WB-1	WALL BOX (WATER SUPPLY TO ICE MAKER)	--	--	--	1/2	--	OATEY FIREMASTER MODEL 39121 WITH FACEPLATE AND ADJUSTABLE METAL SUPPORT BRACKETS. FIRE-RATED, LOW LEAD, OR APPROVED EQUAL.
WB-2	WALL BOX (SUPPLY/DRAIN FOR WASHING MACHINE)	2	1 1/2	2	1/2	1/2	OATEY FIREMASTER MODEL 38478 WITH FACEPLATE, ADJUSTABLE METAL SUPPORT BRACKETS, AND WATER HAMMER ARRESTORS. FIRE RATED, OR APPROVED EQUAL.
WC-1	WATER CLOSET (17-1/2" SEAT HEIGHT) (FLUSH VALVE) (FLOOR MOUNTED) (COMFORT HEIGHT / ADA COMPLIANT)	4	2	INT.	1	--	KOHLER HIGHCLIFF ULTRA MODEL K-96057 FLOOR MOUNTED WITH ELONGATED BOWL. KOHLER LUSTRA MODEL K-4666-C ELONGATED OPEN FRONT SEAT WITH HINGE. SLOAN REGAL MODEL 111-1.6 FLUSHOMETER, 1.6 GPF.
WCO	WALL CLEANOUT	SEE PLANS	--	--	--	--	JAY R. SMITH 4472T SERIES WITH CAST BRONZE TAPER THREAD PLUG, STAINLESS STEEL ROUND COVER, AND A STAINLESS STEEL VANDAL PROOF SCREW.
WH-1	WATER HEATER (50 GALLON UPRIGHT MODEL) (208V-1Ø ELECTRIC)	--	--	--	SEE PLANS	SEE PLANS	BRADFORD WHITE MODEL LE50S3-3, NON-SIMULTANEOUS DUAL ELEMENTS, (2) 4.5 KW, 208V/1Ø, 24" DIAMETER, 47" TALL, WITH TOP CONNECTIONS. PROVIDE WITH WALL BRACKET SUPPORT AND SEISMIC STRAP. PROVIDE WATER HEATER WITH HEAT TRAP.

NOTES:

1. ALL ADA COMPLIANT FIXTURES MUST COMPLY WITH ICC/ANSI A117.1. SEE ARCHITECTURAL PLANS FOR HANDICAPPED FIXTURE DESIGNATIONS, LOCATIONS, CLEARANCES, AND MOUNTING HEIGHTS.
2. ALL EXPOSED HW PIPING, CW PIPING, AND DRAIN LINES BENEATH ALL LAVATORIES AND ALL ADA COMPLIANT SINKS MUST BE INSULATED TO PREVENT INJURY. REFER TO ARCHITECTURAL PLANS. INSULATE WITH MOLDED CLOSED CELL VINYL INSULATION - TRUEBRO, PLUMBEREX, OR EQUAL.
3. PROVIDE P-TRAP PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS (NOT ALL TRAP PRIMERS ARE INDICATED ON PLANS - REFERENCE DETAILS FOR ADDITIONAL INFORMATION). PROVIDE A BALL TYPE SHUT-OFF VALVE UPSTREAM OF PRIMER VALVE. SEE SPECIFICATIONS.
4. SEE SPECIFICATIONS FOR ALTERNATE APPROVED MANUFACTURERS.
5. LOCATE CONTROLS PER ADA STANDARDS; REFERENCE ARCHITECTURAL DRAWINGS FOR TUB/SHOWER ELEVATIONS.
6. BACKFLOW PREVENTION: THIS BUILDING IS PROVIDED WITH A REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) ON THE MAIN WATER SERVICE.



D1 WASTE AND VENT RISER RR 106-107
NOT TO SCALE



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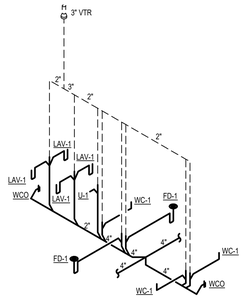

E1 WASTE AND VENT RISER RR 129-130
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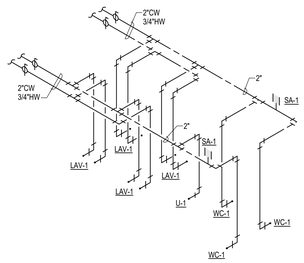

E3 WATER RISER RR 129-130
NOT TO SCALE

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MRK	DATE	DESCRIPTION

JOB NO.:	24000.01
DATE:	07/24/2024
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PHASE: **PERMIT SET**

PLUMBING SCHEDULES

SHEET NO.
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RECEPTACLE DEVICE ABBREVIATIONS

SYMBOL	DESCRIPTION	NOTES
GFI	GROUND FAULT CIRCUIT INTERRUPTER	
S	INTEGRAL SURGE PROTECTION (SPD) TYPE	
USB	INTEGRAL USB CHARGING PORTS AND TRANSFORMER	

EQUIPMENT CONNECTION SCHEDULE

SYMBOL	DESCRIPTION	HARDWIRE (HW) OR DEVICE	NOTES
CP	COPY MACHINE	NEMA 5-20R	
D	ELECTRIC DRYER	NEMA 14-30R	
DW	DISHWASHER	HW	1, 2, 7
EWC	ELECTRIC WATER COOLER	HW	1, 2
HT	HEAT TAPE	HW	
MD	MOTORIZED OVERHEAD DOOR	HW	1, 2, 4, 5, 6
MG	MOTORIZED GATE	HW	1, 2, 3, 5, 6, 8
R	ELECTRIC RANGE	NEMA 14-50R	
RF	REFRIGERATOR	NEMA 5-20R	
TR	TELECOMMUNICATIONS RACK	(2) NEMA 5-20R, SPD TYPE	
W	ELECTRIC WASHER	NEMA 5-20R	

NOTES:
1. CONCEAL CONNECTION IN MANUFACTURER'S ASSEMBLY.
2. FINAL MOUNTING HEIGHT TO BE COORDINATED WITH EQUIPMENT INSTALLATION.
3. REFER TO TYPICAL INSTALLATION DETAILS FOR APPLICATIONS NOTED ON PLANS.
4. FIELD CONNECT TO MANUFACTURER'S SUPPLIED CONTROL DEVICES, SAFETY SENSORS AND DUAL-DIRECTION MOTORS.
5. INSTALL AND CONNECT PER EQUIPMENT MANUFACTURER'S SHOP DRAWINGS AND INSTRUCTIONS.
6. INSTALL SINGLE-POLE TOGGLE SWITCH AT CONNECTION FOR LOCAL DISCONNECT.
7. LOCATE CONNECTION IN ADJACENT MILLWORK SECTION.
8. CONNECT TO MOTOR POWER SUPPLY, ALL SAFETY SENSORS, AND EYES PER MANUFACTURER'S INSTRUCTIONS.

SWITCH DEVICE ABBREVIATIONS

SYMBOL	DESCRIPTION	NOTES
3, 4	3 OR 4-WAY TOGGLE SWITCH	
FC	FAN SPEED CONTROLLER	2
P	PILOT LIGHT TYPE	1

NOTES:
1. ILLUMINATED WHEN IN 'ON' POSITION.
2. INSTALL AND CONNECT PER MANUFACTURERS REQUIREMENTS.

TELECOMMUNICATIONS DEVICE ABBREVIATIONS

SYMBOL	DESCRIPTION	NOTES
AP	WIRELESS ACCESS POINT	1

NOTES:
1. REFER TO TYPICAL INSTALLATION DETAILS FOR APPLICATIONS NOTED ON PLANS.

FIRE ALARM SYMBOLS LIST

SYMBOL	DESCRIPTION
FS	FIRE SPRINKLER BELL, PROVIDED BY FIRE SPRINKLER CONTRACTOR
TS	TAMPER SWITCH, PROVIDED BY FIRE SPRINKLER CONTRACTOR
PS	PRESSURE SWITCH, PROVIDED BY FIRE SPRINKLER CONTRACTOR
FS	FLOW SWITCH, PROVIDED BY FIRE SPRINKLER CONTRACTOR
PIV	POST INDICATOR VALVE, PROVIDED BY FIRE SPRINKLER CONTRACTOR
KB	KNOX BOX; SEE ARCHITECTURAL PLANS, CONNECT TO MONITORING CONTACTS
MM	FIRE ALARM MONITOR MODULE
F	FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED; P - PHOTO ELECTRIC, I - IONIZATION, H - HEAT
F	FIRE ALARM DUCT SMOKE DETECTOR; S - SUPPLY, R - RETURN
F G	FIRE ALARM MANUAL STATION, G - POLYCARBONATE OPERABLE GUARD WITH INTEGRAL BATTERY OPERATED HORN
F 15	FIRE ALARM HORN WITH STROBE LIGHT, WALL MOUNT, WITH STROBE INTENSITY INDICATED, G - POLYCARBONATE PROTECTIVE GUARD; DERATE CANDELLA PER NFPA 72
F ID	IN-DUCT SMOKE DETECTOR, RATE FOR AIR VELOCITIES SCHEDULED
F 15	FIRE ALARM HORN / STROBE, CEILING MOUNTED, CANDELA RATING NOTED
TS	FIRE ALARM REMOTE TEST SWITCH WITH LED INDICATOR
F	FIRE SMOKE / DAMPER CONNECTION
75 75	FIRE ALARM STROBE LIGHT, CEILING OR WALL MOUNT, WITH STROBE INTENSITY INDICATED
	FIRE ALARM DOOR HOLDER PROVIDED WITH DOOR HARDWARE, CEILING OR WALL MOUNTED
FACP	FIRE ALARM CONTROL PANEL
NAC 'A'	NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLY; DESIGNATOR DENOTES PANEL IDENTIFIER
FDC	FIRE DEPARTMENT CONNECTION SWITCH PROVIDED BY FIRE SPRINKLER CONTRACTOR
FA	FIRE ALARM REMOTE ANNUNCIATOR
NAC	NOTIFICATION APPLIANCE CIRCUIT

FIRE ALARM SYMBOLS LIST GENERAL NOTES:
1. ALL SYMBOLS IDENTIFIED MAY NOT BE USED ON PLANS.

ELECTRICAL ABBREVIATIONS

SYMBOL	DESCRIPTION
AC	ABOVE COUNTER
ACH	ABOVE COUNTER, HORIZONTAL MOUNT, CENTERED IN BACKSPLASH
ACV	ABOVE COUNTER, VERTICAL MOUNT, 6" ABOVE COUNTER OR 3" ABOVE BACKSPLASH
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
C	CEILING MOUNT
C.O.	CONVENIENCE OUTLET
EC	EMPTY CONDUIT WITH PULL-LINE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HW	HARD WIRE / DIRECT CONNECTION
kA	KILO - AMPS
KS	DENOTES INSTALLATION IN KNEESPACE OF MILLWORK. DEVICE SHALL BE CENTERED IN KNEESPACE. KNEESPACE LOCATIONS TO BE COORDINATED WITH MILLWORK ELEVATIONS PRIOR TO ROUGH-IN
mA	MILLI - AMPS
MLO	MAIN LUGS ONLY
MW	MILLWORK INSTALLATION OF DEVICE; INSTALL HORIZONTAL; INSTALL WITH TOP OF BOX 2" BELOW BOTTOM OF DRAWER OR COUNTER TOP; SEE TYPICAL DETAIL
OC	ON CENTER
SPD	SURGE PROTECTION DEVICE
UON	UNLESS OTHERWISE NOTED
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF

ELECTRICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
	CAPPED RACEWAY
	INTERCONNECTION RACEWAY AND CONDUCTORS
SLV	RACEWAY SLEEVE(S); QUANTITY AND SIZE AS SCHEDULED
TC	TELECOMMUNICATIONS SYSTEM RACEWAY
UG P	UNDERGROUND PRIMARY RACEWAY AND CONDUCTORS
UG S	UNDERGROUND SECONDARY RACEWAY AND CONDUCTORS
	EXTERIOR PAD MOUNTED TRANSFORMER
	TELECOMMUNICATIONS NETWORK EQUIPMENT RACK
PB	IN - GRADE PULLBOX
'A' 'A'	BRANCH CIRCUIT PANELBOARD, SURFACE AND FLUSH MOUNTED, DASHED LINE DENOTES MINIMUM WORKING CLEARANCE
'RP' 'RP'	TERMINAL CABINET, SURFACE AND FLUSH MOUNTED, DASHED LINE DENOTES MINIMUM WORKING CLEARANCE
'MSB'	ELECTRICAL SWITCHBOARD, FLOOR MOUNTED ON HOUSEKEEPING PAD, DASHED LINE DENOTES MINIMUM WORKING CLEARANCE
GBB	GROUND BUS BAR
	TELECOMMUNICATIONS TERMINAL BOARD (TTB), 3/4" THICK, FIRE-TREATED PLYWOOD; HEIGHT: 8'-0" UON, WIDTH AS SHOWN ON PLANS
3	DUPLEX RECEPTACLE, (CONVENIENCE OUTLET, C.O.) NUMBER INDICATES CIRCUIT
	DOUBLE DUPLEX RECEPTACLE
A	SPECIAL PURPOSE RECEPTACLE OR CONNECTION, CEILING OR WALL MOUNTED
FB-1	FLUSH, CAST - IN - PLACE COMBINATION FLOORBOX, TYPE PER SCHEDULE
J B	JUNCTION BOX, CEILING OR WALL MOUNTED, B - BLANK
D	MOTORIZED DAMPER
M	MOTOR OUTLET
	DISCONNECT SWITCH
KB	KNOX BOX
VFD	VARIABLE FREQUENCY DRIVE; SEE MECHANICAL
	CIRCUIT BREAKER
	PUSHBUTTON STATION (FLUSH)
	WATTHOUR METER
MDF	TELECOMMUNICATIONS OUTLET, B - BLANK; NUMBER IN SYMBOL DENOTES QUANTITY OF CABLES AND CONNECTIONS; SCRIPT DENOTES RACK CONNECTION
T	THERMOSTAT OUTLET
TV	COMBINATION POWER / DATA TELEVISION ASSEMBLY
1	KEYNOTE NUMBER
10.0	DETAIL REFERENCE
1 E0.0 2 E0.0	ENLARGED PLAN REFERENCE
EF 1	EQUIPMENT DESIGNATION

* SEE SPECIFICATION SECTION 260533 FOR ADDITIONAL CONDUIT REQUIREMENTS

ELECTRICAL SYMBOLS LIST GENERAL NOTES:
1. HEIGHTS INDICATED ARE TO CENTER OF ITEM.
2. EXISTING ELECTRICAL ITEMS INDICATED WITH SHADED SOLID LINES.
3. ALL SYMBOLS IDENTIFIED MAY NOT BE USED ON PLANS.

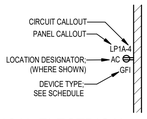
LIGHTING SYMBOLS

SYMBOL	DESCRIPTION
	WALL MOUNTED LIGHTING OUTLET AND LUMINAIRE
	RECESSED SQUARE LIGHTING OUTLET AND LUMINAIRE
	RECESSED ROUND LIGHTING OUTLET AND LUMINAIRE
	MONOPOINT LIGHTING OUTLET AND LUMINAIRE
	LIGHTING OUTLET AND LUMINAIRE
	PENDANT MOUNTED LIGHTING OUTLET AND LUMINAIRE
	GRID MOUNTED RECESSED LIGHTING OUTLET AND LUMINAIRE
	DUAL HEAD EMERGENCY UNIT
	FLUSH MOUNTED EMERGENCY LIGHT
1 1	EXIT LIGHTING OUTLET AND FIXTURE, CEILING OR WALL MOUNTED; DIRECTIONAL ARROWS AS REQUIRED OR AS NOTED; HATCH DENOTES FACE ORIENTATION
	POLE AND ARM MOUNTED LUMINAIRE
LV A	LOW-VOLTAGE SWITCH / BUTTON STATION
RP1	LOW-VOLTAGE RELAY ASSIGNMENT, TAG IDENTIFIES RELAY PANEL
	LOCAL / ROOM CONTROL ZONE ASSIGNMENT
	SUSPENDED TRACK LIGHTING UNIT AND ASSEMBLY
	DECORATIVE POLE AND LUMINAIRE ASSEMBLY

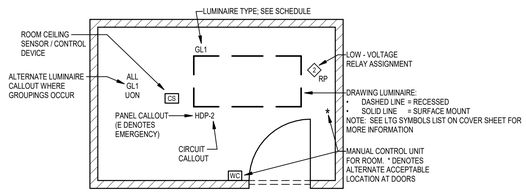
LIGHTING SYMBOLS GENERAL NOTES:
1. EXISTING ELECTRICAL ITEMS INDICATED WITH SHADED SOLID LINES.
2. ALL SYMBOLS IDENTIFIED MAY NOT BE USED ON PLANS.
3. GRAPHICAL SIZE OF LUMINAIRES ON PLANS INTENDED TO DEPICT NOMINAL SIZE OF LUMINAIRE.
4. REFER TO LIGHTING CONTROL AND LUMINAIRE INSTALLATION SCHEDULES ON LIGHTING PLANS FOR ADDITIONAL INSTALLATION INSTRUCTIONS.

ELECTRICAL RACEWAY AND CABLING GENERAL INSTRUCTIONS
1. ALL ELECTRICAL SYSTEMS SHALL BE INSTALLED IN LISTED RACEWAY SYSTEMS COMPLYING WITH THE REQUIREMENTS SET FORTH IN THESE DRAWINGS AND SPECIFICATIONS.
2. ALL ELECTRICAL CONDUCTORS SHALL BE LISTED AND SUITABLE FOR THE ENVIRONMENT AND APPLICATION WITHIN WHICH THEY ARE INSTALLED.
3. CONDUCTORS FOR SYSTEMS OPERATING AT GREATER THAN OR EQUAL TO 120 VOLTS NOMINAL TO GROUND SHALL UTILIZE NOT LESS THAN #12 AWG (AMERICAN WIRE GAUGE). CONDUCTORS SHALL BE INCREASED IN SIZE RELEVANT TO VOLTAGE DROP OR WHERE RACEWAY FILL RATIOS REQUIRE REDUCTION IN AMPACITY LISTINGS. WHERE NEUTRAL CONDUCTORS ARE REQUIRED, THE NEUTRAL CONDUCTOR SHALL BE CONSIDERED A CURRENT-CARRYING CONDUCTOR.
4. AMPACITY OF ELECTRICAL CONDUCTORS SHALL BE BASED ON 75 DEGREE CELSIUS TEMPERATURE RATING.
5. THE USE OF MULTI-WIRE BRANCH CIRCUITS THAT SHARE A NEUTRAL CONDUCTOR (COMMONLY REFERRED TO AS AN 'EDISON' CIRCUIT) ARE PROHIBITED. DEDICATED NEUTRAL CONDUCTORS SHALL BE INSTALLED FOR ALL LINE-TO-GROUND BRANCH CIRCUIT CONNECTIONS.
6. ALL FEEDER AND BRANCH CIRCUITS SHALL BE EQUIPPED WITH A DEDICATED EQUIPMENT GROUNDING CONDUCTOR. IN NO CASE SHALL RACEWAYS BE UTILIZED AS THE ONLY EQUIPMENT GROUNDING CONNECTION.
7. BRANCH CIRCUITS DERIVED FROM THE SAME SOURCE MAY BE COMBINED IN SINGLE RACEWAY WHERE PRACTICAL. IN NO CASE, UNLESS PART OF A LISTED FACTORY-BUILT WIRING SYSTEM, SHALL MORE THAN THREE (3) LINE-TO-GROUND BRANCH CIRCUITS BE COMBINED INTO A SINGLE RACEWAY. BRANCH CIRCUITS AND FEEDER CIRCUITS FOR DEDICATED EQUIPMENT CONNECTIONS OR LINE-TO-LINE AND POLYPHASE CONNECTIONS SHALL BE IN RACEWAY DEDICATED TO EACH CONNECTION.
8. INSTALLED BRANCH CIRCUIT ROUTING, COMBINING, AND DEVICE-TO-DEVICE CONNECTIONS AS INSTALLED IN THE FIELD SHALL BE DEPICTED ON CONTRACTOR'S AS-BUILT DRAWINGS. AS-BUILT DRAWINGS SHALL BE CONTINUALLY UPDATED AS THE CONSTRUCTION PROGRESSES.

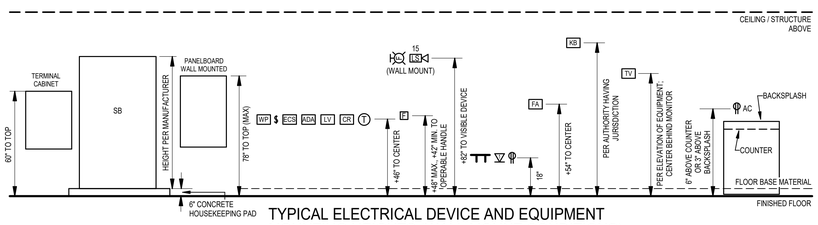
GENERAL ELECTRICAL INSTALLATION REQUIREMENTS
1. FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT AND PROVIDE ALL LABOR REQUIRED AND NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND/OR SPECIFIED IN ALL SECTIONS OF DIVISION 26 AND ALL OTHER WORK AND MISCELLANEOUS ITEMS, NOT SPECIFICALLY MENTIONED, BUT REASONABLY INFERRED FOR A COMPLETE INSTALLATION INCLUDING ALL ACCESSORIES AND APPURTENANCES REQUIRED FOR TESTING THE SYSTEM. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS THAT ALL SYSTEMS BE COMPLETE, AND READY FOR OPERATION. ALL SPECIFIED PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH ALL MANUFACTURERS' INSTRUCTIONS AND REQUIREMENTS.
2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT AND WIRING. MOST DIRECT ROUTING OF CONDUITS AND WIRING IS NOT ASSURED. EXACT REQUIREMENTS SHALL BE GOVERNED BY ARCHITECTURAL, STRUCTURAL AND MECHANICAL CONDITIONS OF THE JOB. CONSULT ALL OTHER DRAWINGS IN PREPARATION OF THE BID. EXTRA LENGTHS OF WIRING OR ADDITION OF PULL OR JUNCTION BOXES, ETC., NECESSITATED BY SUCH CONDITIONS SHALL BE INCLUDED IN THE BID. CHECK ALL INFORMATION AND REPORT ANY APPARENT DISCREPANCIES BEFORE SUBMITTING BID.
3. SEQUENCE, COORDINATE AND INTEGRATE THE VARIOUS ELEMENTS OF ELECTRICAL SYSTEMS, MATERIALS AND EQUIPMENT.
4. COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS. INFORM CONTRACTORS OF OTHER TRADES OF THE REQUIRED ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT TO MAINTAIN SERVICEABILITY AND CODE COMPLIANCE.
5. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
6. ARRANGE FOR CHASES, SLOTS AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION TO ALLOW FOR ELECTRICAL INSTALLATIONS.
7. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.
8. SEQUENCE, COORDINATE AND INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE BUILDING.
9. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE. PREFERENCE SHOULD BE GIVEN TO ADA GOVERNING REQUIREMENTS FOR ACCESSIBLE AND OPERABLE COMPONENTS.
10. COORDINATE CONNECTION OF ELECTRICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD SERVICE COMPANIES AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE.
11. INSTALL SYSTEMS, MATERIALS AND EQUIPMENT TO CONFORM WITH APPROVED SUBMITTAL DATA, INCLUDING COORDINATION DRAWINGS, TO THE GREATEST EXTENT POSSIBLE. CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENT, REFER CONFLICT TO THE ARCHITECT.
12. INSTALL SYSTEMS, MATERIALS AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS WHERE INSTALLED EXPOSED IN FINISHED SPACES.
13. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS AND AS REQUIRED BY CODE. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.
14. ALL ELECTRICAL ITEMS, EQUIPMENT, ETC. REQUIRING ACCESS AND MAINTENANCE TO BE PROVIDED WITH ACCESS PANELS BY ELECTRICAL CONTRACTOR WHEN LOCATED BEHIND HARD INACCESSIBLE FINISHED SURFACES. SEE ARCHITECTURAL CEILING PLANS FOR CEILING AND WALL FINISH TYPES.
15. INSTALL ACCESS PANEL OR DOORS WHERE EQUIPMENT IS CONCEALED BEHIND FINISHED SURFACES. ACCESS PANELS AND DOORS ARE SPECIFIED IN DIVISION 8 SECTION 'ACCESS DOORS'.
16. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE.
17. ONLY QUALITY WORKMANSHIP WILL BE ACCEPTED. HAPHAZARD OR POOR INSTALLATION PRACTICE WILL BE CAUSE FOR REJECTION OF WORK.
18. PROVIDE FOREMAN IN CHARGE OF THIS WORK AT ALL TIMES.
19. WHERE THE SPECIFICATIONS CALL FOR AN INSTALLATION TO BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, A COPY OF SUCH RECOMMENDATIONS SHALL AT ALL TIMES BE KEPT IN THE JOB SUPERINTENDENT'S OFFICE AND SHALL BE AVAILABLE TO THE OWNER'S REPRESENTATIVE.
20. WHERE AIR PLENUMS ARE ENCOUNTERED, ALL CABLING AND CONDUCTORS NOT IN RACEWAYS SHALL BE RATED, LISTED, AND SUITABLE FOR USE IN PLENUM SPACES.
21. PROVIDE A MEANINGFUL QUALITY ASSURANCE PROGRAM. TO ASSIST THE CONTRACTOR IN THIS PROGRAM, THE SPECIFICATIONS CONTAINED HEREIN ARE SET FORTH AS THE MINIMUM ACCEPTABLE REQUIREMENTS. THIS DOES NOT RELIEVE THE CONTRACTOR FROM EXECUTING OTHER QUALITY ASSURANCE MEASURES TO OBTAIN A COMPLETE OPERATING FACILITY WITHIN THE SCOPE OF THIS PROJECT.
22. THE CONTRACTOR SHALL INSURE THAT ALL WORKMANSHIP, ALL MATERIALS EMPLOYED, ALL REQUIRED EQUIPMENT AND THE MANNER AND METHOD OF INSTALLATION CONFORMS TO ACCEPTED CONSTRUCTION AND ENGINEERING PRACTICES, AND THAT EACH PIECE OF EQUIPMENT IS IN SATISFACTORY WORKING CONDITION TO SATISFACTORILY PERFORM ITS FUNCTIONAL OPERATION.
23. PROVIDE QUALITY ASSURANCE TESTS AND OPERATIONAL CHECK ON ALL COMPONENTS OF THE ELECTRICAL DISTRIBUTION SYSTEM, ALL LIGHTING FIXTURES, AND COMMUNICATION SYSTEMS.



TYPICAL ELECTRICAL CIRCUIT CONNECTION CALLOUTS
NOT TO SCALE



TYPICAL LIGHTING CIRCUIT CONNECTION CALLOUTS
NOT TO SCALE



TYPICAL ELECTRICAL DEVICE AND EQUIPMENT MOUNTING HEIGHTS (WALL MOUNT CONDITIONS)
NOT TO SCALE

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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PROFESSIONAL ENGINEER REGISTERED 11424 STATE OF IDAHO GEOFREY L. JOHNSON

MOSCOW CITY SHOP

CITY OF MOSCOW

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	MKC/CRH
CHECKED BY:	GLJ

PHASE: **PERMIT SET**

ELECTRICAL COVER SHEET

SHEET NO.
E0.00

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

COMcheck Software Version 4.1.5.5

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Moscow City Shop
Project Type: New Construction

Construction Site: Moscow, ID
Owner/Agent:
Designer/Contractor: GEOFFREY L. JOHNSON, EIDAM & ASSOCIATES, 291 E. SHORE DR. SUITE 210, Eagle, ID 83616

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Moscow City Shop (Automotive Facility)	17745	0.71	12599
		Total Allowed Watts =	12599

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Moscow City Shop (Automotive Facility)				
LED 1: BL1: BARE STRIP 4': Other:	1	44	20	880
LED 5: EM1: EMERGENCY LIGHTING UNIT: Other: Exemption:Exit signs	1	5	1	Exempt
LED 5 copy 1: EM2: EMERGENCY LIGHTING UNIT: Other: Exemption:Emergency lighting automatically off during normal business operation	1	17	16	Exempt
LED 5 copy 2: EM4: EMERGENCY LIGHTING UNIT: Other: Exemption:Emergency lighting automatically off during normal business operation	1	17	11	Exempt
LED 6 copy 1: EX1: EXIT SIGN: Other: Exemption:Exit signs	1	10	3	Exempt
LED 12 copy 1: GS1: GRID LED 2X4: Other:	1	12	32	384
LED 12 copy 2: GS2: GRID LED 2X2: Other:	1	61	27	1647
LED 12 copy 2: SL1: SURFACE LED 1X4: Other:	1	19	49	931
LED 12 copy 3: SL2: SURFACE LED 1X2: Other:	1	2	25	50
LED 12 copy 4: HB1: HIGH BAY LED: Other:	1	42	147	6174
LED 11: RR2: ROUND RECESSED LED: LED Other Fixture Unit 13W:	1	2	13	26
			Total Proposed Watts =	10092

Interior Lighting PASSES: Design 20% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date 9/26/24

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][1]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.4.1 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C405.5.1 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5.1 [FI16][1]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

COMcheck Software Version 4.1.5.5

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Moscow City Shop
Project Type: New Construction
Exterior Lighting Zone: 2 (Neighborhood business district (LZ2))

Construction Site: Moscow, ID
Owner/Agent:
Designer/Contractor: GEOFFREY L. JOHNSON, EIDAM & ASSOCIATES, 291 E. SHORE DR. SUITE 210, Eagle, ID 83616

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Parking Lot (Parking area)	30085 ft2	0.04	Yes	1203
			Total Tradable Watts (a) =	1203
			Total Allowed Watts =	1203
			Total Allowed Supplemental Watts (b) =	400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Parking Lot (Parking area 30085 ft2): Tradable Wattage				
LED 1: P4: POLE LIGHT: LED Roadway-Parking Unit 64W:	1	3	45	135
LED 2: WL1: WALL LED: Other:	1	8	26	208
LED 2 copy 1: WL2: WALL LED: Other:	1	8	46	368
LED 4: EM3: EMERGENCY LIGHT: Other: Exemption:Emergency lighting automatically off during normal business operation	1	10	10	Exempt
			Total Tradable Proposed Watts =	711

Exterior Lighting PASSES: Design 56% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date 9/26/24

COMcheck Software Version 4.1.5.5

Inspection Checklist

Energy Code: 2018 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2, C405.2.2.1, C405.2.2.2 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL26][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.4 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL28][not 1]	Manual controls required by the energy code are in a location with ready access to occupants and located where the controlled lights are visible, or identify the area served and their status.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.6 [EL30][not 1]	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.3 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

LIGHTING SYSTEM FUNCTIONAL TESTING: CONTROLS FOR AUTOMATIC LIGHTING SYSTEMS SHALL COMPLY WITH THIS SECTION.

FUNCTIONAL TESTING: PRIOR TO PASSING FINAL INSPECTION, THE CONTRACTOR THROUGH COMMISSIONING SHALL PROVIDE EVIDENCE THAT THE LIGHTING CONTROL SYSTEMS HAVE BEEN TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH THE FOLLOWING FOR THE APPLICABLE CONTROL TYPE.

OCCUPANT SENSOR CONTROLS: WHERE OCCUPANT SENSOR CONTROLS ARE PROVIDED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:

1. CERTIFY THAT THE OCCUPANT SENSOR HAS BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
2. FOR PROJECTS WITH SEVEN OR FEWER OCCUPANT SENSORS, EACH SENSOR SHALL BE TESTED.
3. FOR PROJECTS WITH MORE THAN SEVEN OCCUPANT SENSORS, TESTING SHALL BE DONE FOR EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY. WHERE MULTIPLES OF EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY ARE PROVIDED, NOT LESS THAN 10 PERCENT, BUT IN NO CASE LESS THAN ONE, OF EACH COMBINATION SHALL BE TESTED UNLESS THE CODE OFFICIAL OR DESIGN PROFESSIONAL REQUIRES A HIGHER PERCENTAGE TO BE TESTED. WHERE 30 PERCENT OR MORE OF THE TESTED CONTROLS FAIL, ALL REMAINING IDENTICAL COMBINATIONS SHALL BE TESTED.

   FOR OCCUPANT SENSOR CONTROLS TO BE TESTED, VERIFY THE FOLLOWING:
   - WHERE OCCUPANT SENSOR CONTROLS INCLUDES STATUS INDICATORS, VERIFY CORRECT OPERATION.
   - THE CONTROLLED LIGHTS TURN OFF OR DOWN TO THE PERMITTED LEVEL WITHIN THE REQUIRED TIME.
   - FOR AUTO-ON OCCUPANT SENSOR CONTROLS, THE LIGHTS TURN ON TO THE PERMITTED LEVEL WHEN AN OCCUPANT ENTERS THE SPACE.
   - FOR MANUAL-ON OCCUPANT SENSOR CONTROLS, THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED.
   - THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT IN ADJACENT AREAS OR BY HVAC OPERATION.

TIME-SWITCH CONTROLS. WHERE TIME-SWITCH CONTROLS ARE PROVIDED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:

1. CONFIRM THAT THE TIME-SWITCH CONTROL IS PROGRAMMED WITH ACCURATE WEEKDAY, WEEKEND, AND HOLIDAY SCHEDULES.
2. PROVIDE DOCUMENTATION TO THE OWNER OF TIME-SWITCH CONTROLS PROGRAMMING INCLUDING WEEKDAY, WEEKEND, HOLIDAY SCHEDULES, AND SET-UP AND PREFERENCE PROGRAM SETTINGS.
3. VERIFY THE CORRECT TIME AND DATE IN THE TIME SWITCH.
4. VERIFY THAT ANY BATTERY BACK-UP IS INSTALLED AND ENERGIZED.
5. VERIFY THAT THE OVERRIDE TIME LIMIT IS SET TO NOT MORE THAN 2 HOURS.
6. SIMULATE OCCUPIED CONDITION. VERIFY AND DOCUMENT THE FOLLOWING:
   - ALL LIGHTS CAN BE TURNED ON AND OFF BY THEIR RESPECTIVE AREA CONTROL SWITCH.
   - THE SWITCH ONLY OPERATES LIGHTING IN THE ENCLOSED SPACE IN WHICH THE SWITCH IS LOCATED.
7. SIMULATE UNOCCUPIED CONDITION. VERIFY AND DOCUMENT THE FOLLOWING:
   - NONEXEMPT LIGHTING TURNS OFF.
   - MANUAL OVERRIDE SWITCH ALLOWS ONLY THE LIGHTS IN THE ENCLOSED SPACE WHERE THE OVERRIDE SWITCH IS LOCATED TO TURN ON OR REMAIN ON UNTIL THE NEXT SCHEDULED SHUTOFF OCCURS.
8. ADDITIONAL TESTING AS SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL.

DAY LIGHT RESPONSIVE CONTROLS. WHERE DAYLIGHT RESPONSIVE CONTROLS ARE PROVIDED, THE FOLLOWING SHALL BE VERIFIED:

1. CONTROL DEVICES HAVE BEEN PROPERLY LOCATED, FIELD CALIBRATED AND SET FOR ACCURATE SET POINTS AND THRESHOLD LIGHT LEVELS.
2. DAYLIGHT CONTROLLED LIGHTING LOADS ADJUSTED TO LIGHT LEVEL SET POINTS IN RESPONSE TO AVAILABLE DAYLIGHT.
3. THE LOCATIONS OF CALIBRATION ADJUSTMENT EQUIPMENT ARE READILY ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL.

DOCUMENTATION REQUIREMENTS:
DOCUMENTS CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE CRITERIA OF IECC SECTION C405 ARE TO BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS FROM THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.

COMCHECK NOTE:
LUMINAIRE QUANTITIES INDICATED WITHIN THIS REPORT ARE NOT TO BE USED BY CONTRACTORS, SUPPLIERS OR ANY OTHER ENTITY FOR ESTIMATING OR TAKEOFF PURPOSES. REFER TO THE LIGHTING PLAN(S) FOR LUMINAIRE TYPES AND QUANTITIES.

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.: 24000.01
DATE: 07/24/2024
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CHECKED BY: GLJ

PHASE: PERMIT SET

LIGHTING COMPLIANCE CERTIFICATE

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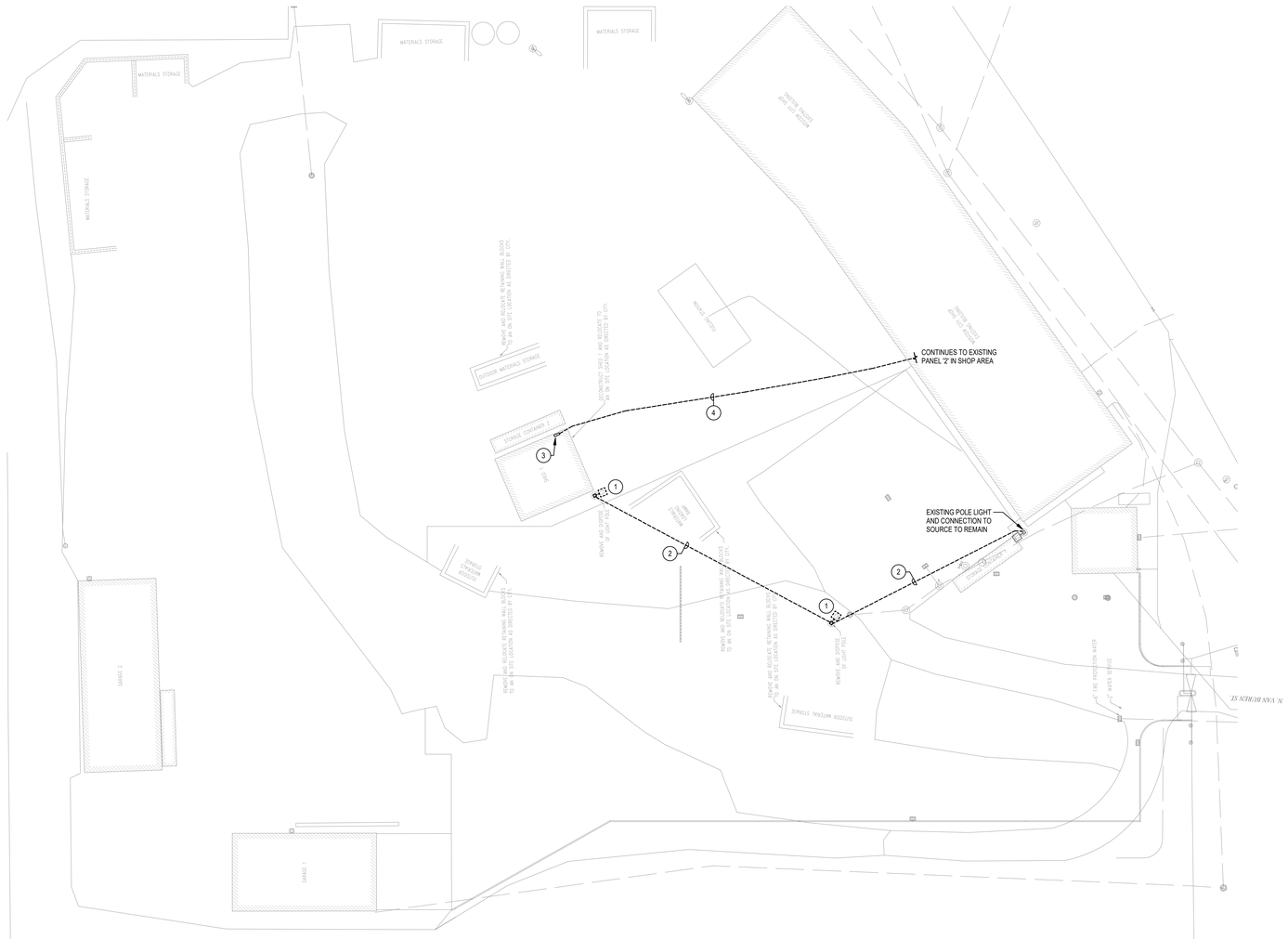
EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

SHEET KEYNOTES

1. REMOVE AND LEGALLY DISPOSE OF EXISTING POLE AND YARD LIGHT.
2. REMOVE AND LEGALLY DISPOSE OF EXISTING TRI-PLEX OVERHEAD CABLE.
3. DISCONNECT, REMOVE, AND LEGALLY DISPOSE OF EXISTING LOAD CENTER AND ALL ASSOCIATED BRANCH CIRCUIT(S) AND DEVICES.
4. REMOVE AND LEGALLY DISPOSE OF UNDERGROUND FEEDER CONDUCTORS BACK TO SOURCE. ABANDON RACEWAY IN PLACE. CAP EXISTING RACEWAY UNDERGROUND.



THIS PLAN REPRESENTS EXISTING DEVICE AND EQUIPMENT LOCATIONS AS CLOSELY AS REASONABLY DISCERNIBLE AND IS PROVIDED FOR CONTRACTOR INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN VERIFICATION OF EXISTING CONDITIONS PRIOR TO BID.

N

E2 SITE ELECTRICAL DEMOLITION PLAN
1" = 30'-0"

GENERAL NOTES

1. REFER TO CIVIL PLANS FOR COORDINATION WITH OTHER EXISTING UTILITIES ON SITE AND FOR INSTRUCTIONS REGARDING LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON CIVIL PLANS IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS REGARDING UNDERGROUND FACILITIES DAMAGE PREVENTION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED AS A RESULT OF SITE WORK. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES OR LOCATING SERVICES FOR EXACT UTILITY LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO DIGGING.
3. PRESERVE AND PROTECT ALL FACILITIES, STRUCTURES, AND LANDSCAPING OUTSIDE OF THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED.
4. COORDINATE WITH LANDSCAPING PLANS FOR SCHEDULE OF LANDSCAPING AND TREES.
5. EXISTING EQUIPMENT, DEVICES, AND CONNECTIONS WHERE SHOWN TO REMAIN ARE TO BE PROTECTED DURING ENTIRE CONSTRUCTION PROCESS. PROTECT ALL CONNECTIONS TO KEEP EXISTING EQUIPMENT ACTIVE. WHERE CONNECTIONS ARE DISRUPTED DUE TO CONSTRUCTION ACTIVITIES, REPAIR AND REPLACE DAMAGED CONNECTIONS.
6. CONTRACTOR TO PROVIDE THE OWNER WITH 24 HOUR NOTICE PRIOR TO DISCONNECTING POWER OR OTHER UTILITIES.

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SITE ELECTRICAL DEMOLITION PLAN

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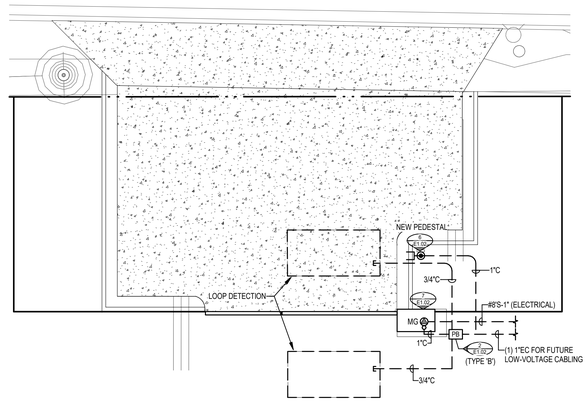
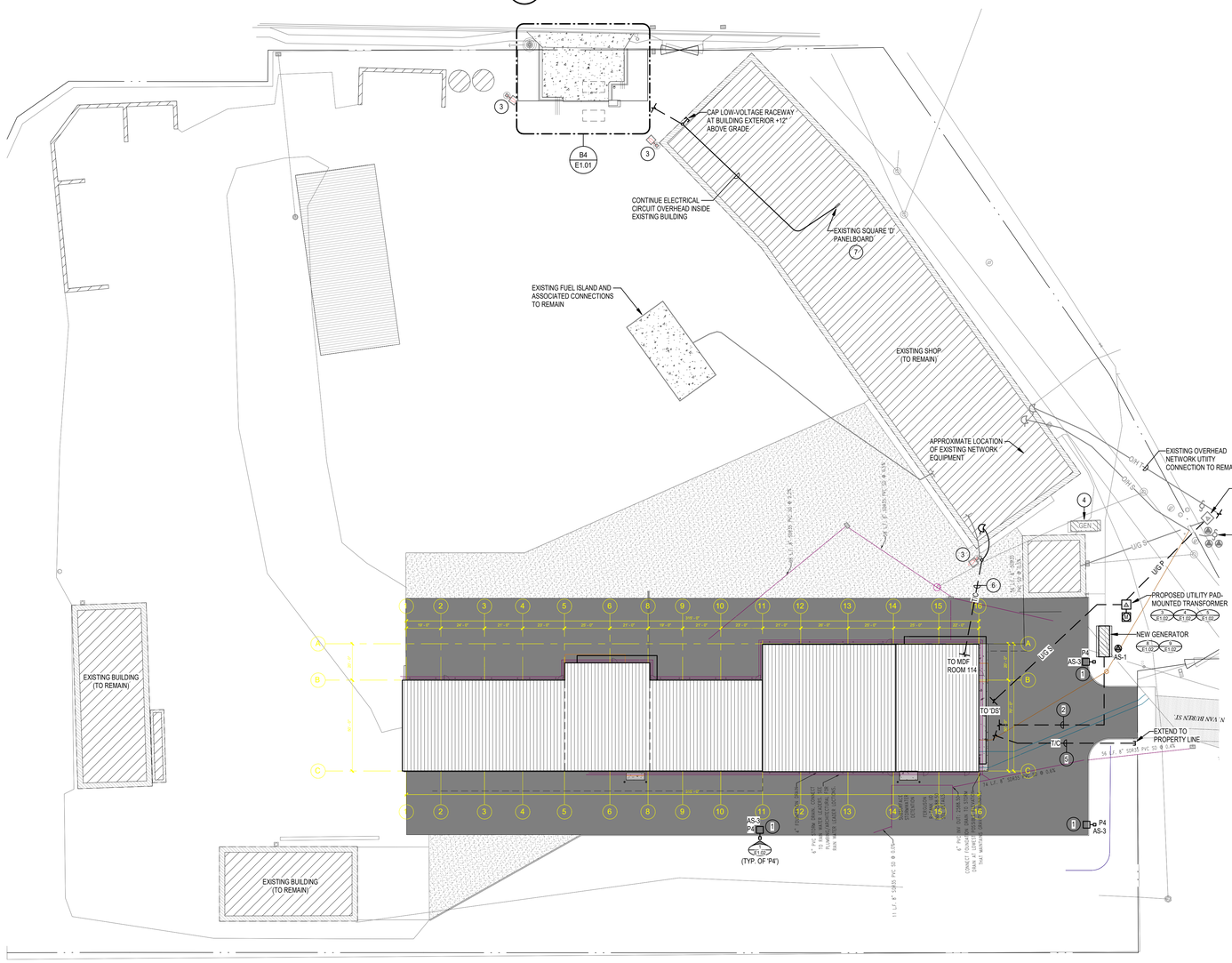


B4 MOTORIZED ENTRY GATE ENLARGED ELECTRICAL PLAN

1/8" = 1'-0"



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E2 SITE ELECTRICAL PLAN

1" = 30'-0"

SHEET KEYNOTES

1. #8"S-1" UNDERGROUND FOR ENTIRE CIRCUIT.
2. UNDERGROUND CONNECTIONS TO GENERATOR. CONTINUE INTO BUILDING PER PLANS AND DETAILS.
3. PRESERVE AND PROTECT EXISTING POLE, YARD LIGHT, AND OVERHEAD CONNECTION TO SHOP BUILDING.
4. PRESERVE AND PROTECT EXISTING GENERATOR AND ASSOCIATED CONNECTIONS.
5. (2) 2"C'S FOR NEW NETWORK UTILITY SERVICE. EXTEND TO 'MDF' IN ROOM 114.
6. NEW FIBER-OPTIC BACKBONE CABLE TO EXISTING SHOP NETWORK EQUIPMENT. ROUTE UNDERGROUND TO EXISTING POLE THEN UP WITH SLACK LOOP TO EXISTING ROOF. CONTINUE THROUGH EXISTING BUILDING TO NETWORK EQUIPMENT.
7. FURNISH AND INSTALL 20A/1P CIRCUIT BREAKER COMPATIBLE WITH EXISTING PANELBOARD FOR 'MG' POWER SUPPLY.

GENERAL NOTES

1. REFER TO CIVIL PLANS FOR COORDINATION WITH OTHER EXISTING UTILITIES ON SITE AND FOR INSTRUCTIONS REGARDING LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON CIVIL PLANS IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS REGARDING UNDERGROUND FACILITIES DAMAGE PREVENTION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED AS A RESULT OF SITE WORK. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES OR LOCATING SERVICES FOR EXACT UTILITY LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO DIGGING.
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4. COORDINATE WITH LANDSCAPING PLANS FOR SCHEDULE OF LANDSCAPING AND TREES.
5. EXISTING EQUIPMENT, DEVICES, AND CONNECTIONS WHERE SHOWN TO REMAIN ARE TO BE PROTECTED DURING ENTIRE CONSTRUCTION PROCESS. PROTECT ALL CONNECTIONS TO KEEP EXISTING EQUIPMENT ACTIVE. WHERE CONNECTIONS ARE DISRUPTED DUE TO CONSTRUCTION ACTIVITIES, REPAIR AND REPLACE DAMAGED CONNECTIONS.
6. CONTRACTOR TO PROVIDE THE OWNER WITH 24 HOUR NOTICE PRIOR TO DISCONNECTING POWER OR OTHER UTILITIES.
7. ALL UNDERGROUND CONDUIT ELBOWS SWEEPING TO ABOVE GRADE SHALL BE PVC WRAPPED RIGID. WHERE SWEEPING ABOVE GRADE, CONDUITS SHALL PROTRUDE A MINIMUM OF 3 INCHES ABOVE GRADE.
8. REFER TO SPECIFICATION SECTION 260100 FOR COORDINATION REQUIREMENTS WITH ELECTRICAL UTILITY COMPANY.
9. ALL CONDUCTORS/CABLES INSTALLED UNDERGROUND SHALL BE SUITABLE FOR WET LOCATIONS.

ENTRY / EXIT GATE SEQUENCE OF OPERATION

OPERATION OF ENTRY/EXIT GATES SHALL BE BY ANY OF THE FUNCTIONS DESCRIBED BELOW:

- KEYPAD SYSTEM. PROPER VERIFICATION OF KEYPAD SHALL ALLOW THE ENTRY GATE TO OPERATE. LOOP DETECTOR CABLE OR TIME-OUT FUNCTION SHALL CLOSE ENTRY GATE UPON VERIFICATION.
- EXIT GATE SHALL OPERATE UPON ACTIVATION OF LOOP DETECTION CABLE IN ROADWAY OF EXIT.
- KNOX BOX ACTIVATION. KNOX BOX INSTALLED AT THE ENTRY GATE PEDESTAL SHALL BE PROVIDED WITH CONTACTS THAT WILL INITIATE OPERATION OF BOTH THE ENTRY AND EXIT GATES WHEN KNOX BOX IS OPENED BY THE FIRE DEPARTMENT. GATES SHALL BE PROGRAMMED TO REMAIN OPEN UNTIL KNOX BOX IS CLOSED AND LOCKED BY FIRE DEPARTMENT. UPON CLOSURE OF THE KNOX BOX, ENTRY AND EXIT GATES SHALL CLOSE. NO OTHER OPERATIONS SHALL BE ACKNOWLEDGED WHILE GATES ARE IN THE OPEN POSITION FROM ACTIVATION FROM THE KNOX BOX.

REFER TO GATE CONTROLLER SPECIFICATIONS AND COORDINATE INSTALLATION WITH GATE CONTROLLER MANUFACTURER AND CONTRACTOR. PROGRAM SYSTEM TO OPERATE WITH SEQUENCES ABOVE AND/OR DIRECTION FROM USER AGENCY FOR OPERATION OF SYSTEM.

ENTRY / EXIT GATE CABLING LEGEND

FROM	TO	CONDUCTOR TYPE
KEYPAD	GATE CONTROLLER	AS RECOMMENDED BY GATE MANUFACTURER
LOOP DETECTOR	GATE CONTROLLER	AS RECOMMENDED BY GATE MANUFACTURER
KNOX BOX CONTACTS	ENTRY GATE CONTROLLER	CONDUCTORS TO OPEN GATE UPON OPENING OF KNOX BOX BY FIRE DEPARTMENT

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SITE ELECTRICAL PLAN

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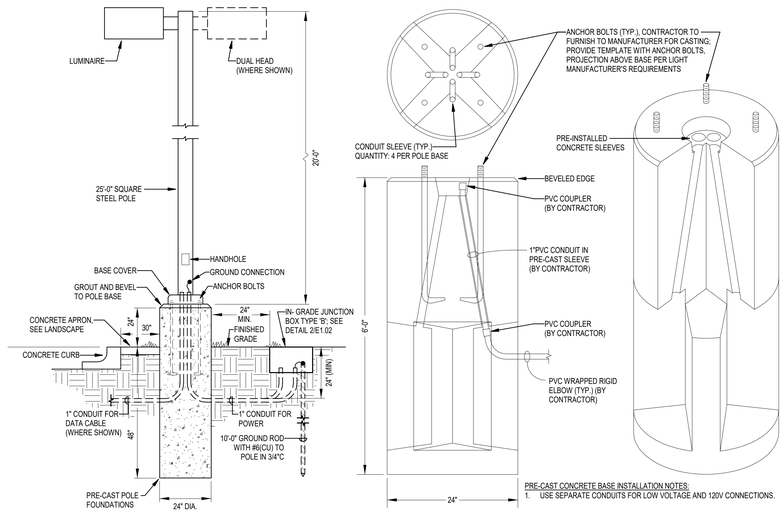
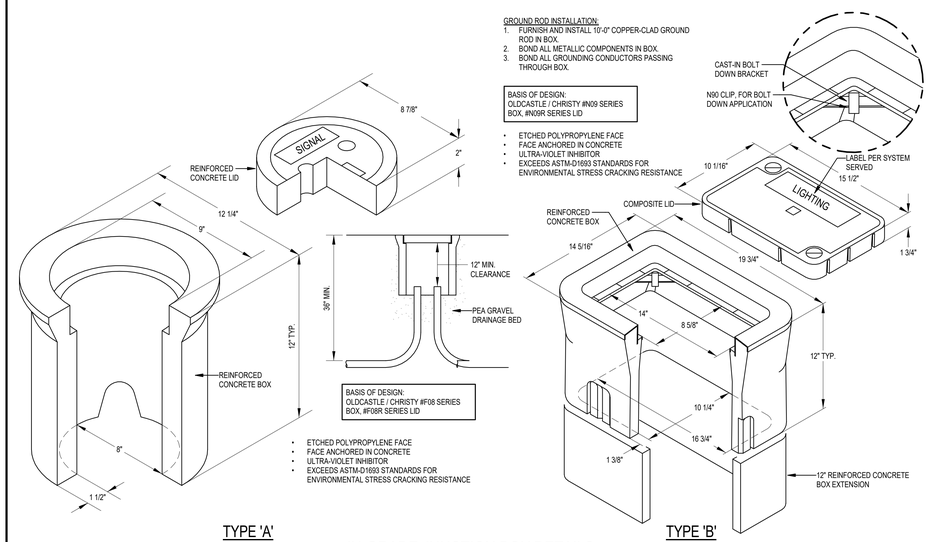


PRE-CAST CONCRETE BASE INSTALLATION NOTES:
1. USE SEPARATE CONDUITS FOR LOW VOLTAGE AND 120V CONNECTIONS.

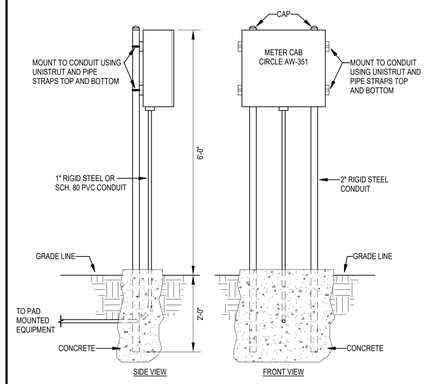
POLE LIGHT WITH PRE-CAST CONCRETE BASE DETAIL

NOT TO SCALE — 1 / E1.02



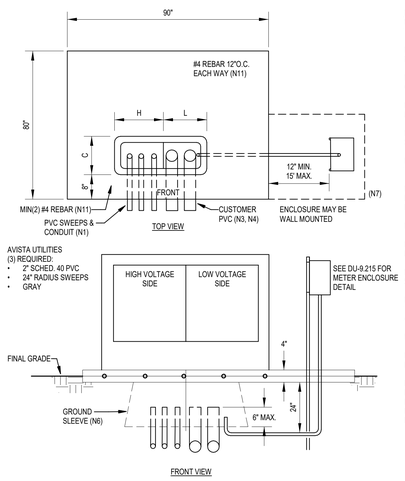
IN-GRADE JUNCTION BOX DETAILS

NOT TO SCALE — 2 / E1.02



PEDESTAL MOUNTED METER ENCLOSURE DETAIL

NOT TO SCALE — 3 / E1.02



NOTES:
N1. DIRECTION OF ENTRY TO HIGH VOLTAGE CONDUITS MAY VARY ACCORDING TO THE JOB REQUIREMENTS.

N2. SERVICE CONDUITS MUST BE INSTALLED PRIOR TO FORMING AND POURING THE PAD TO AVOID UNDERMINING THE PAD.

N3. SERVICE CONDUITS MUST BE CONFINED TO THE LOW VOLTAGE SIDE OF THE WINDOW.

N4. WHEN THE NUMBER OF SECONDARY CONDUCTORS EXCEEDS THE LIMITS IN DU-5.124, AVISTA UTILITIES WILL PROVIDE A SECONDARY ENCLOSURE.

N5. A GROUND SLEEVE MAY BE SUPPLIED BY AVISTA UTILITIES. IT SHALL BE CENTERED LEFTO TO RIGHT IN THE PAD.

N6. FOR TRANSFORMERS LARGER THAN 500KVA, THE CUSTOMER MAY BE REQUIRED TO PROVIDE A LARGER GROUND SLEEVE OR VAULT UNDER THE PAD.

N7. THE METER PEDESTAL SHALL BE LOCATED AS SPECIFIED BY AVISTA UTILITIES ELECTRIC METER SHOP. THE RIGID UPRIGHT STEEL CONDUITS FOR METERING ENCLOSURE SHALL BE SET IN CONCRETE.

N8. PAD SHALL BE LOCATED AND ORIENTED AS SPECIFIED BY AVISTA UTILITIES (R2).

N9. PAD SHALL BE CONSTRUCTED ON FIRM UNDISTURBED OR WELL-COMPACTED EARTH, SHALL BE BEDDED ON GRAVEL, AND SHALL BE LEVEL.

N10. CONCRETE SHALL BE 5-BAG MIX WITH 3/4" MAXIMUM SIZE AGGREGATE. TOP SURFACE SHALL BE BROOM FINISHED. EDGES SHALL BE ROUNDED.

N11. CONCRETE SHALL BE AT LEAST 4" THICK AND SHALL BE REINFORCED AT HALF THE DEPTH WITH #4 REBAR ON 12" CENTERS EACH WAY. REINFORCING EXTENDED AROUND WINDOW SHALL CONSIST OF A MINIMUM OF (2) REBARS.

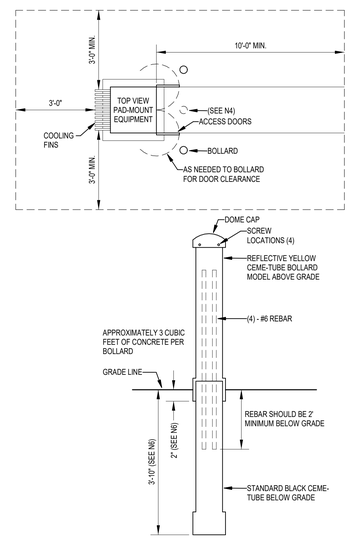
N12. 2" STEEL PIPE POLES SHOULD BE BONDED TO TRANSFORMER GROUND.

N13. CONCRETE PAD INSTALLATIONS MUST BE APPROVED BEFOR FINAL INSTALLATION.

REFERENCES:
R1. AVISTA UTILITIES ELECTRIC SERVICE AND METER REQUIREMENTS MANUAL.
R2. FOR CLEARANCES TO BUILDINGS, SEE DU-3.220.
R3. REFER TO UNDERGROUND STANDARD DU-5.120.
R4. REFER TO DU-9.215 PEDESTAL MOUNTED METER ENCLOSURE.

PAD-MOUNTED TRANSFORMER PAD DETAIL

NOT TO SCALE — 4 / E1.02



NOTES:
N1. THE INSTALLATION OF BOLLARDS (GUARD POSTS) MAY BE REQUIRED WHEN ELECTRICAL EQUIPMENT IS EXPOSED TO VEHICULAR TRAFFIC OR MINIMUM CLEARANCES AROUND EQUIPMENT CANNOT BE MET.

N2. THE CUSTOMER IS RESPONSIBLE FOR SUPPLYING, INSTALLING, AND MAINTAINING BOLLARDS WHEN REQUIRED BY AN AVISTA UTILITIES REPRESENTATIVE. AVISTA WILL SUPPLY AND INSTALL BOLLARDS ONLY TO PROTECT PREVIOUSLY INSTALLED EQUIPMENT.

N3. SEE DETAIL ON PAGE 1 FOR CLEARANCES TO PAD-MOUNT EQUIPMENT.

N4. IF LARGE EQUIPMENT SUCH AS A THREE-PHASE TRANSFORMER OR PAD-MOUNT CAPACITOR BANK REQUIRES BOLLARDS FOR PROTECTION, AND IF THE FIVE (5) FOOT SPACING BETWEEN BOLLARDS CANNOT BE OBTAINED WHILE MAINTAINING ADEQUATE CLEARANCE, A SINGLE THIRD BOLLARD MAY BE INSTALLED SUBJECT TO THE FOLLOWING PROVISIONS:

a. THERE MUST BE A CLEAR POSSIBILITY OF VEHICLE STRIKES TO THE EQUIPMENT.
b. THE BOLLARD MUST BE INSTALLED IN LINE WITH THE LINE BETWEEN THE DOORS ON THE EQUIPMENT (THREE-PHASE TRANSFORMER DOORS TO NOT TYPICALLY MEET AT THE EXACT CENTER OF THE EQUIPMENT BUT ARE PLACED TO THE RIGHT).
c. THE BOLLARD MUST BE INSTALLED SUFFICIENTLY FAR AWAY FROM THE EQUIPMENT CABINET SO AS NOT TO INTERFERE WITH DOOR OPENING.
d. REMOVABLE BOLLARDS ARE NOT PERMITTED.

N5. PLASTIC TUBE 8" BOLLARDS FILLED WITH CONCRETE ARE PREFERRED FOR THE PROTECTION OF AVISTA UTILITIES EQUIPMENT. THEY ARE EASY TO INSTALL, YELLOW IN COLOR, MAINTENANCE FREE AND LOCALLY AVAILABLE (GRAYBAR AND WHITECAP SUPPLY), AND DO NOT REQUIRE BONDING TO THE EQUIPMENT CABINET. ALL OTHER BOLLARDS MUST BE APPROVED BY AN AVISTA UTILITIES REPRESENTATIVE.

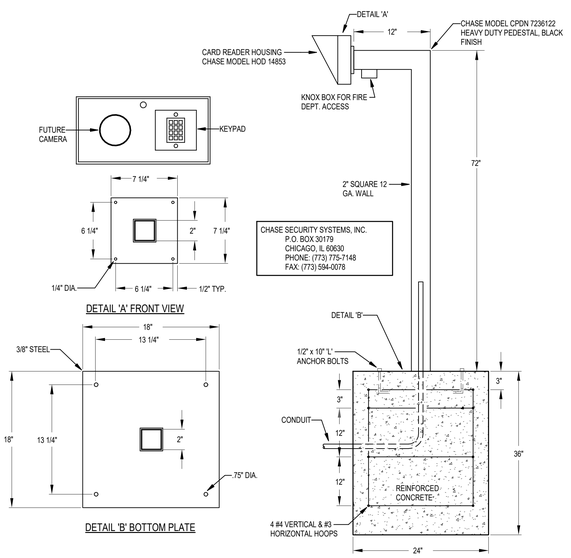
N6. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE HOLE FOR THE BOLLARD SHOULD BE 3'-10" DEEP. SETTING DEPTH IS NOT CRITICAL SO LONG AS THE BOTTOM OF THE TOP SECTION OF THE BOLLARD IS BELOW THE GROUND LINE.

N7. BOLLARDS SHALL BE A MINIMUM OF 48" TALL. IF SEVERAL BOLLARDS ARE NEEDED, THEY SHALL BE PLACED AT A MAXIMUM OF 5' ON CENTER FROM EACH OTHER.

REFERENCES:
R1. REFER TO WAC 296-46B-450(f).
R2. REFER TO DU-4.512 GROUNDING / BONDING OF ADJACENT EQUIPMENT.

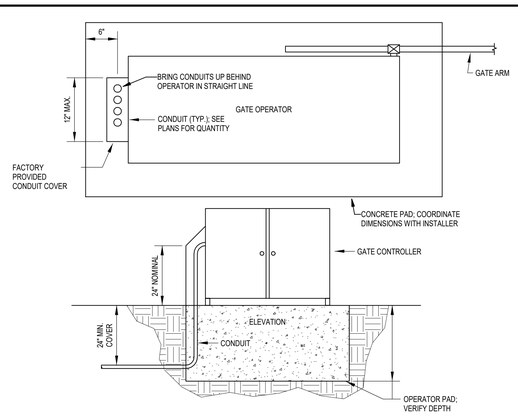
BOLLARD CONSTRUCTION DETAIL

NOT TO SCALE — 5 / E1.02



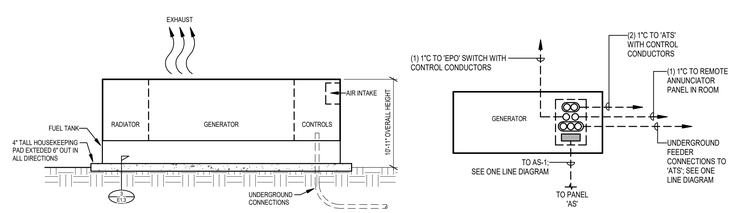
ENTRY GATE PEDESTAL DETAIL

NOT TO SCALE — 6 / E1.02



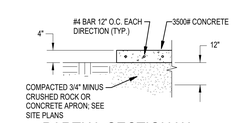
TYPICAL GATE OPERATOR CONDUIT INSTALLATION DETAIL

NOT TO SCALE — 7 / E1.02



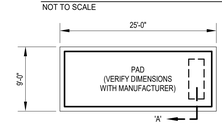
GENERATOR ELEVATION & CONNECTION DETAIL

NOT TO SCALE — 8 / E1.02



PARTIAL SECTION 'A'

NOT TO SCALE



GENERATOR PAD DETAIL

NOT TO SCALE — 9 / E1.02

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	MKC/CRH
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SITE ELECTRICAL DETAILS

SHEET NO.
E1.02

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

SHEET KEYNOTES

1. ---

GENERAL NOTES

1. REFER TO RESPECTIVE SYSTEM PLANS FOR APPLICABLE GENERAL NOTES AND INSTALLATION INSTRUCTIONS.

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:

- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

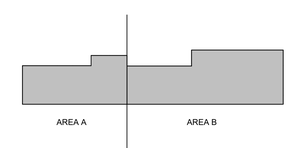
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

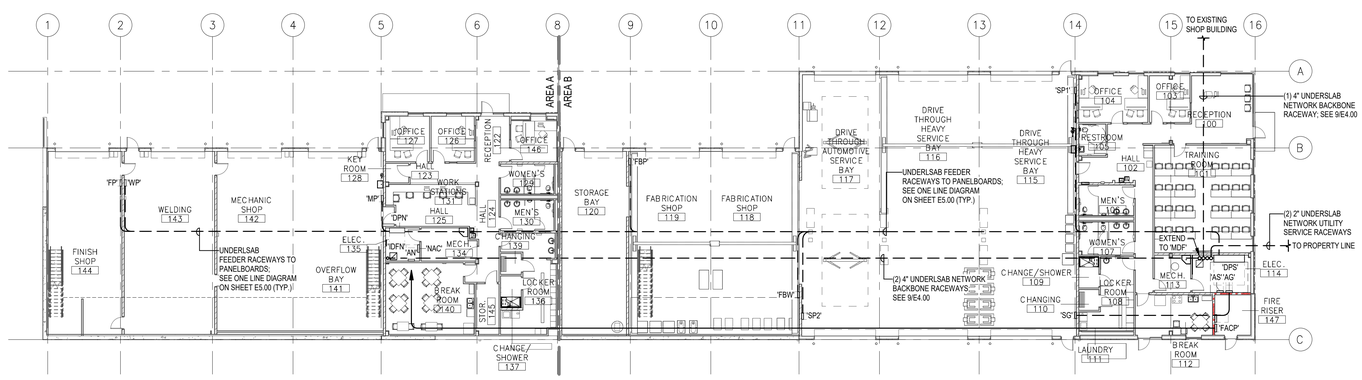
CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN





E1 OVERALL ELECTRICAL PLAN
1/16" = 1'-0"

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ELECTRICAL OVERALL PLAN

SHEET NO.
E2.10

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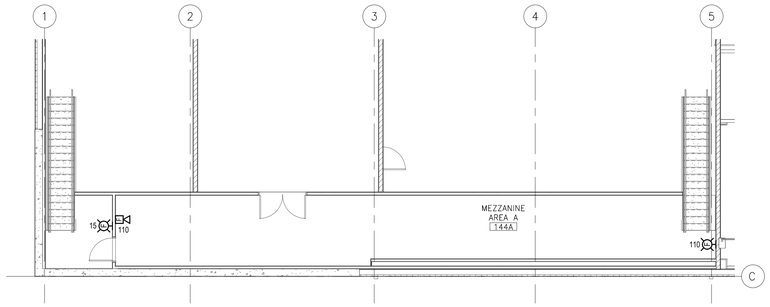
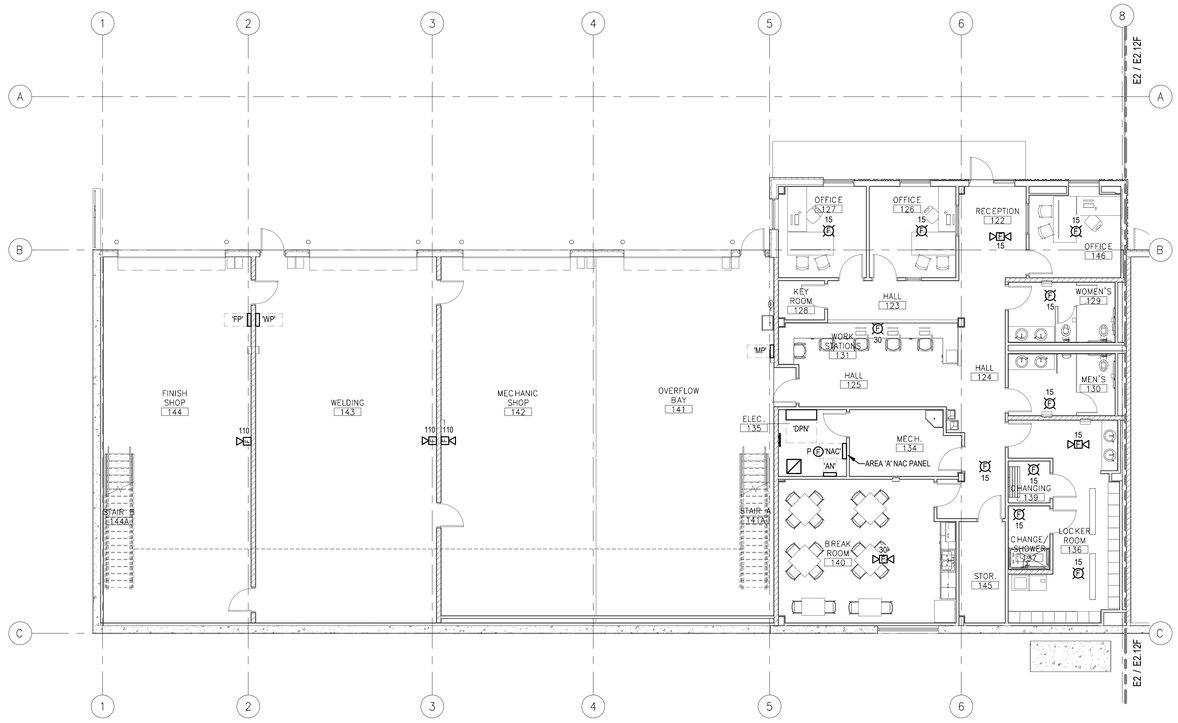


B2 MEZZANINE FIRE ALARM PLAN - AREA A
1/8" = 1'-0"



E2 FIRE ALARM PLAN - AREA A
1/8" = 1'-0"

SHEET KEYNOTES

1. ---

FIRE ALARM DESIGN DATA

OCCUPANCY GROUP:	'B, S'
OCCUPANCY LOAD:	SEE ARCHITECTURAL CODE PLAN.
BUILDING AREA:	SEE ARCHITECTURAL CODE PLAN.
SYSTEM TYPE:	NON-CODED ADDRESSABLE TYPE.
OCCUPANT NOTIFICATION:	HORNSTROBE DEVICES.
MECHANICAL EQUIPMENT:	SHUTDOWN PER IMC REQUIREMENTS WHERE REQUIRED.
RATED WALL ASSEMBLIES:	SEE ARCHITECTURAL CODE PLAN.
FIRE SPRINKLER SYSTEM:	SEE GENERAL NOTES.
POWER SUPPLY:	POWER SUPPLIES AND BATTERIES OVERSIZED FOR 25% ADDITIONAL DEVICES.
CIRCUIT CAPACITY:	LOAD INDIVIDUAL CIRCUITS TO 50% MAXIMUM; CONDUCTORS SHALL BE SIZED FOR 100% LOAD.
VOLTAGE DROP:	CALCULATE AT 100% LOAD AT END OF LINE. VOLTAGE DROP SHALL NOT EXCEED 10% ON EACH CIRCUIT.
SMOKE CONTROL:	N/A
SYSTEM CONNECTIONS:	REFER TO SYSTEM WIRING DIAGRAM ON SHEET E4.00 FOR TYPICAL CONNECTION LAYOUTS AND CONFIGURATION.

GENERAL NOTES

1. FIRE ALARM SYSTEM DEVICE CONNECTIONS SHOWN ON THIS PLAN ARE SHOWN FOR BIDDING PURPOSES ONLY. FIRE ALARM CONTRACTOR SHALL PROPERLY DESIGN CIRCUIT LOADS TO BE COMPATIBLE WITH NFPA 72 AND MANUFACTURERS SPECIFICATIONS AND MODIFY CONNECTIONS AS NECESSARY. FIRE ALARM SYSTEM SHOP DRAWINGS AND DESIGN CALCULATIONS SHALL BE THE FINAL WORKING DRAWINGS FROM WHICH THE INSTALLATION IS IMPLEMENTED.
2. DO NOT BEGIN FIRE ALARM SYSTEM INSTALLATION UNTIL SUBMITTALS HAVE BEEN APPROVED BY THE ELECTRICAL ENGINEER AND THE BUILDING OFFICIAL. ALL COSTS AND CORRECTIONS OF WORK DUE TO LATE SUBMITTALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL FIRE ALARM SYSTEM WIRING SHALL BE IN RED-COLORED CONDUIT (3/4 INCH MINIMUM SIZE). SEPARATE RACEWAYS SHALL BE UTILIZED FOR INITIATING CIRCUITS AND NOTIFICATION CIRCUITS. WIRING COLOR CODE SHALL BE MAINTAINED CONSISTENT THROUGHOUT THE INSTALLATION.
4. ALL OUTLET, PULL, AND JUNCTION BOXES SHALL BE LABELED "FIRE ALARM" AND PAINTED RED.
5. REFER TO SPECIFICATION SECTION 260533 "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS" FOR INSTALLATION REQUIREMENTS FOR CONDUITS AND BOXES.
6. CIRCUIT PROTECTIVE DEVICE(S) SERVING FIRE ALARM EQUIPMENT TO BE FURNISHED WITH INTEGRAL LOCK-ON DEVICE(S) AND BE PAINTED RED. EACH SYSTEM EQUIPMENT PANEL SHALL BE SERVED WITH A DEDICATED LINE VOLTAGE CIRCUIT.
7. FURNISH AND INSTALL APPROPRIATE QUANTITY OF SYSTEM POWER SUPPLIES, NAC PANELS, AND APPROPRIATE SMOKE DETECTION AND LINE VOLTAGE POWER CONNECTIONS FOR PROPER SYSTEM FUNCTION AND SPARE CAPACITY REQUIRED. LOCATE ADDITIONAL POWER SUPPLY AND NAC PANELS IN LOCATIONS ADJACENT TO OTHER SHOWN FIRE ALARM EQUIPMENT. POWER SUPPLIES AND NAC PANELS MAY BE LOCATED IN OTHER AREAS OF THE BUILDING ONLY WITH THE WRITTEN CONSENT OF THE ELECTRICAL ENGINEER.
8. THE LOCATION OF ALL CONCEALED SMOKE DETECTION DEVICES SHALL BE IDENTIFIED IN ACCORDANCE WITH NFPA 72.
9. SMOKE DETECTION DEVICES AT DOOR HOLD-OPEN DEVICES SHALL BE LOCATED IN ACCORDANCE WITH NFPA 72 REQUIREMENTS.
10. SMOKE DETECTION DEVICES SHALL BE LOCATED AT LEAST THREE (3) FEET FROM SUPPLY AND RETURN AIR DIFFUSERS.
11. ALL VISUAL NOTIFICATION APPLIANCES SHALL BE SYNCHRONIZED.
12. EACH DEVICE SHALL BE LABELED WITH DEVICE DESIGNATION. LABEL SHALL HAVE 1/4 INCH HIGH BLACK LETTERS ON WHITE BACKGROUND. DEVICE DESIGNATION SHALL INCLUDE DEVICE ADDRESS OR CIRCUIT IDENTIFIER.
13. FURNISH AND INSTALL VINYL COATED SYSTEM DIAGRAM AT THE FIRE ALARM CONTROL PANEL. SYSTEM DIAGRAM SHALL INCLUDE THE BUILDING FLOORPLAN, ALL INSTALLED DEVICES, AND ALL DEVICE ADDRESSES/IDENTIFIERS. LOCATE AN OVERALL SYSTEM DIAGRAM AT THE MAIN FIRE ALARM CONTROL PANEL WITH ALL BUILDING LEVELS/FLOORS ON SEPARATE DIAGRAMS. LOCATE EACH RESPECTIVE FLOORPLAN DIAGRAM AT EACH NAC PANEL ON ALL OTHER FLOORS/LEVELS OF THE FACILITY.
14. FURNISH AND INSTALL ALL REQUIRED SUPERVISORY POWER AND ALARM CONNECTIONS FOR FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH FIRE SPRINKLER DESIGN AND NFPA 13. ALL CONNECTIONS SHALL BE INDIVIDUALLY ADDRESSED. COORDINATE ALL FIRE ALARM AND POWER CONNECTIONS WITH FIRE SPRINKLER CONTRACTOR PRIOR TO INSTALLATION. INCLUDE CONNECTIONS ON FIRE ALARM SYSTEM SHOP DRAWINGS.
15. CONTRACTOR SHALL COORDINATE PLACEMENT OF CEILING MOUNTED DEVICES/APPLIANCES WITH ALL OTHER TRADES. SPACING REQUIREMENTS PER NFPA 72 AND LOCAL AUTHORITY HAVING JURISDICTION SHALL APPLY TO COORDINATION EFFORTS WITH OTHER TRADES.

EXPOSED RACEWAY INSTALLATIONS

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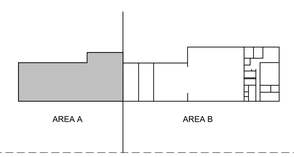
SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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FIRE ALARM PLAN - AREA A

SHEET NO.
E2.11F

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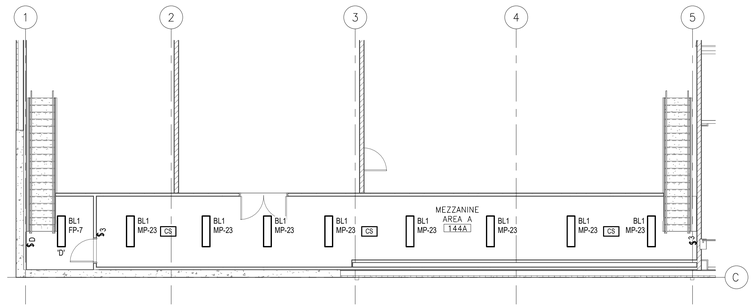

B1 MEZZANINE LIGHTING PLAN - AREA A
1/8" = 1'-0"

LIGHTING CONTROL SCHEDULE - AREA A

SYSTEM / ROOM / AREA	DIMMING: MANUAL	DIMMING: PROGRAMMED	DIMMING: DAYLIGHT	MANUAL: TOGGLE (LINE-VOLT)	MANUAL: INT. TO SENSOR	SENSOR(S): DUAL	SENSOR(S): CEILING	SENSOR(S): LARGE MOTION	SENSOR(S): SMALL MOTION	SENSOR(S): OCCUPANCY	SENSOR(S): VACANCY	SENSOR(S): AUX. RELAY	SENSOR(S): 2-POLE	DAYLIGHT: ZONE AREA	DAYLIGHT: ON - BOARD	DAYLIGHT: PHOTOCELL	NETWORK INTERFACE: PROTOCOL	NETWORK INTERFACE: RELAY	NETWORK INTERFACE: WIRELESS	PROGRAM SEQUENCE	NOTES
122	●					●	●	●		●										C2	1, 2
123	●					●	●	●		●										C2	1, 2
124	●					●	●	●		●										C2	1, 2
125	●					●	●	●		●										C2	1, 2
126	●				●		●		●		●									B1	
127	●				●		●		●		●									B1	
128					●		●		●		●									B	
129						●	●		●	●										C	
130						●	●		●	●										C	
131	●					●	●	●		●										C2	1, 2
134					●		●		●		●									B	
135					●															A	
136						●		●		●	●									C	1
137					●		●			●	●									C	
139					●		●			●	●									C	
140	●					●		●	●		●									C2	
141, 142 (BAYS)					●															A2	
141, 142 (BELOW MEZZ.)					●		●													A3	
143 (BAYS)					●															A2	
143 (BELOW MEZZ.)					●		●													A	
144 (BAYS)					●															A1	
144 (BELOW MEZZ.)					●															A	
144 (ABOVE MEZZ.)					●															A	
144A					●			●	●		●									C2	1
145					●		●			●		●								B	
146	●				●		●			●		●								B1	
BUILDING EXTERIOR																				D	

PROGRAM SEQUENCE SCHEDULE

SEQUENCE	DESCRIPTION
A	MANUAL ON. MANUAL OFF.
A1	MANUAL ON. MANUAL OFF. DUAL SWITCHING CONFIGURATION FOR LIGHT REDUCTION CONTROLS.
A2	3-WAY OR 4-WAY MANUAL ON. MANUAL OFF. DUAL SWITCHING CONFIGURATION FOR LIGHT REDUCTION CONTROLS.
A3	3-WAY OR 4-WAY MANUAL ON. MANUAL OFF.
B	MANUAL ON. AUTO OFF.
B1	MANUAL ON. MANUAL DIMMING. AUTO OFF.
C	AUTO ON. AUTO OFF.
C1	BUSINESS DAYS: AUTO ON AT 7:00 AM, AUTO OFF AT 10:00 PM. NON-BUSINESS AND HOLIDAYS: DISABLED.
C2	AUTO ON. AUTO OFF, WITH MANUAL OVERRIDE (DIMMING WHERE SCHEDULED).
D	INTEGRAL MOTION / AMBIENT SENSOR ON BOARD EACH LUMINAIRE.
E	NIGHTTIME OPERATION: AUTO ON (100%) 60 MINUTES BEFORE SUNSET. AUTO OFF (0%) 30 MINUTES AFTER SUNRISE. DAYTIME OPERATION: AUTO ON (50%) UPON LOW LEVEL TRIGGER FROM PHOTOCELL AFTER 2-MINUTE DELAY. AUTO OFF (0%) UPON CLEAR FROM PHOTOCELL AFTER 2-MINUTE DELAY.
E1	NIGHTTIME OPERATION: AUTO ON (100%) 60 MINUTES BEFORE SUNSET. AUTO OFF (0%) 30 MINUTES AFTER SUNRISE. DAYTIME OPERATION: AUTO ON (100%) UPON LOW LEVEL TRIGGER FROM PHOTOCELL AFTER 2-MINUTE DELAY. AUTO OFF (0%) UPON CLEAR FROM PHOTOCELL AFTER 2-MINUTE DELAY.
E2	NIGHTTIME OPERATION: AUTO ON (100%) 60 MINUTES BEFORE SUNSET. AUTO DIM (50%) AT 11:00PM. AUTO DIM (100%) 120 MINUTES BEFORE SUNRISE. AUTO OFF (0%) 30 MINUTES AFTER SUNRISE. DAYTIME OPERATION: AUTO ON (50%) UPON LOW LEVEL TRIGGER FROM PHOTOCELL AFTER 2-MINUTE DELAY. AUTO OFF (0%) UPON CLEAR FROM PHOTOCELL AFTER 2-MINUTE DELAY.

NOTES:
1. MULTIPLE SENSORS IN PARALLEL.
2. ROOMS 122, 123, 124, 125, 131 TO OPERATE FROM SAME SENSORS.

LUMINAIRE INSTALLATION SCHEDULE - AREA A

ROOM	LUMINAIRE INSTALLATION	NOMINAL MOUNTING HEIGHT	INSTALLATION NOTES
122	CEILING	RECESSED	- - -
123	CEILING	RECESSED	
124	CEILING	RECESSED	
125	CEILING	RECESSED	
126	CEILING	RECESSED	
127	CEILING	RECESSED	
128	CEILING	SURFACE	
129	CEILING	SURFACE	
130	CEILING	SURFACE	
131	CEILING	RECESSED	
134	CEILING	SURFACE	
135	CEILING	SURFACE	
136	CEILING	SURFACE	
137	CEILING	SURFACE	
139	CEILING	SURFACE	
140	CEILING	RECESSED	
141,142 (BAY)	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
141,142 (BELOW MEZZ.)	STRUCTURE	SURFACE	
143 (BAY)	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
143 (BELOW MEZZ.)	STRUCTURE	SURFACE	
144 (BAY)	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
144 (BELOW MEZZ.)	STRUCTURE	SURFACE	
144 (ABOVE MEZZ.)	STRUCTURE	SURFACE	
144A	STRUCTURE	SURFACE	
145	CEILING	SURFACE	
146	CEILING	RECESSED	

WALL CONTROL DEVICE SCHEDULE - AREA A

ROOM	DEVICE ID	BUTTONS 1	BUTTONS 2	BUTTONS 3	BUTTONS 4	CONTROL ZONE	SWITCH LABEL
122	1	●				HALLS / WORKSTATIONS	LOBBY
125	1	●				HALLS / WORKSTATIONS	LOBBY

NOTES:
1. MANUFACTURER SHALL CUSTOM ENGRAVE SWITCH BUTTONS WITH LABELS AS SCHEDULED.
2. SELECT BUTTON QUANTITY PER DEVICE.
3. PROGRAM BUTTON(S) PER LIGHTING CONTROL DEVICE SCHEDULE.

SHEET KEYNOTES

1. CONNECT TO UNCONTROLLED LEG OF LIGHTING CIRCUIT.
2. REMOTE BATTERY HIGH ON WALL.
3. #RS-1" ENTIRE CIRCUIT.

GENERAL NOTES

1. REFER TO LUMINAIRE SCHEDULE ON SHEET E3.00 FOR LUMINAIRE TYPES AND ADDITIONAL INSTALLATION INSTRUCTIONS ASSOCIATED WITH RESPECTIVE LUMINAIRE TYPES.
2. REFER TO LIGHTING CONTROL DEVICE SCHEDULE AND TYPICAL CONTROL SYSTEM SCHEMATICS ON SHEET E3.00 FOR CONTROL DEVICE TYPES, CONTROL SYSTEM CONNECTION REQUIREMENTS, AND GENERAL INSTALLATION INSTRUCTIONS.
3. REFER TO LIGHTING SYMBOLS LIST FOR GENERAL DESCRIPTION OF LUMINAIRE SYMBOLS, CONTROL SYMBOLS, AND CONNECTION NOMENCLATURE.
4. REFER TO MECHANICAL SYSTEM CONTROL SCHEMATICS FOR INSTALLATION AND INTERFACE REQUIREMENTS FOR LIGHTING CONTROL DEVICES AND BUILDING MANAGEMENT SYSTEMS, DIRECT DIGITAL CONTROL SYSTEMS, AND OTHER HVAC AND CONTROL INTERFACE REQUIREMENTS.
5. ALL LUMINAIRES AND LIGHTING CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. DO NOT PROCEED WITH THE WORK WITHOUT PROPER REVIEW OF ALL MANUFACTURER'S LITERATURE, SHOP DRAWINGS, AND DETAILS.
6. ALL LUMINAIRES SHALL BE SUPPORTED FROM STRUCTURE. DO NOT UTILIZE CEILING GRIDS AS THE ONLY MEANS OF SUPPORT.
7. SEISMIC SUPPORTS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SEISMIC SPECIFICATIONS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. COORDINATE LUMINAIRE PLACEMENT WITH ARCHITECTURAL REFLECTED CEILING PLANS, MECHANICAL AND PLUMBING PLANS, FIRE-SPRINKLER SYSTEM LAYOUTS, AND STRUCTURAL ASSEMBLIES PRIOR TO INSTALLATION.
9. CEILING GRID ORIENTATION AND FRAMING FOR HARD-LID ASSEMBLY CEILINGS SHALL BE VERIFIED PRIOR TO LUMINAIRE INSTALLATION.
10. RECESSED LUMINAIRES SHALL BE INSTALLED FLUSH WITH FINISHED SURFACES. DO NOT CUT OPENINGS LARGER THAN LUMINAIRE TRIMS.
11. SUSPENDED LUMINAIRES SHALL BE INSTALLED PARALLEL WITH THE FLOOR UNLESS OTHERWISE NOTED, AND SHALL BE PLUMB WITH BUILDING LINES AND STRUCTURE.
12. FINAL INSTALLATION HEIGHT OF PENDANT-MOUNTED LUMINAIRES SHALL BE GOVERNED BY PROPER COORDINATION WITH OTHER TRADES. SCHEDULED HEIGHTS INDICATED ARE NOMINAL. ADEQUATE LENGTH OF CABLES, STEMS, AND OTHER SUPPORT STRUCTURES SHALL BE FURNISHED BASED ON FIELD CONDITIONS ENCOUNTERED. FINAL INSTALLATION HEIGHTS SHALL BE ADJUSTED UPON REVIEW OF THE INSTALLATION. PROVIDE ADEQUATE SPARE LENGTH OF SUSPENSION MATERIALS FOR FINAL ADJUSTMENTS. WHERE OBSTRUCTIONS SUCH AS DUCTWORK, PIPING, EQUIPMENT RACKS, ETC. EXIST, SPAN OBSTRUCTION WITH RIGID SUSPENSION SYSTEM.
13. EXIT SIGNS SHALL BE LOCATED TO PROVIDE CLEAR VISIBLE IDENTIFICATION OF EXIT DOORS AND EGRESS PATHWAYS. EXIT SIGNS SHALL NOT BE OBSTRUCTED FROM VIEW. FIELD-MODIFY EXIT SIGNS TO ALLOW FOR DIRECTIONAL INDICATIONS AS DIRECTED.
14. LOCATE WALL MOUNTED LIGHTING CONTROL DEVICES NOT MORE THAN 12-INCHES FROM THE TRIM OF THE DOOR ON THE LATCH SIDE, OR NOT MORE THAN 12-INCHES FROM THE DOOR SIDE LIGHT (WHERE APPLICABLE), OR NOT MORE THAN 12-INCHES FROM OPEN POSITION OF THE DOOR WHERE INSTALLED ON OPPOSING WALL FROM THE DOOR LATCH. DO NOT INSTALL WALL MOUNTED LIGHTING CONTROL DEVICES BEHIND DOORS IN THE OPEN POSITION.
15. LOCATE ALL LIGHTING AND CONTROL SYSTEM POWER SUPPLIES, REMOTE DRIVERS, OR INTERFACE EQUIPMENT IN ACCESSIBLE LOCATIONS. DO NOT EXCEED MANUFACTURER'S PUBLISHED DISTANCE LIMITATIONS BETWEEN SUCH DEVICES AND LUMINAIRES OR CONTROLS.
16. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE-TO-NEUTRAL LOADS. ALL LIGHTING BRANCH CIRCUITS SHALL BE EQUIPPED WITH DEDICATED NEUTRAL CONDUCTORS.
17. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED WITH ALL BRANCH LIGHTING CIRCUITS. RACEWAYS SHALL BE BONDED IN ACCORDANCE WITH NEC REQUIREMENTS.
18. ALL LUMINAIRES EQUIPPED WITH DIMMING DRIVERS OR POWER SUPPLIES SHALL BE EQUIPPED WITH DIMMING CONTROL CONDUCTORS THROUGHOUT THE ENTIRE CIRCUIT. WHERE DIMMING FUNCTIONS ARE NOT SCHEDULED TO BE UTILIZED, ALL DIMMING CONTROL CONDUCTORS SHALL BE CAPPED WITH LISTED TERMINATIONS AT THE LUMINAIRE. IDENTIFY ALL DIMMING CONTROL CONDUCTORS UNIQUELY AND INDEPENDENTLY FROM POWER SYSTEM CONDUCTORS AT EACH LUMINAIRE CONNECTION.
19. UNCONTROLLED LUMINAIRES, EXIT SIGNS, AND UNITARY EMERGENCY LIGHTING UNITS SHALL BE CONNECTED TO THE UNCONTROLLED LEG OF LIGHTING CIRCUIT. DO NOT ROUTE CONTROLLED CONNECTIONS THROUGH THESE DEVICES.
20. LOW-VOLTAGE LIGHTING CONTROL CONNECTIONS, REGARDLESS OF WIRING CLASSIFICATION SYSTEM, SHALL BE INSTALLED IN RACEWAYS IN WALL CAVITIES AND IN AREAS WHERE WIRING CANNOT BE CONCEALED WITH CEILING SYSTEMS. LOW-VOLTAGE CONTROL CABLING MAY BE SUPPORTED FROM STRUCTURE IN ACCESSIBLE CONCEALED CEILING CAVITIES; UTILIZE J-HOOKS, D-RINGS, OR CABLE TRAYS FOR CABLING SUPPORT IN THESE AREAS. CABLING IS NOT PERMITTED TO BE ROUTED WITHOUT SUPPORT WITHIN CEILING CAVITIES.
21. ALL PROGRAMMABLE LIGHTING CONTROL DEVICES SHALL BE FIELD-ADJUSTED AFTER COMPLETION OF INSTALLATION. SET TIME-DELAYS, SENSITIVITY, COVERAGE PATTERNS, AND OTHER ADJUSTABLE SETTINGS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, AND THE DIRECTION OF THE ELECTRICAL ENGINEER. WHERE THIRD-PARTY COMMISSIONING IS REQUIRED, COMPLY WITH THE REQUIREMENTS SET FORTH BY THE COMMISSIONING AGENCY.
22. COORDINATE WITH THE PROJECT PAINTING CONTRACTOR TO PAINT ALL VISIBLE OVERHEAD STRUCTURES TO MATCH THE PROJECT PAINTING REQUIREMENTS. DO NOT FIELD PAINT LUMINAIRE HOUSINGS OR SENSORS.

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:
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- OFFICES
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- COMMON AREAS

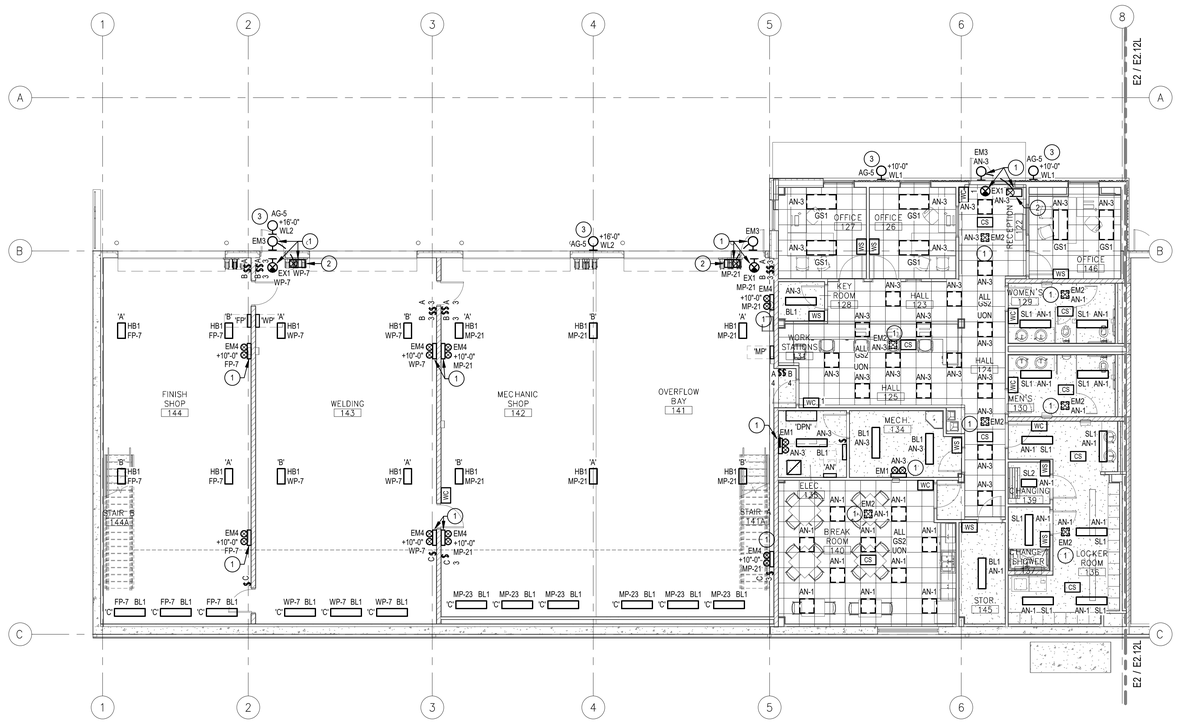
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



E2 LIGHTING PLAN - AREA A
1/8" = 1'-0"

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.: 24000.01
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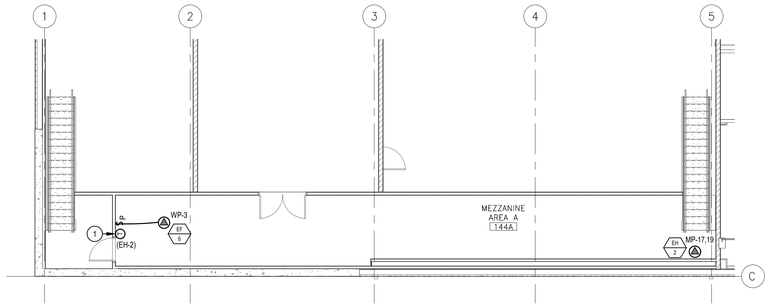
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

LIGHTING PLAN - AREA A

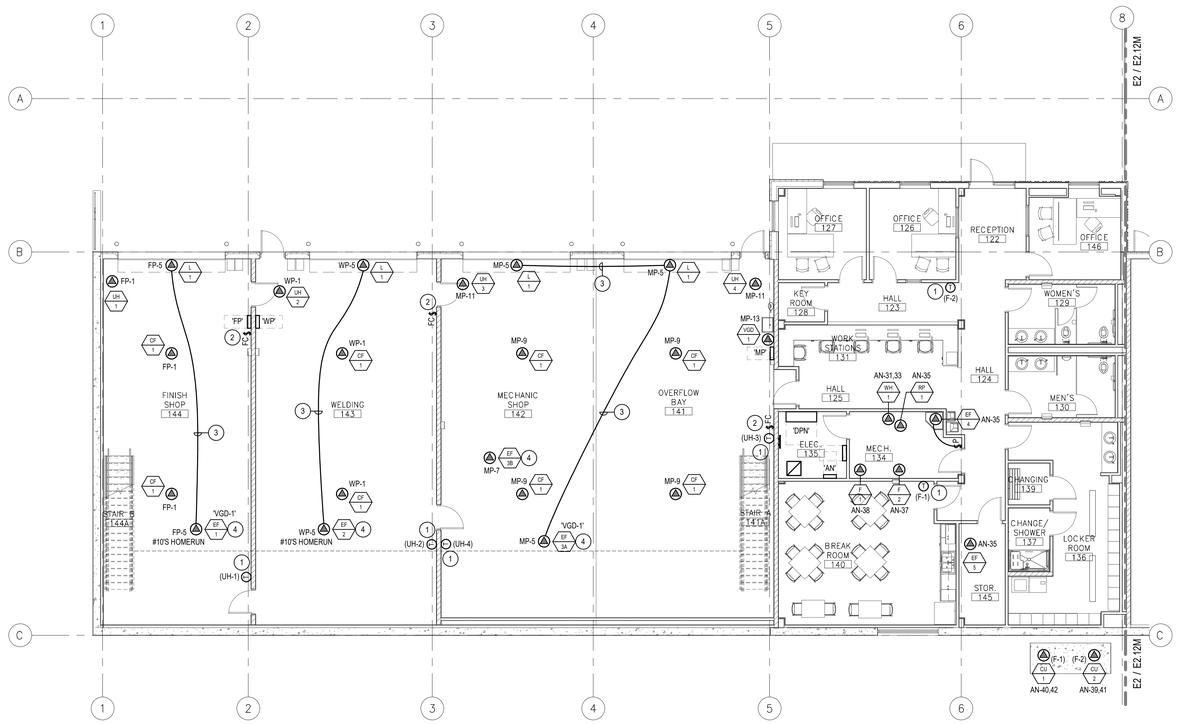
SHEET NO.
E2.11L

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052



B2 MEZZANINE MECHANICAL POWER PLAN - AREA A

1/8" = 1'-0"



E2 MECHANICAL POWER PLAN - AREA A

1/8" = 1'-0"

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT	VOLTAGE	FLA	DISCONNECT	CONDUCTORS	CONDUIT	NOTES
CF-1	120/1	0.815	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
CU-1	208/1	19.0	30A/2P, NON-FUSED, NEMA '3R'	2-10 & 1-10(G)	3/4"	1
CU-2	208/1	19.0	30A/2P, NON-FUSED, NEMA '3R'	2-10 & 1-10(G)	3/4"	1
EF-1	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-2	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-3A	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-3B	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-4	120/1	0.38	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-5	120/1	7.2	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-6	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EH-2	208/1	24.0	INTEGRAL TO UNIT	2-8 & 1-10(G)	3/4"	
F-1	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	1
F-2	120/1	13.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	1
L-1	120/1	0.5	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
RF-1	120/1	0.46	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-1	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-2	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-3	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-4	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
VGD-1	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
WH-1	208/1	21.6	30A/2P, NON-FUSED, NEMA '1'	2-10 & 1-10(G)	3/4"	

NOTES:
1. ROUTE 3/4"C WITH CONTROLS BETWEEN RESPECTIVE INDOOR AND OUTDOOR UNIT.

SHEET KEYNOTES

1. 3/4" CONDUIT AND CONTROL CONDUCTORS TO RESPECTIVE EQUIPMENT.
2. 3/4" CONDUIT AND CONTROL CONDUCTORS TO ALL CEILING FANS IN BAY FOR CONTROL.
3. INTERLOCK FOR LOUVER OPEN / CLOSE ON EXHAUST START / STOP.
4. ROUTE CONTROL CONNECTIONS THROUGH RESPECTIVE 'VGD' CONTROL PANEL; COORDINATE CONNECTIONS WITH VEHICLE GAS DETECTION SYSTEM MANUFACTURER; SEE MECHANICAL FOR SYSTEM CONNECTION REQUIREMENTS.

GENERAL NOTES

1. REFER TO MECHANICAL PLANS FOR DUCTWORK CONFIGURATIONS AND DUCT CONNECTIONS TO MECHANICAL EQUIPMENT. ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE PROPERLY COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO MAINTAIN ACCESS TO AND WORKING CLEARANCE AROUND ALL MECHANICAL EQUIPMENT PRIOR TO COMMENCING INSTALLATION.
2. REFER TO CEILING MOUNTED MECHANICAL EQUIPMENT DETAIL(S) FOR CONNECTIONS TO ELECTRICAL COMPONENTS ASSOCIATED WITH MECHANICAL EQUIPMENT, DISCONNECTING MEANS MOUNTING LOCATIONS, AND WORKING CLEARANCE REQUIREMENTS. DETAIL(S) ARE SHOWN ON SHEET E4.00.
3. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
4. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
5. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
6. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
7. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:
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SHOP EQUIPMENT AND CONNECTIONS

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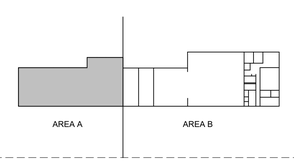

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PHASE: PERMIT SET

MECHANICAL POWER PLAN - AREA A

SHEET NO.
E2.11M

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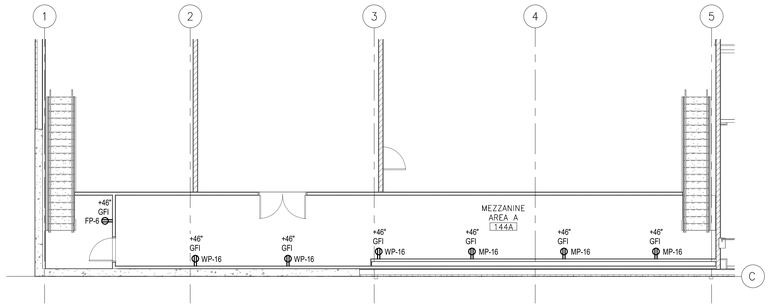
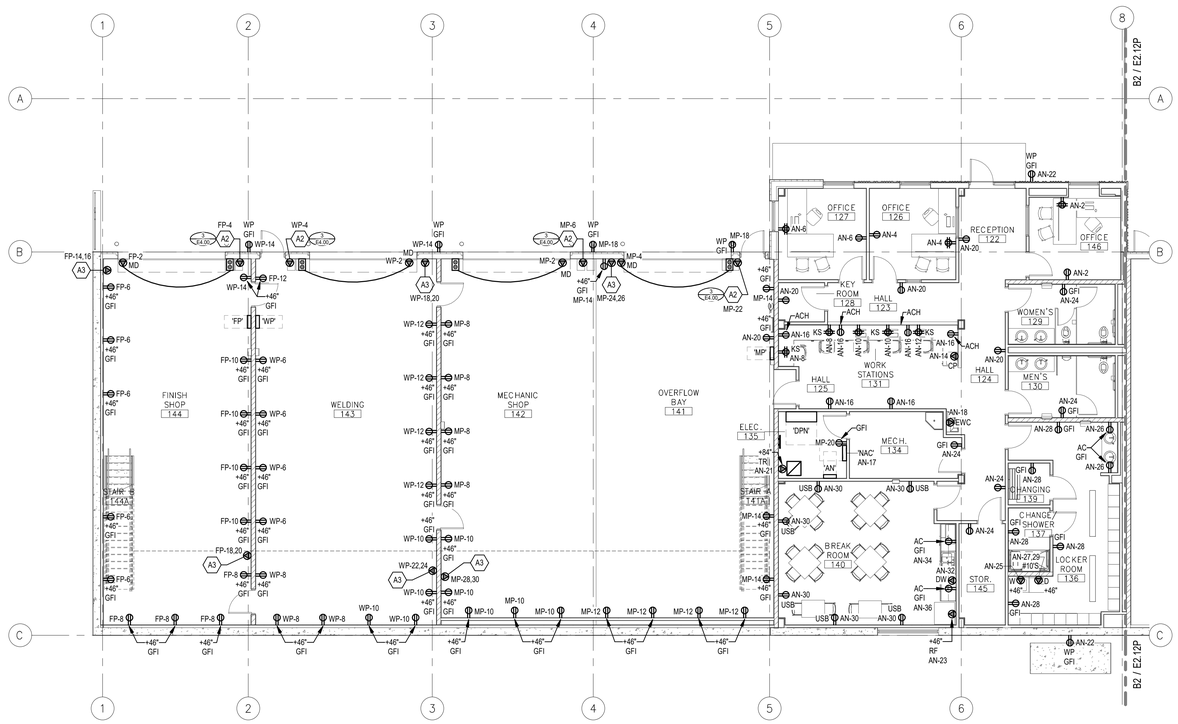


B2 MEZZANINE POWER PLAN - AREA A
1/8" = 1'-0"



E2 POWER PLAN - AREA A
1/8" = 1'-0"

SHOP EQUIPMENT AND CONNECTIONS - AREA A

ITEM NUMBER	DESCRIPTION	LOAD: HORSEPOWER	LOAD: KILOWATTS	VOLTAGE: 120V 1 PHASE	VOLTAGE: 208V 1 PHASE	VOLTAGE: 208V 3 PHASE	VOLTAGE: 480V 3 PHASE	DISC. MEANS: DISC. SWITCH SIZE	DISC. MEANS: RECEPTACLE	DISC. MEANS: CONFIGURATION	DISC. MEANS: PANEL BREAKER	CONNECTIONS: TYPE OF CONNECTION	CONNECTIONS: OUTLET MOUNTING HEIGHT	CONNECTIONS: PLUG AND CORD FURNISHED	FEEDER: NUMBER OF CONDUCTORS	FEEDER: WIRE SIZE	FEEDER: GROUND SIZE	FEEDER: CONDUIT SIZE	NOTES
A2	WALL MOUNT RETRACTABLE CORD REEL		0.18	●					●	L5-20R		CORD & PLUG	+72"	●	2	12	12	3/4"	- - -
A3	GENERAL USE EQUIP.		8.3		●				●	10-50R		CORD & PLUG	+46"	●	3	8	10	3/4"	

SHEET KEYNOTES

1. ---

GENERAL NOTES

1. REFER TO SYMBOLS LIST ON E0.00 FOR REFERENCED SYMBOLS AND DESCRIPTIONS.
2. RECEPTACLE LOCATIONS SHALL BE COORDINATED WITH MILLWORK, WALL FINISHES, WINDOW HEIGHTS, AND OTHER WALL MOUNTED EQUIPMENT PRIOR TO ROUGH-IN. NOTIFY ARCHITECT OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
3. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
4. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
5. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
6. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
7. RECEPTACLE AND WIRING DEVICE MOUNTING HEIGHTS SHALL BE REFERENCED FROM FINISHED FLOOR HEIGHT.
8. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.
9. FURNISH AND INSTALL ALL ELECTRICAL CONNECTIONS TO MOTORIZED DOOR OPERATORS AND ELECTRIFIED DOOR HARDWARE AS DIRECTED BY DOOR HARDWARE INSTALLER. COORDINATE LOCATION OF CONTROLLER, POWER SUPPLY, SAFETY SENSORS, AND ALL INTERCONNECTIONS WITH DOOR HARDWARE SUPPLIER PRIOR TO COMMENCING WORK.
10. ALL EXTERIOR PENETRATIONS SHALL BE SEALED. PENETRATIONS OF EXTERIOR WALLS SHALL BE POSITIONED AT LEAST 8" AWAY FROM WALL JOINTS.

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:

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REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN

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POWER PLAN - AREA A

SHEET NO.
E2.11P

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SHEET KEYNOTES

1. ---

GENERAL NOTES

1. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL.
2. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
3. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
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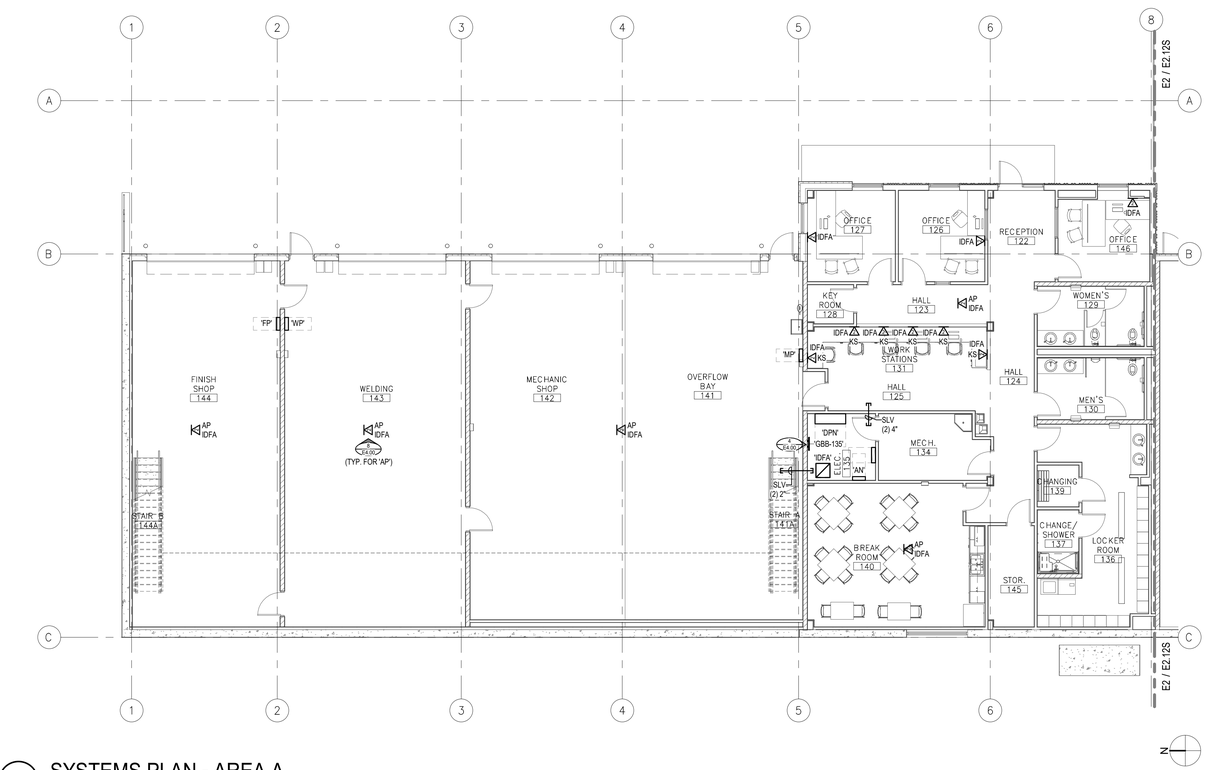
5. LOCATE TELECOMMUNICATIONS OUTLETS WITHIN 8" OF NEAREST RECEPTACLE. COORDINATE LOCATION WITH POWER PLANS PRIOR TO ROUGH-IN.
6. MINIMUM CONDUIT SIZE FOR TELECOMMUNICATIONS CIRCUITS: 1 INCH.
7. ALL TELECOMMUNICATIONS CONDUITS TERMINATED IN OPEN AIR/ABOVE CEILINGS SHALL BE FURNISHED WITH INSULATED THROAT BUSHINGS.
8. SPECIAL SYSTEM CONDUCTORS ABOVE ACCESSIBLE CEILING SHALL BE ROUTED TO RESPECTIVE HEAD END EQUIPMENT VIA CABLE TRAY OR RACEWAY SLEEVE(S). SUPPORT BY J-HOOKS AT 10' ON CENTER SUPPORTED FROM STRUCTURE ENROUTE TO CABLE TRAY. ROUTE CONDUCTORS THROUGH CONDUIT WHERE CEILING SPACES ARE EXPOSED OR UNACCESSIBLE.
9. OVERHEAD RACEWAY SLEEVES SHALL BE INSTALLED IN CONCEALED SPACES AS HIGH AS POSSIBLE TO STRUCTURE; COORDINATE ROUTING WITH STRUCTURAL SYSTEMS AND MECHANICAL SYSTEMS. TURN ENDS DOWN TO 36" ABOVE FINISHED CEILING OR 24" ABOVE CABLE TRAYS. SEAL ALL WALL PENETRATIONS.
10. FILL ONE OVERHEAD RACEWAY SLEEVE AT A TIME; DO NOT UTILIZE NEXT SLEEVE UNTIL FILL IS COMPLETE. DO NOT EXCEED CODE-REQUIRED FILL. MAINTAIN AS MANY SPARE SLEEVES AS POSSIBLE.
11. REFER TO TELECOMMUNICATIONS OUTLET INSTALLATION DETAIL, 7/E4.00, FOR TYPICAL INSTALLATION REQUIREMENTS.
12. REFER TO TELECOMMUNICATIONS SYSTEM ONE LINE DIAGRAM ON SHEET E4.00 FOR SYSTEM CONNECTION REQUIREMENTS, CONDUIT CONNECTIONS, AND EQUIPMENT RACK ELEVATIONS.



E2 SYSTEMS PLAN - AREA A
1/8" = 1'-0"

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:

- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN

LOMBARD CONRAD ARCHITECTS

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**MKC/CRH**
CHECKED BY:	**GLJ**

PHASE: **PERMIT SET**

SYSTEMS PLAN - AREA A

SHEET NO.

E2.11S

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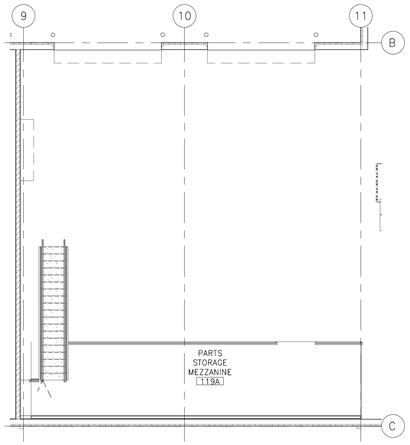


1 MEZZANINE FIRE ALARM PLAN - AREA B
1/8" = 1'-0"

SHEET KEYNOTES

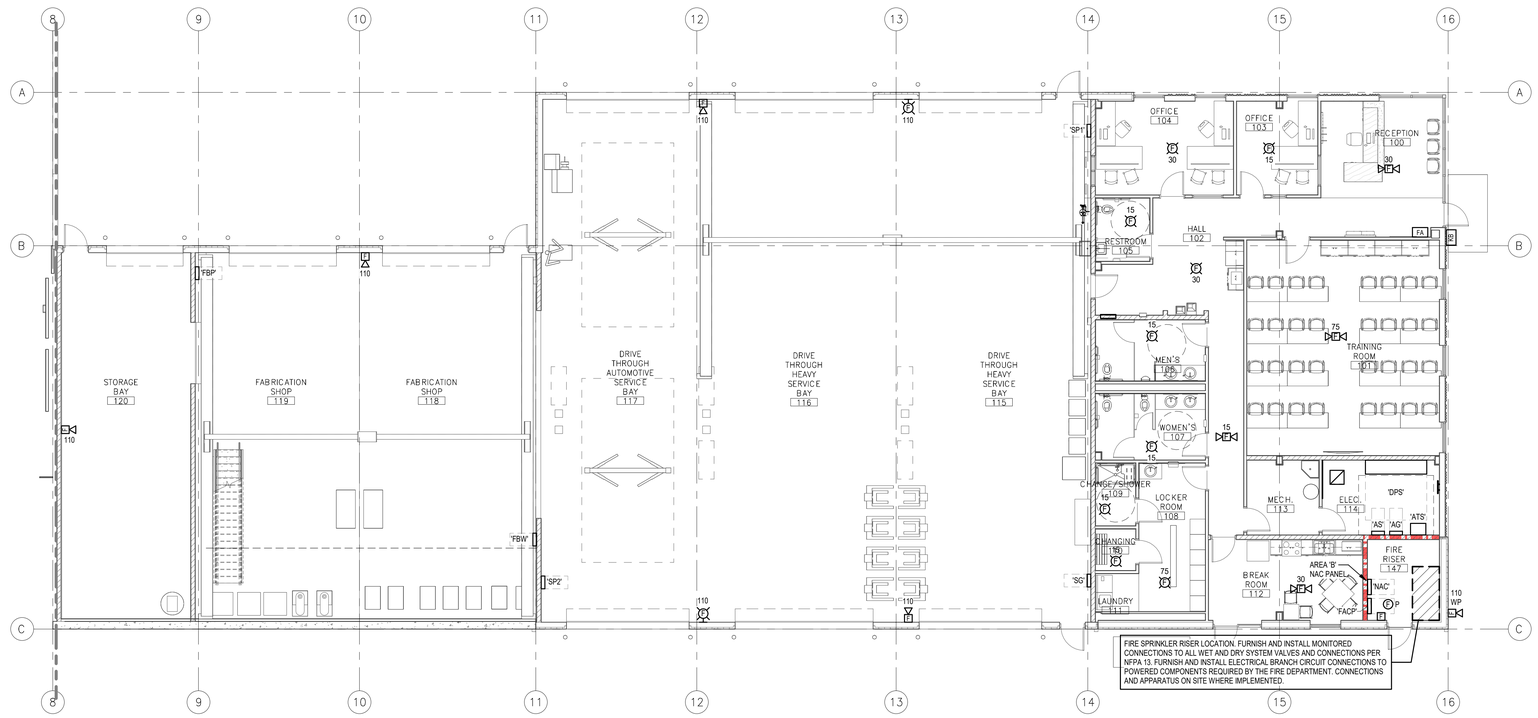
1. ---

FIRE ALARM DESIGN DATA

OCCUPANCY GROUP:	'B, S'
OCCUPANCY LOAD:	SEE ARCHITECTURAL CODE PLAN.
BUILDING AREA:	SEE ARCHITECTURAL CODE PLAN.
SYSTEM TYPE:	NON-CODED ADDRESSABLE TYPE.
OCCUPANT NOTIFICATION:	HORNSTROBE DEVICES.
MECHANICAL EQUIPMENT:	SHUTDOWN PER IMC REQUIREMENTS WHERE REQUIRED.
RATED WALL ASSEMBLIES:	SEE ARCHITECTURAL CODE PLAN.
FIRE SPRINKLER SYSTEM:	SEE GENERAL NOTES.
POWER SUPPLY:	POWER SUPPLIES AND BATTERIES OVERSIZED FOR 25% ADDITIONAL DEVICES.
CIRCUIT CAPACITY:	LOAD INDIVIDUAL CIRCUITS TO 50% MAXIMUM; CONDUCTORS SHALL BE SIZED FOR 100% LOAD.
VOLTAGE DROP:	CALCULATE AT 100% LOAD AT END OF LINE; VOLTAGE DROP SHALL NOT EXCEED 10% ON EACH CIRCUIT.
SMOKE CONTROL:	N/A
SYSTEM CONNECTIONS:	REFER TO SYSTEM WIRING DIAGRAM ON SHEET E4.00 FOR TYPICAL CONNECTION LAYOUTS AND CONFIGURATION.

GENERAL NOTES

1. FIRE ALARM SYSTEM DEVICE CONNECTIONS SHOWN ON THIS PLAN ARE SHOWN FOR BIDDING PURPOSES ONLY. FIRE ALARM CONTRACTOR SHALL PROPERLY DESIGN CIRCUIT LOADS TO BE COMPATIBLE WITH NFPA 72 AND MANUFACTURERS SPECIFICATIONS AND MODIFY CONNECTIONS AS NECESSARY. FIRE ALARM SYSTEM SHOP DRAWINGS AND DESIGN CALCULATIONS SHALL BE THE FINAL WORKING DRAWINGS FROM WHICH THE INSTALLATION IS IMPLEMENTED.
2. DO NOT BEGIN FIRE ALARM SYSTEM INSTALLATION UNTIL SUBMITTALS HAVE BEEN APPROVED BY THE ELECTRICAL ENGINEER AND THE BUILDING OFFICIAL. ALL COSTS AND CORRECTIONS OF WORK DUE TO LATE SUBMITTALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL FIRE ALARM SYSTEM WIRING SHALL BE IN RED-COLORED CONDUIT (3/4 INCH MINIMUM SIZE). SEPARATE RACEWAYS SHALL BE UTILIZED FOR INITIATING CIRCUITS AND NOTIFICATION CIRCUITS. WIRING COLOR CODE SHALL BE MAINTAINED CONSISTENT THROUGHOUT THE INSTALLATION.
4. ALL OUTLET, PULL, AND JUNCTION BOXES SHALL BE LABELED "FIRE ALARM" AND PAINTED RED.
5. REFER TO SPECIFICATION SECTION 260533 "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS" FOR INSTALLATION REQUIREMENTS FOR CONDUITS AND BOXES.
6. CIRCUIT PROTECTIVE DEVICE(S) SERVING FIRE ALARM EQUIPMENT TO BE FURNISHED WITH INTEGRAL LOCK-ON DEVICE(S) AND BE PAINTED RED. EACH SYSTEM EQUIPMENT PANEL SHALL BE SERVED WITH A DEDICATED LINE VOLTAGE CIRCUIT.
7. FURNISH AND INSTALL APPROPRIATE QUANTITY OF SYSTEM POWER SUPPLIES, NAC PANELS, AND APPROPRIATE SMOKE DETECTION AND LINE VOLTAGE POWER CONNECTIONS FOR PROPER SYSTEM FUNCTION AND SPARE CAPACITY REQUIRED. LOCATE ADDITIONAL POWER SUPPLY AND NAC PANELS IN LOCATIONS ADJACENT TO OTHER SHOWN FIRE ALARM EQUIPMENT. POWER SUPPLIES AND NAC PANELS MAY BE LOCATED IN OTHER AREAS OF THE BUILDING ONLY WITH THE WRITTEN CONSENT OF THE ELECTRICAL ENGINEER.
8. THE LOCATION OF ALL CONCEALED SMOKE DETECTION DEVICES SHALL BE IDENTIFIED IN ACCORDANCE WITH NFPA 72.
9. SMOKE DETECTION DEVICES AT DOOR HOLD-OPEN DEVICES SHALL BE LOCATED IN ACCORDANCE WITH NFPA 72 REQUIREMENTS.
10. SMOKE DETECTION DEVICES SHALL BE LOCATED AT LEAST THREE (3) FEET FROM SUPPLY AND RETURN AIR DIFFUSERS.
11. ALL VISUAL NOTIFICATION APPLIANCES SHALL BE SYNCHRONIZED.
12. EACH DEVICE SHALL BE LABELED WITH DEVICE DESIGNATION. LABEL SHALL HAVE 1/4 INCH HIGH BLACK LETTERS ON WHITE BACKGROUND. DEVICE DESIGNATION SHALL INCLUDE DEVICE ADDRESS OR CIRCUIT IDENTIFIER.
13. FURNISH AND INSTALL VINYL COATED SYSTEM DIAGRAM AT THE FIRE ALARM CONTROL PANEL. SYSTEM DIAGRAM SHALL INCLUDE THE BUILDING FLOORPLAN, ALL INSTALLED DEVICES, AND ALL DEVICE ADDRESSES/IDENTIFIERS. LOCATE AN OVERALL SYSTEM DIAGRAM AT THE MAIN FIRE ALARM CONTROL PANEL WITH ALL BUILDING LEVELS/FLOORS ON SEPARATE DIAGRAMS. LOCATE EACH RESPECTIVE FLOORPLAN DIAGRAM AT EACH NAC PANEL ON ALL OTHER FLOORS/LEVELS OF THE FACILITY.
14. FURNISH AND INSTALL ALL REQUIRED SUPERVISORY POWER AND ALARM CONNECTIONS FOR FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH FIRE SPRINKLER DESIGN AND NFPA 13. ALL CONNECTIONS SHALL BE INDIVIDUALLY ADDRESSED. COORDINATE ALL FIRE ALARM AND POWER CONNECTIONS WITH FIRE SPRINKLER CONTRACTOR PRIOR TO INSTALLATION. INCLUDE CONNECTIONS ON FIRE ALARM SYSTEM SHOP DRAWINGS.
15. CONTRACTOR SHALL COORDINATE PLACEMENT OF CEILING MOUNTED DEVICES/APPLIANCES WITH ALL OTHER TRADES. SPACING REQUIREMENTS PER NFPA 72 AND LOCAL AUTHORITY HAVING JURISDICTION SHALL APPLY TO COORDINATION EFFORTS WITH OTHER TRADES.



E2 FIRE ALARM PLAN - AREA B
1/8" = 1'-0"

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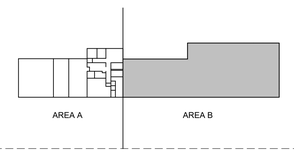
SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	MKC/CRH
CHECKED BY:	GLJ
PHASE:	PERMIT SET

FIRE ALARM PLAN - AREA B

SHEET NO.
E2.12F

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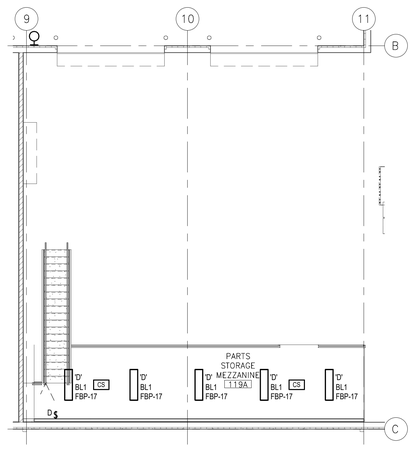

B2 MEZZANINE LIGHTING PLAN - AREA B
1/8" = 1'-0"

LIGHTING CONTROL SCHEDULE - AREA B

SYSTEM / ROOM / AREA	DIMMING: MANUAL	DIMMING: PROGRAMMED	DIMMING: DAYLIGHT	MANUAL: TOGGLE (LINE VOLT)	MANUAL: INT. TO SENSOR	SENSOR(S) (NOTE 1): MANUAL	SENSOR(S) (NOTE 1): CEILING	SENSOR(S) (NOTE 1): LARGE MOTION	SENSOR(S) (NOTE 1): SMALL MOTION	SENSOR(S) (NOTE 1): OCCUPANCY	SENSOR(S) (NOTE 1): VACANCY	SENSOR(S) (NOTE 1): AUX. RELAY	SENSOR(S) (NOTE 1): 2-POLE	DAYLIGHT: ZONE AREA	DAYLIGHT: ON - BOARD	DAYLIGHT: PHOTOCELL	NETWORK INTERFACE: PROTOCOL	NETWORK INTERFACE: RELAY	NETWORK INTERFACE: WIRELESS	PROGRAM SEQUENCE	NOTES
100	●				●		●	●		●										C2	1, 2
101	●				●		●		●		●									B1	1
102	●				●		●	●		●										C2	1, 2
103	●			●			●		●		●									B1	
104	●				●		●		●		●									B1	
105				●			●		●	●										C	
106					●		●		●	●										C	
107					●		●		●	●										C	
108					●		●		●	●										C2	
109				●			●		●	●										C	
110, 111				●			●		●	●										C	
112	●				●		●		●	●										C2	
113				●			●		●	●										C	
114					●															A	
115, 116, 117					●															A2	
118, 119 (BAYS)					●															A2	
118, 119 (BELOW MEZZ.)					●															A	
119A					●			●	●		●									C2	1
120					●															A2	
147					●		●			●	●									C	
BUILDING EXTERIOR																				D	
SITE LIGHTING																				E2	

PROGRAM SEQUENCE SCHEDULE

SEQUENCE	DESCRIPTION
A	MANUAL ON, MANUAL OFF.
A1	MANUAL ON, MANUAL OFF. DUAL SWITCHING CONFIGURATION FOR LIGHT REDUCTION CONTROLS.
A2	3-WAY OR 4-WAY MANUAL ON, MANUAL OFF. DUAL SWITCHING CONFIGURATION FOR LIGHT REDUCTION CONTROLS.
A3	3-WAY OR 4-WAY MANUAL ON, MANUAL OFF.
B	MANUAL ON, AUTO OFF.
B1	MANUAL ON, MANUAL DIMMING, AUTO OFF.
C	AUTO ON, AUTO OFF.
C1	BUSINESS DAYS: AUTO ON AT 7:00 AM, AUTO OFF AT 10:00 PM. NON-BUSINESS AND HOLIDAYS: DISABLED.
C2	AUTO ON, AUTO OFF, WITH MANUAL OVERRIDE (DIMMING WHERE SCHEDULED).
D	INTEGRAL MOTION / AMBIENT SENSOR ON BOARD EACH LUMINAIRE.

NOTES:
1. MULTIPLE SENSORS IN PARALLEL.
2. ROOMS 100, 102 TO OPERATE FROM SAME SENSORS.

LUMINAIRE INSTALLATION SCHEDULE - AREA B

ROOM	LUMINAIRE INSTALLATION	NOMINAL MOUNTING HEIGHT	INSTALLATION NOTES
100	CEILING	RECESSED	- - -
101	CEILING	RECESSED	
102	CEILING	RECESSED	
103	CEILING	RECESSED	
104	CEILING	RECESSED	
105	CEILING	SURFACE	
106	CEILING	SURFACE	
107	CEILING	SURFACE	
108	CEILING	SURFACE	
109	CEILING	SURFACE	
110	CEILING	SURFACE	
111	CEILING	SURFACE	
112	CEILING	RECESSED	
113	CEILING	SURFACE	
114	CEILING	SURFACE	
115	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
116	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
117	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
118, 119 (BAY)	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
118, 119 (BELOW MEZZ.)	STRUCTURE	SURFACE	
119A	STRUCTURE	SURFACE	
120	SUSPENDED	20'-0" ABOVE FINISHED FLOOR	
147	CEILING	SURFACE	

WALL CONTROL DEVICE SCHEDULE - AREA B

ROOM	DEVICE ID	BUTTONS 1	BUTTONS 2	BUTTONS 3	BUTTONS 4	CONTROL ZONE	SWITCH LABEL
100	1	●				HALL / RECEPTION	LOBBY
102	1	●				HALL / RECEPTION	LOBBY

NOTES:
1. MANUFACTURER SHALL CUSTOM ENGRAVE SWITCH BUTTONS WITH LABELS AS SCHEDULED.
2. SELECT BUTTON QUANTITY PER DEVICE.
3. PROGRAM BUTTON(S) PER LIGHTING CONTROL DEVICE SCHEDULE.

SHEET KEYNOTES

1. CONNECT TO UNCONTROLLED LEG OF LIGHTING CIRCUIT.
2. REMOTE BATTERY HIGH ON WALL.
3. #R'S-1" ENTIRE CIRCUIT.

GENERAL NOTES

1. REFER TO LUMINAIRE SCHEDULE ON SHEET E3.00 FOR LUMINAIRE TYPES AND ADDITIONAL INSTALLATION INSTRUCTIONS ASSOCIATED WITH RESPECTIVE LUMINAIRE TYPES.
2. REFER TO LIGHTING CONTROL DEVICE SCHEDULE AND TYPICAL CONTROL SYSTEM SCHEMATICS ON SHEET E3.00 FOR CONTROL DEVICE TYPES, CONTROL SYSTEM CONNECTION REQUIREMENTS AND GENERAL INSTALLATION INSTRUCTIONS.
3. REFER TO LIGHTING SYMBOLS LIST FOR GENERAL DESCRIPTION OF LUMINAIRE SYMBOLS, CONTROL SYMBOLS, AND CONNECTION NOMENCLATURE.
4. REFER TO MECHANICAL SYSTEM CONTROL SCHEMATICS FOR INSTALLATION AND INTERFACE REQUIREMENTS FOR LIGHTING CONTROL DEVICES AND BUILDING MANAGEMENT SYSTEMS, DIRECT DIGITAL CONTROL SYSTEMS, AND OTHER HVAC AND CONTROL INTERFACE REQUIREMENTS.
5. ALL LUMINAIRES AND LIGHTING CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. DO NOT PROCEED WITH THE WORK WITHOUT PROPER REVIEW OF ALL MANUFACTURER'S LITERATURE, SHOP DRAWINGS, AND DETAILS.
6. ALL LUMINAIRES SHALL BE SUPPORTED FROM STRUCTURE. DO NOT UTILIZE CEILING GRIDS AS THE ONLY MEANS OF SUPPORT.
7. SEISMIC SUPPORTS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SEISMIC SPECIFICATIONS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. COORDINATE LUMINAIRE PLACEMENT WITH ARCHITECTURAL REFLECTED CEILING PLANS, MECHANICAL AND PLUMBING PLANS, FIRE-SPRINKLER SYSTEM LAYOUTS, AND STRUCTURAL ASSEMBLIES PRIOR TO INSTALLATION.
9. CEILING GRID ORIENTATION AND FRAMING FOR HARD-LID ASSEMBLY CEILINGS SHALL BE VERIFIED PRIOR TO LUMINAIRE INSTALLATION.
10. RECESSED LUMINAIRES SHALL BE INSTALLED FLUSH WITH FINISHED SURFACES. DO NOT CUT OPENINGS LARGER THAN LUMINAIRE TRIMS.
11. SUSPENDED LUMINAIRES SHALL BE INSTALLED PARALLEL WITH THE FLOOR UNLESS OTHERWISE NOTED, AND SHALL BE PLUMB WITH BUILDING LINES AND STRUCTURE.
12. FINAL INSTALLATION HEIGHT OF PENDANT-MOUNTED LUMINAIRES SHALL BE GOVERNED BY PROPER COORDINATION WITH OTHER TRADES. SCHEDULED HEIGHTS INDICATED ARE NOMINAL. ADEQUATE LENGTH OF CABLES, STEMS, AND OTHER SUPPORT STRUCTURES SHALL BE FURNISHED BASED ON FIELD CONDITIONS ENCOUNTERED. FINAL INSTALLATION HEIGHTS SHALL BE ADJUSTED UPON REVIEW OF THE INSTALLATION. PROVIDE ADEQUATE SPARE LENGTH OF SUSPENSION MATERIALS FOR FINAL ADJUSTMENTS. WHERE OBSTRUCTIONS SUCH AS DUCTWORK, PIPING, EQUIPMENT RACKS, ETC. EXIST, SPAN OBSTRUCTION WITH RIGID SUSPENSION SYSTEM.
13. EXIT SIGNS SHALL BE LOCATED TO PROVIDE CLEAR VISIBLE IDENTIFICATION OF EXIT DOORS AND EGRESS PATHWAYS. EXIT SIGNS SHALL NOT BE OBSTRUCTED FROM VIEW. FIELD-MODIFY EXIT SIGNS TO ALLOW FOR DIRECTIONAL INDICATIONS AS DIRECTED.
14. LOCATE WALL MOUNTED LIGHTING CONTROL DEVICES NOT MORE THAN 12-INCHES FROM THE TRIM OF THE DOOR ON THE LATCH SIDE, OR NOT MORE THAN 12-INCHES FROM THE DOOR SIDE LIGHT (WHERE APPLICABLE), OR NOT MORE THAN 12-INCHES FROM OPEN POSITION OF THE DOOR WHERE INSTALLED ON OPPOSING WALL FROM THE DOOR LATCH. DO NOT INSTALL WALL MOUNTED LIGHTING CONTROL DEVICES BEHIND DOORS IN THE OPEN POSITION.
15. LOCATE ALL LIGHTING AND CONTROL SYSTEM POWER SUPPLIES, REMOTE DRIVERS, OR INTERFACE EQUIPMENT IN ACCESSIBLE LOCATIONS. DO NOT EXCEED MANUFACTURER'S PUBLISHED DISTANCE LIMITATIONS BETWEEN SUCH DEVICES AND LUMINAIRES OR CONTROLS.
16. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE-TO-NEUTRAL LOADS. ALL LIGHTING BRANCH CIRCUITS SHALL BE EQUIPPED WITH DEDICATED NEUTRAL CONDUCTORS.
17. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED WITH ALL BRANCH LIGHTING CIRCUITS. RACEWAYS SHALL BE BONDED IN ACCORDANCE WITH NEC REQUIREMENTS.
18. ALL LUMINAIRES EQUIPPED WITH DIMMING DRIVERS OR POWER SUPPLIES SHALL BE EQUIPPED WITH DIMMING CONTROL CONDUCTORS THROUGHOUT THE ENTIRE CIRCUIT. WHERE DIMMING FUNCTIONS ARE NOT SCHEDULED TO BE UTILIZED, ALL DIMMING CONTROL CONDUCTORS SHALL BE CAPPED WITH LISTED TERMINATIONS AT THE LUMINAIRE. IDENTIFY ALL DIMMING CONTROL CONDUCTORS UNIQUELY AND INDEPENDENTLY FROM POWER SYSTEM CONDUCTORS AT EACH LUMINAIRE CONNECTION.
19. UNCONTROLLED LUMINAIRES, EXIT SIGNS, AND UNITARY EMERGENCY LIGHTING UNITS SHALL BE CONNECTED TO THE UNCONTROLLED LEG OF LIGHTING CIRCUIT. DO NOT ROUTE CONTROLLED CONNECTIONS THROUGH THESE DEVICES.
20. LOW-VOLTAGE LIGHTING CONTROL CONNECTIONS, REGARDLESS OF WIRING CLASSIFICATION SYSTEM, SHALL BE INSTALLED IN RACEWAYS IN WALL CAVITIES AND IN AREAS WHERE WIRING CANNOT BE CONCEALED WITH CEILING SYSTEMS. LOW-VOLTAGE CONTROL CABLING MAY BE SUPPORTED FROM STRUCTURE IN ACCESSIBLE CONCEALED CEILING CAVITIES; UTILIZE J-HOOKS, D-RINGS, OR CABLE TRAYS FOR CABLING SUPPORT IN THESE AREAS. CABLING IS NOT PERMITTED TO BE ROUTED WITHOUT SUPPORT WITHIN CEILING CAVITIES.
21. ALL PROGRAMMABLE LIGHTING CONTROL DEVICES SHALL BE FIELD-ADJUSTED AFTER COMPLETION OF INSTALLATION. SET TIME-DELAYS, SENSITIVITY, COVERAGE PATTERNS, AND OTHER ADJUSTABLE SETTINGS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, AND THE DIRECTION OF THE ELECTRICAL ENGINEER. WHERE THIRD-PARTY COMMISSIONING IS REQUIRED, COMPLY WITH THE REQUIREMENTS SET FORTH BY THE COMMISSIONING AGENCY.
22. COORDINATE WITH THE PROJECT PAINTING CONTRACTOR TO PAINT ALL VISIBLE OVERHEAD STRUCTURES TO MATCH THE PROJECT PAINTING REQUIREMENTS. DO NOT FIELD PAINT LUMINAIRE HOUSINGS OR SENSORS.

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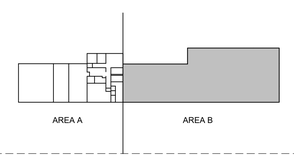
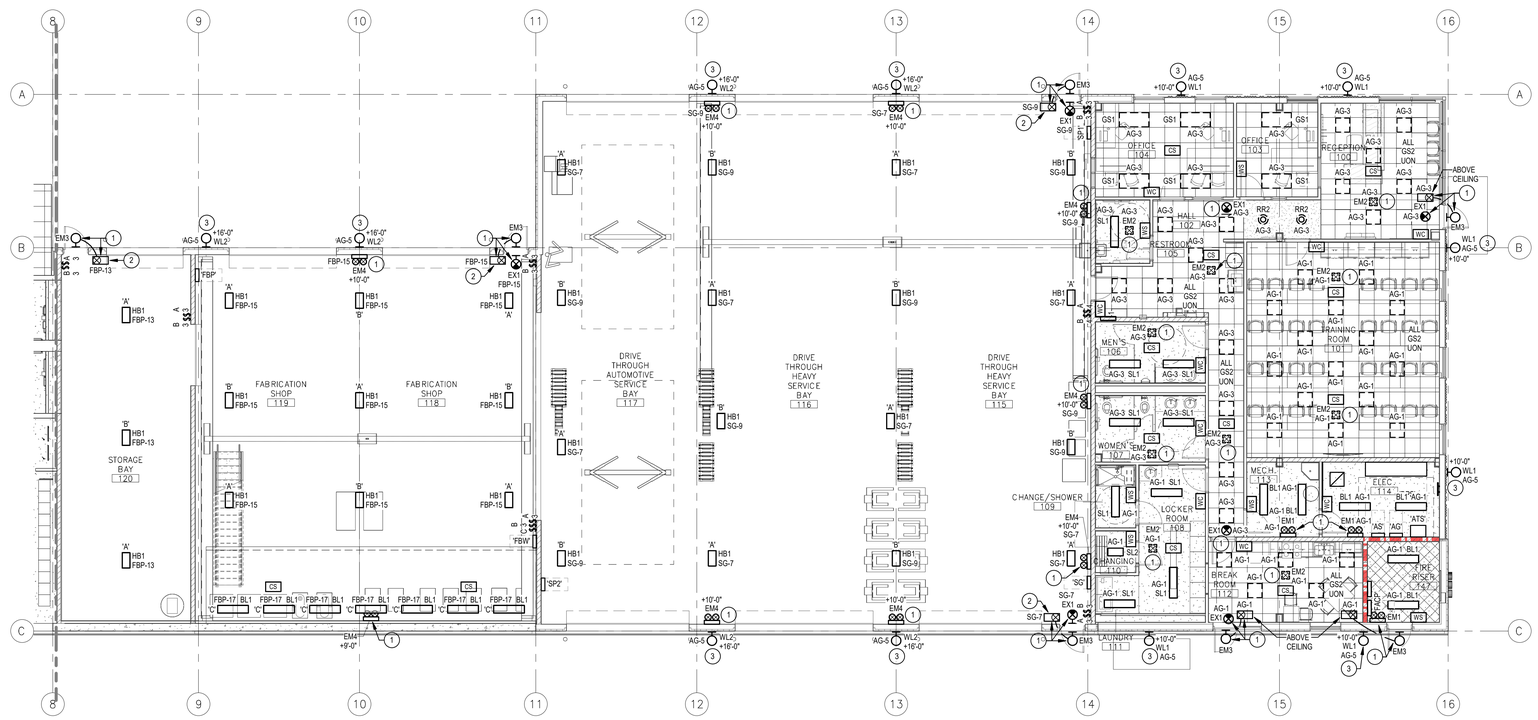
REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN





E2 LIGHTING PLAN - AREA B
1/8" = 1'-0"

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CITY OF MOSCOW

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MRK.	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

LIGHTING PLAN - AREA B

SHEET NO.
E2.12L

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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COMBINATION DISCONNECT/STARTER SCHEDULE

EQUIPMENT	STARTER SIZE	DISCONNECT SIZE	HOA	CONTROL VOLTAGE	ENCLOSURE	MOTOR LOAD	NOTES
EF-9A	1	30A	●	24V	NEMA '1'	1 1/4 HP	1
EF-9B	1	30A	●	24V	NEMA '1'	1 1/4 HP	1

NOTES:
1. CONNECT STARTER COIL TO RELAY SIGNAL FROM 'VGD-3' FOR OPERATION.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT	VOLTAGE	FLA	DISCONNECT	CONDUCTORS	CONDUIT	NOTES
CF-1	120/1	0.815	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
CU-3	208/1	19.0	30A/2P, NON-FUSED, NEMA '3R'	2-10 & 1-10(G)	3/4"	1
CU-4	208/1	30.0	60A/2P, NON-FUSED, NEMA '3R'	2-8 & 1-10(G)	3/4"	1
EF-7A	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-7B	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-8	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-9A	208/3	20.0	SEE STARTER SCHEDULE	3-10 & 1-10(G)	3/4"	
EF-9B	208/3	20.0	SEE STARTER SCHEDULE	3-10 & 1-10(G)	3/4"	
EF-10	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-11	120/1	0.39	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EH-1	208/1	19.2	INTEGRAL TO UNIT	2-10 & 1-10(G)	3/4"	
F-3	120/1	13.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	1
F-4	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	1
H-1	120/1	2.5	INTEGRAL TO UNIT	2-12 & 1-12(G)	3/4"	3
HR-1D	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	2
HR-1F	208/3	4.0	INTEGRAL TO CONTROL BOX	3-12 & 1-12(G)	3/4"	2
HR-2D	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	2
HR-2F	208/3	4.0	INTEGRAL TO CONTROL BOX	3-12 & 1-12(G)	3/4"	2
L-1	120/1	0.5	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
L-2	120/1	0.5	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
RP-1	120/1	0.46	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-6	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-7	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-8	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-9	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-10	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-11	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-12	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
VGD-2	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
VGD-3	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
WH-1	208/1	21.6	30A/2P, NON-FUSED, NEMA '1'	2-10 & 1-10(G)	3/4"	

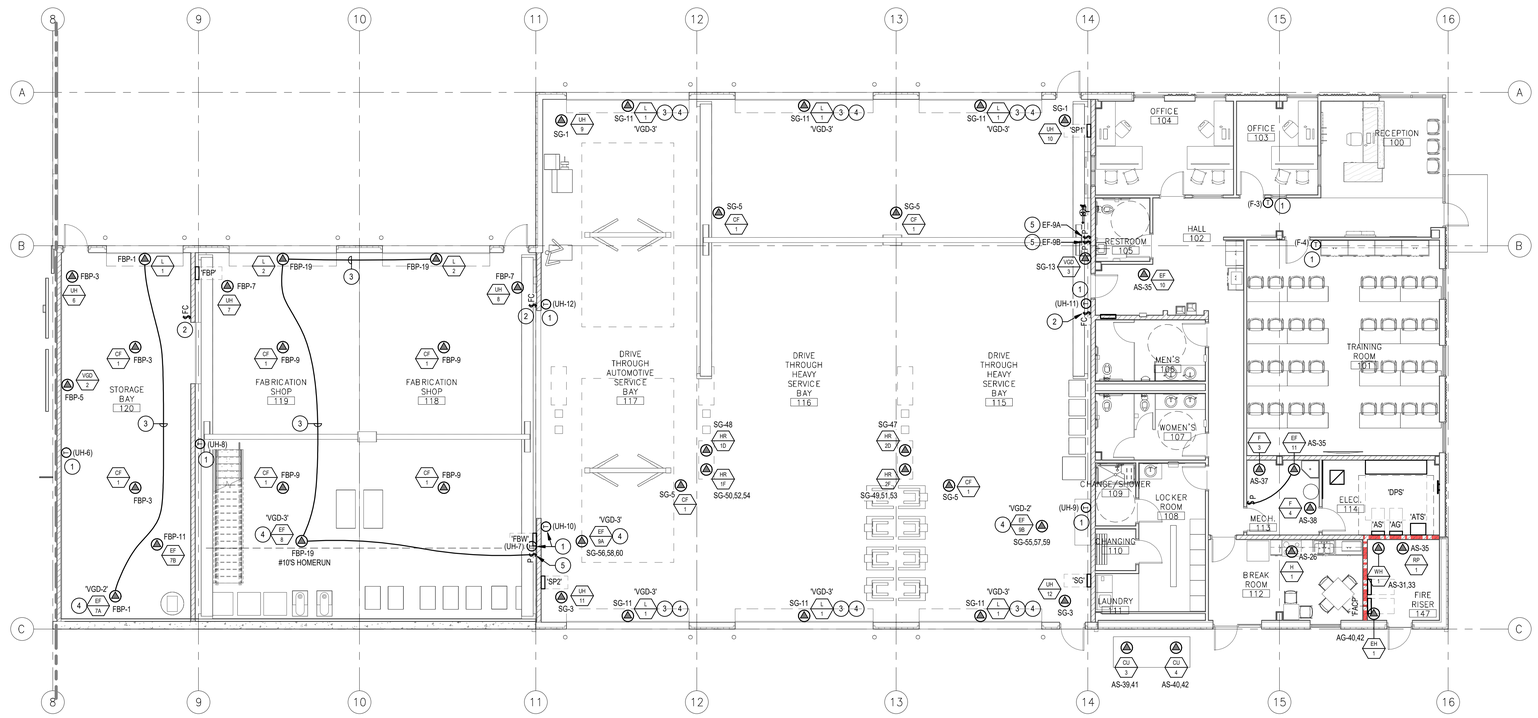
NOTES:
1. ROUTE 3/4"C WITH CONTROLS BETWEEN RESPECTIVE INDOOR AND OUTDOOR UNIT.
2. ROUTE THROUGH FACTORY-PROVIDED CONTROL DEVICES; VERIFY LOCATION WITH MANUFACTURER'S RECOMMENDATIONS.
3. INSTALL CONNECTIONS TO WALL-MOUNTED CONTROL DEVICES PER MANUFACTURER.

SHEET KEYNOTES

1. 3/4" CONDUIT AND CONTROL CONDUCTORS TO RESPECTIVE EQUIPMENT.
2. 3/4" CONDUIT AND CONTROL CONDUCTORS TO ALL CEILING FANS IN BAY FOR CONTROL.
3. INTERLOCK FOR LOUVER OPEN / CLOSE ON EXHAUST START / STOP.
4. ROUTE CONTROL CONNECTIONS THROUGH RESPECTIVE 'VGD' CONTROL PANEL; COORDINATE CONNECTIONS WITH VEHICLE GAS DETECTION SYSTEM MANUFACTURER; SEE MECHANICAL FOR SYSTEM CONNECTION REQUIREMENTS.
5. SEE MECHANICAL EQUIPMENT SCHEDULES FOR SEQUENCING AND LABELING REQUIREMENTS, AND MECHANICAL SYSTEM CONNECTION REQUIREMENTS.

GENERAL NOTES

1. REFER TO MECHANICAL PLANS FOR DUCTWORK CONFIGURATIONS AND DUCT CONNECTIONS TO MECHANICAL EQUIPMENT. ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE PROPERLY COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO MAINTAIN ACCESS TO AND WORKING CLEARANCE AROUND ALL MECHANICAL EQUIPMENT PRIOR TO COMMENCING INSTALLATION.
2. REFER TO CEILING MOUNTED MECHANICAL EQUIPMENT DETAIL(S) FOR CONNECTIONS TO ELECTRICAL COMPONENTS ASSOCIATED WITH MECHANICAL EQUIPMENT. DISCONNECTING MEANS MOUNTING LOCATIONS, AND WORKING CLEARANCE REQUIREMENTS. DETAIL(S) ARE SHOWN ON SHEET E4.00.
3. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
4. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
5. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
6. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
7. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.



E2 MECHANICAL POWER PLAN - AREA B
1/8" = 1'-0"

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:
- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

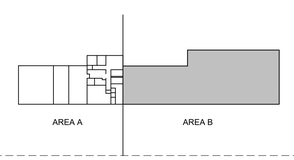
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

MECHANICAL POWER PLAN - AREA B

SHEET NO.
E2.12M

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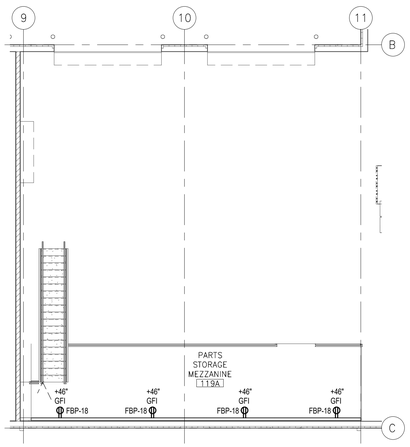


B2 MEZZANINE POWER PLAN - AREA B

1/8" = 1'-0"

SHOP EQUIPMENT AND CONNECTIONS - AREA B

## ITEM NUMBER	DESCRIPTION	LOAD: HORSEPOWER	LOAD: KLOWATTS	VOLTAGE: 120V - 1 PHASE	VOLTAGE: 208V - 1 PHASE	VOLTAGE: 208V - 3 PHASE	VOLTAGE: 480V - 3 PHASE	DISC. MEANS: DISC. SWITCH	DISC. MEANS: DISC. SWITCH SIZE	DISC. MEANS: RECEPTACLE	DISC. MEANS: RECEPTACLE NEMA CONFIGURATION	DISC. MEANS: DIGITAL BREAKER	CONNECTIONS: TYPE OF CONNECTION	CONNECTIONS: OUTLET MOUNTING HEIGHT	CONNECTIONS: PLUG AND CORD REQUIRED	FEEDER: NUMBER OF CONDUCTORS	FEEDER: WIRE SIZE	FEEDER: GROUND SIZE	FEEDER: CONDUIT SIZE	NOTES
B3	EXISTING 2-POST LIFT		5.4			●						●	HW			3	12	12	3/4"	1, 3, 5
B4	GENERAL USE EQUIPMENT		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	
B4A	EXISTING WELD #1		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4B	EXISTING WELD #2 (MT200)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4C	EXISTING WELD #3 (HOBART TT2300)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4D	EXISTING WELD #4 (MILLER 212)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B4E	EXISTING WELD #5 (MILLER 250)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B5A	EXISTING PLASMA #1 (HYPER 600)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B5B	EXISTING PLASMA #2 (HYPER 85)		14.4			●					●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B6B	EXISTING BALANCER (COATS 1055)		5.8			●					●	L15-20R	CORD & PLUG	+46"	●	3	12	12	3/4"	1, 5
B7	OVERHEAD HOIST (5 TON)		9.5			●		●	60A/3P				HW	SEE NOTES		4	4	10	1 1/4"	1, 3, 4
B8	EXISTING DRILL PRESS		1.2	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	5
B9	NEW AIR COMPRESSOR	15				●		●	60A/3P				HW	+46"		3	6	10	3/4"	3
B9A	AIR COMPRESSOR DRYER		0.5	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	
B10	NEW 2-POST LIFT		5.4			●						●	HW			3	12	12	3/4"	1, 3, 6
B11	EXISTING GRINDER		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	3	12	12	3/4"	5
B12	EXISTING SHOP PRESS (EDWARDS)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	1, 5
B14	OVERHEAD HOIST (10 TON)		18.4			●		●	100A/3P				HW	SEE NOTES		4	1	8	1 1/2"	1, 3, 4
B17	CEILING RETRACTABLE CORD REEL		0.18	●							●	L15-20R	CORD & PLUG	C.LG. STRUCT.	●	2	12	12	3/4"	
B18	BAND SAW		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	5
B19	EXISTING BEAD BLASTER		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	2, 5
B20A	EXISTING MOBILE COLUMN LIFT		2.9			●					●	L15-30R	CORD & PLUG	+46"	●	3	10	10	3/4"	5, 7

EQUIPMENT AND CONNECTION NOTES:

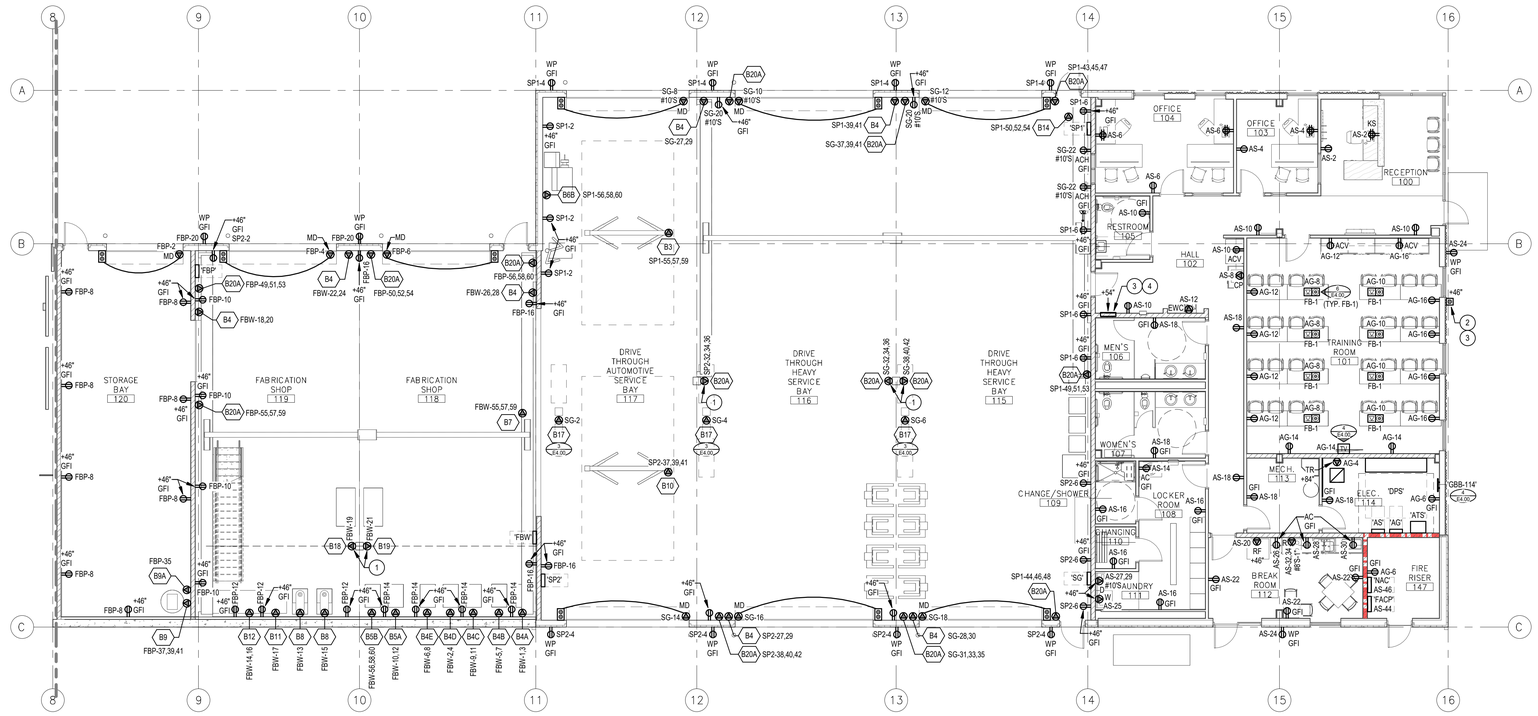
1. FIELD CONNECT CONTROLS, GROUNDING, AND INTERNAL COMPONENT CONNECTIONS PER MANUFACTURER'S SHOP DRAWINGS AND INSTRUCTIONS.
2. INTERLOCK WITH EXISTING DUST COLLECTION BIN CONTROLS.
3. FURNISH AND INSTALL FLEXIBLE CONNECTIONS TO EQUIPMENT.
4. FEED FROM CEILING WITH FLEXIBLE CONNECTION TO UNIT TERMINALS; LOCATE DISCONNECT AT CEILING STRUCTURE.
5. MATCH EXISTING CONNECTIONS.
6. CIRCUIT ROUGH-IN FOR FUTURE EQUIPMENT.
7. LOCATE RECEPTACLE ON WALL. FURNISH AND INSTALL SO CORD WITH MATCHING PLUG OF SUFFICIENT LENGTH FOR EQUIPMENT CONNECTION.

SHEET KEYNOTES

1. INSTALL EXPOSED ON STRUCTURAL COLUMN WITH OVERHEAD CONNECTION.
2. GENERATOR 'EPO' SWITCH IN WEATHERPROOF ENCLOSURE.
3. SEE 6/E1.02 FOR CONNECTION REQUIREMENTS.
4. GENERATOR REMOTE ANNUNCIATOR PANEL FLUSH IN WALL.

GENERAL NOTES

1. REFER TO SYMBOLS LIST ON E0.00 FOR REFERENCED SYMBOLS AND DESCRIPTIONS.
2. RECEPTACLE LOCATIONS SHALL BE COORDINATED WITH MILLWORK, WALL FINISHES, WINDOW HEIGHTS, AND OTHER WALL MOUNTED EQUIPMENT PRIOR TO ROUGH-IN. NOTIFY ARCHITECT OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
3. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
4. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
5. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
6. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
7. RECEPTACLE AND WIRING DEVICE MOUNTING HEIGHTS SHALL BE REFERENCED FROM FINISHED FLOOR HEIGHT.
8. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.
9. FURNISH AND INSTALL ALL ELECTRICAL CONNECTIONS TO MOTORIZED DOOR OPERATORS AND ELECTRIFIED DOOR HARDWARE AS DIRECTED BY DOOR HARDWARE INSTALLER. COORDINATE LOCATION OF CONTROLLER, POWER SUPPLY, SAFETY SENSORS, AND ALL INTERCONNECTIONS WITH DOOR HARDWARE SUPPLIER PRIOR TO COMMENCING WORK.
10. ALL EXTERIOR PENETRATIONS SHALL BE SEALED. PENETRATIONS OF EXTERIOR WALLS SHALL BE POSITIONED AT LEAST 8" AWAY FROM WALL JOINTS.



E2 POWER PLAN - AREA B

1/8" = 1'-0"

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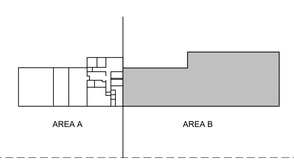

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JOB NO.: 24000.01
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POWER PLAN - AREA B

SHEET NO.

E2.12P

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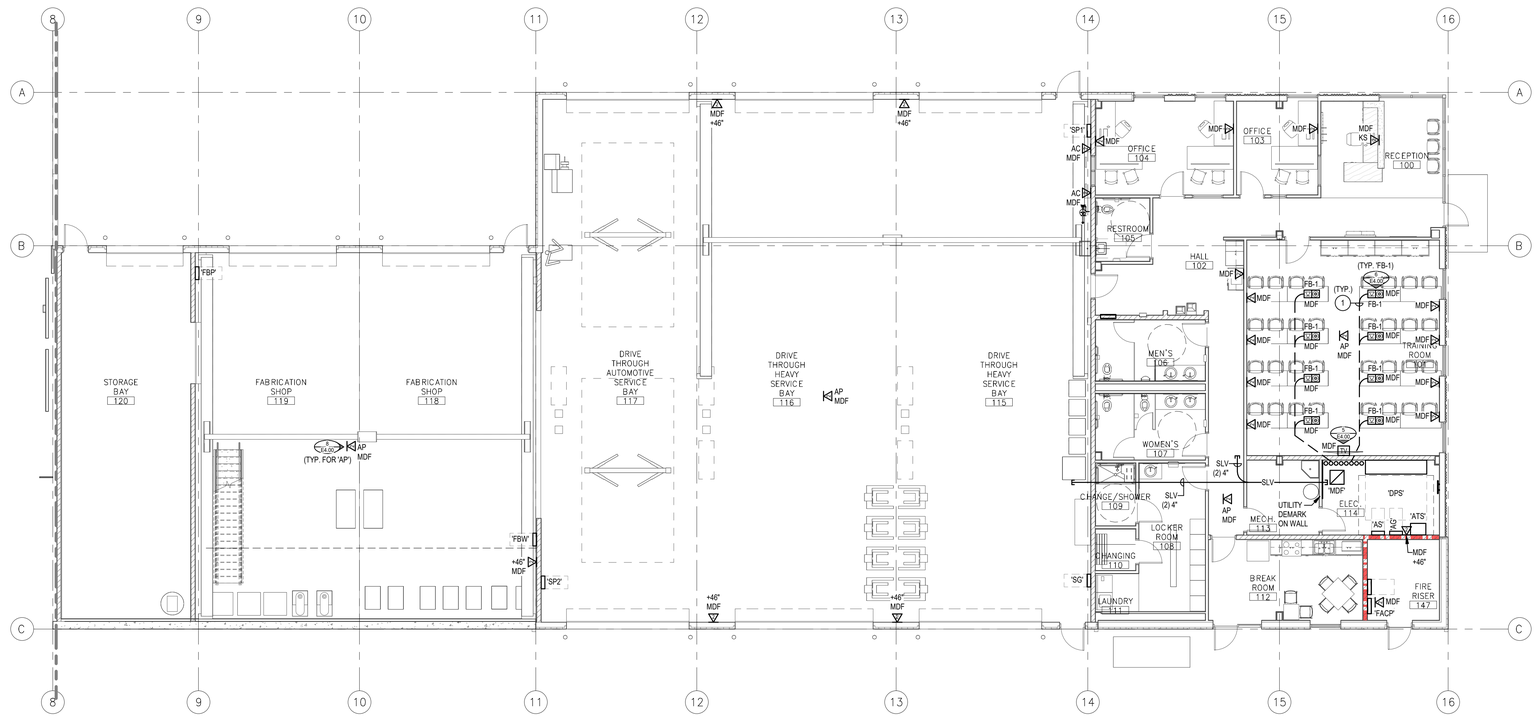
SHEET KEYNOTES

1. 1"C WITH FLOORBOX NETWORK CABLES UNDERSLAB TO HEAD END EQUIPMENT.

GENERAL NOTES

1. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL.
2. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
3. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
4. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.
5. LOCATE TELECOMMUNICATIONS OUTLETS WITHIN 6" OF NEAREST RECEPTACLE. COORDINATE LOCATION WITH POWER PLANS PRIOR TO ROUGH-IN.
6. MINIMUM CONDUIT SIZE FOR TELECOMMUNICATIONS CIRCUITS: 1 INCH.
7. ALL TELECOMMUNICATIONS CONDUITS TERMINATED IN OPEN AIR/ABOVE CEILINGS SHALL BE FURNISHED WITH INSULATED THROAT BUSHINGS.
8. SPECIAL SYSTEM CONDUCTORS ABOVE ACCESSIBLE CEILING SHALL BE ROUTED TO RESPECTIVE HEAD END EQUIPMENT VIA CABLE TRAY OR RACEWAY SLEEVE(S). SUPPORT BY J-HOOKS AT 10' ON CENTER SUPPORTED FROM STRUCTURE ENROUTE TO CABLE TRAY. ROUTE CONDUCTORS THROUGH CONDUIT WHERE CEILING SPACES ARE EXPOSED OR UNACCESSIBLE.
9. OVERHEAD RACEWAY SLEEVES SHALL BE INSTALLED IN CONCEALED SPACES AS HIGH AS POSSIBLE TO STRUCTURE; COORDINATE ROUTING WITH STRUCTURAL SYSTEMS AND MECHANICAL SYSTEMS. TURN ENDS DOWN TO 36" ABOVE FINISHED CEILING OR 24" ABOVE CABLE TRAYS. SEAL ALL WALL PENETRATIONS.
10. FILL ONE OVERHEAD RACEWAY SLEEVE AT A TIME; DO NOT UTILIZE NEXT SLEEVE UNTIL FILL IS COMPLETE. DO NOT EXCEED CODE-REQUIRED FILL. MAINTAIN AS MANY SPARE SLEEVES AS POSSIBLE.
11. REFER TO TELECOMMUNICATIONS OUTLET INSTALLATION DETAIL, 7/E4.00, FOR TYPICAL INSTALLATION REQUIREMENTS.
12. REFER TO TELECOMMUNICATIONS SYSTEM ONE LINE DIAGRAM ON SHEET E4.00 FOR SYSTEM CONNECTION REQUIREMENTS, CONDUIT CONNECTIONS, AND EQUIPMENT RACK ELEVATIONS.



E2 SYSTEMS PLAN - AREA B
1/8" = 1'-0"

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:

- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

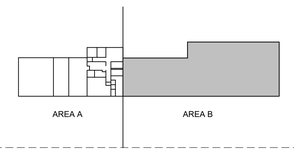
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

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SYSTEMS PLAN - AREA B

SHEET NO.
E2.12S

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HEAT TAPE SPECIFICATIONS:

1. THE SELF-REGULATING HEATER SHALL CONSIST OF TWO 18 (OR 16) AWG TINNED COPPER BUS WIRES EMBEDDED IN PARALLEL IN A SELF REGULATING POLYMER CORE THAT VARIES ITS POWER OUTPUT TO RESPOND TO TEMPERATURE ALONG ITS ENTIRE LENGTH. THE MAXIMUM SHEATH TEMPERATURE SHALL NOT EXCEED 150 DEGREES F.
2. THE HEATER SHALL BE CAPABLE OF CROSSING OVER ITSELF WITHOUT OVERHEATING. THE HEATER SHALL BE CAPABLE OF BEING CUT TO LENGTH IN THE FIELD AND TERMINATED IN THE FIELD.
3. THE HEATER CORE SHALL BE COVERED WITH A BONDED INNER TPR JACKET, THEN A TPR ELASTOMER JACKET, PROTECTED WITH A TINNED COPPER OVERBRAID FOR PHYSICAL, AS WELL AS ELECTRICAL GROUNDING, PROTECTION. THE OVERALL COVERING SHALL BE A FLAME RETARDANT TPR JACKET WITH U.V. INHIBITOR FOR CORROSION AND ABRASION RESISTANCE.
4. THE HEATER AND COMPONENTS SHALL BE UL RATED AS A SYSTEM FOR THIS APPLICATION. THE HEATER SHALL BE CAPABLE OF BEING OPERATED AT 120 VAC, OR 208 THROUGH 277 VAC.
5. THE HEATER CABLE SHALL BE DESIGNED FOR A USEFUL LIFE OF 20 YEARS OR MORE WITH THE POWER ON CONTINUOUSLY, BASED ON THE FOLLOWING USEFUL LIFE CRITERIA:
   a. RETENTION OF AT LEAST 75 PERCENT OF RATED POWER AFTER 20 YEARS OF OPERATION AT THE MAXIMUM PUBLISHED MAINTAIN TEMPERATURE.
   b. RETENTION OF AT LEAST 90 PERCENT OF RATED POWER AFTER 1000 HOURS OF CONTINUOUS OPERATION AT THE MAXIMUM PUBLISHED OPERATING TEMPERATURE.
6. HEATER CABLE CIRCUIT LENGTHS AND CIRCUIT BREAKER SIZING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED LITERATURE.
7. THE HEATER AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND USING MANUFACTURER'S APPROVED COMPONENTS. FURNISH AND INSTALL ALL SEALS, CLIPS, CONNECTORS, ETC. FOR A COMPLETE, OPERABLE SYSTEM.
8. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NEC 426-53 AND NEC 426-27(b).
9. BEFORE AND AFTER INSTALLATION, THE HEATER CABLE SHALL BE MEGGERED AT 2500 VDC TO ENSURE ELECTRICAL INTEGRITY.
10. THE HEATER SHALL HAVE A MANUFACTURER'S WARRANTY OF TEN YEARS.
11. THE ELECTRICAL HEATER CABLE SHALL BE TYPE CLT, AS MANUFACTURED BY NELSON HEAT TRACE SYSTEMS OR EQUAL IN RAYCHEM. THE HEATER CABLE SHALL BE RATED 8 WATTS PER FOOT IN OPEN AIR AND 10 WATTS PER FOOT EMBEDDED IN SNOW/ICE.

SHEET KEYNOTES

1. HEAT TAPE IN HORIZONTAL GUTTER.
2. HEAT TAPE AT DOWNSPOUT; INSTALL PER LOCATION-SPECIFIC CALLOUTS.

GENERAL NOTES

1. ALL CONDUIT FOR ROOF EQUIPMENT CONNECTIONS SHALL BE CONCEALED IN CEILING SPACE OF FLOOR BELOW UNLESS SPECIFICALLY NOTED.
2. SEAL ALL ROOF PENETRATIONS IN ACCORDANCE WITH ROOFING MANUFACTURER. REFER TO ROOF PENETRATION DETAIL(S) ON ARCHITECTURAL AND ELECTRICAL SHEETS.
3. ADHERE HEAT TAPE TO ROOFING MATERIALS IN ACCORDANCE WITH THE ROOFING MANUFACTURER'S REQUIREMENTS. USE ONLY PRODUCTS AND METHODS SPECIFICALLY ALLOWED TO MAINTAIN ROOFING WARRANTY.
4. DERATE AMPACITY OF CONDUCTORS IN RACEWAYS EXPOSED ON ROOF PER NEC 310.15.

E1 ROOF ELECTRICAL PLAN
3/32" = 1'-0"

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ROOF ELECTRICAL PLAN

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LIGHTING CONTROL DEVICE SYMBOLS

SYMBOL	DESCRIPTION
◇ RP	RELAY PANEL ASSIGNMENT; TAG IDENTIFIES PANEL
CS	CEILING MOUNTED SENSOR DEVICE
DS	DAYLIGHT SENSOR DEVICE; CEILING MOUNTED UON
PC	PHOTOCELL SENSOR
PP	LIGHTING CONTROL POWER PACK / POWER SUPPLY
WC 1	WALL-MOUNTED CONTROL STATION; TAG IDENTIFIES DEVICE ID
WIFI	WIRELESS COMMUNICATION DEVICE
WS	WALL-MOUNTED SENSOR DEVICE
—CB—	LIGHTING NETWORK CONTROL BUS CONNECTION
—DIM—	LIGHTING SYSTEM DIMMING CONNECTION
—LV—	LIGHTING SYSTEM LINE-VOLTAGE CONNECTION
—TC—	NETWORK CONNECTION

LIGHTING CONTROL SYSTEM GENERAL NOTES

1. SELECT CONTROL COMPONENTS FOR FUNCTIONS, OPERATIONS, AND PROGRAMMING REQUIREMENTS SUMMARIZED ON LIGHTING CONTROL SCHEDULE(S). ALL CONTROL COMPONENTS SHALL BE COMPATIBLE WITH AND CERTIFIED FOR USE ON LIGHTING CONTROL SYSTEM.
2. LOCAL AREA NETWORK (LAN) CONNECTIONS FOR INTEGRATION WITH BUILDING LAN SYSTEM SHALL BE COORDINATED WITH OWNER'S INFORMATION TECHNOLOGY PERSONNEL PRIOR TO CONNECTION TO NETWORK SYSTEMS.
3. WIRELESS COMMUNICATION DEVICES (WIFI) UTILIZED FOR COMMUNICATION TO WIRELESS-ENABLED LIGHTING CONTROLS SHALL BE PLACED AND ORIENTED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS FOR SIGNAL STRENGTH AND COVERAGE BOUNDARIES. CONSULT MANUFACTURER FOR RECOMMENDATIONS PRIOR TO SUBMITTING BID. ADDITIONAL WIRELESS COMMUNICATION DEVICES, WHERE REQUIRED, SHALL BE INCLUDED ALONG WITH ASSOCIATED INFRASTRUCTURE AND INSTALLATION.
4. CONTROL BUS BRIDGE DEVICES SHALL BE PROVIDED BASED UPON THE FUNCTIONS, OPERATIONS, AND PROGRAMMING REQUIREMENTS SUMMARIZED ON LIGHTING CONTROL SCHEDULE(S). INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS. BRIDGE DEVICES MAY BE LOCATED EITHER AT SYSTEM HEAD END OR FIELD-MOUNTED. WHERE FIELD MOUNTED, LOCATE IN CONCEALED, ACCESSIBLE POSITIONS IN CEILING AREAS.
5. CONTROL-BUS SIGNAL CABLING SHALL BE INSTALLED FOR A COMPLETE NETWORKED SYSTEM AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS. CONTROL-BUS CABLING MAY BE ROUTED THROUGH CONCEALED CEILING AREAS IN SIMILAR FASHION TO OTHER LOW-VOLTAGE SYSTEMS, BUT SHALL BE INSTALLED IN RACEWAYS WHERE INSTALLED IN WALLS OR THROUGH-WALL PENETRATIONS. WHERE AIR-PLENUMS ARE ENCOUNTERED, CABLING SHALL BE LISTED FOR USE IN PLENUM SPACES.
6. CEILING MOUNTED SENSORS, INCLUDING DAYLIGHT SENSORS, SHALL BE POSITIONED WITHIN EACH SPACE IN COORDINATION WITH ALL OTHER ROOM COMPONENTS INCLUDING LUMINAIRES, HVAC REGISTERS, ETC. CONSULT ARCHITECTURAL AND MECHANICAL PLANS FOR INFORMATION ON OTHER SYSTEMS. POSITION SENSORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR OPTIMIZING SENSOR PERFORMANCE.
7. POWER PACKS/POWER SUPPLY COMPONENTS SHALL BE UTILIZED FOR AND SHALL ACT AS THE INTERFACE BETWEEN THE LUMINAIRE(S), THIRD PARTY DEVICES, AND CONTROLS. SELECT POWER PACK FOR THE LOAD SERVED AND THE OPERATIONAL CONSIDERATIONS OF THE ROOM/AREA. POWER PACK EQUIPMENT SHALL BE INSTALLED IN CONCEALED, ACCESSIBLE LOCATIONS AND SHALL BE LOCATED IN GENERAL PROXIMITY TO THE LOAD SERVED. WHERE INACCESSIBLE CEILING SPACES ARE ENCOUNTERED, LOCATE POWER PACKS AS CLOSE AS POSSIBLE TO THE LOAD.
8. DIMMING CONTROL CONNECTIONS SHALL BE IMPLEMENTED BETWEEN ALL GROUPED LUMINAIRES, EITHER BY ZONE OR BY ROOM, REGARDLESS OF CONTROL SEQUENCES. DIMMING CONTROLS PER ROOM/AREA/ZONE SHALL BE EXTENDED TO THE SCHEDULED LIGHTING CONTROL INTERFACE.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MOUNTING	LAMPS	WATTS / LUMINAIRE	VOLTAGE	EMERGENCY	MANUFACTURER	CATALOG NUMBER	ALTERNATE MANUFACTURERS	NOTES
BL1	BARE STRIP LUMINAIRE, 48" OVERALL LENGTH, STEEL HOUSING, FLAT DIFFUSE LENS, GENERAL OPTICAL DISTRIBUTION, DIMMING DRIVER, CHAIN HANGERS, WITH WIREGUARD, WHITE FINISH	SEE PLANS	LED 3000 LM 3500K	20 VA	120	N/A	LITHONIA	CLX-L48-3000LM-SEF-FDL-120-GZ10-35K-80CRI-WH-HC36-W GCLXA8WH	HUBBELL, METALUX	1, 2
EM1	EMERGENCY LIGHTING UNIT, INTEGRAL BATTERY, DUAL HEAD, WALL MOUNT, WHITE FINISH	WALL MOUNT	INT. LED	1 VA	120	INTEGRAL BATTERY	LITHONIA	ELM2L	LIGHTGUARD, SURE-LITES	
EM2	EMERGENCY LIGHTING UNIT, CONCEALED HEADS, MOTORIZED DOOR, DUAL HEAD, INTEGRAL BATTERY	CEILING RECESSED	INT. LED	16 VA	120V (BATT) LV TO UNIT	REMOTE BATTERY PER UNIT	CONCEALITE	FS-LED8-90-***	EMERGI-LITE	5, 7
EM3	EXTERIOR EMERGENCY LIGHTING UNIT, DOOR FRAME MOUNTED, EXTRUDED ALUMINUM HOUSING, FULL CUT-OFF, WALL MOUNT CONFIGURATION, REMOTE BATTERY SUPPLY, DARK BRONZE FINISH	ABOVE DOOR ON FRAME	INT. LED	10 VA	120V (BATT) LV TO UNIT	REMOTE BATTERY PER UNIT	SIGNTEX	MUE-BB-10-B-W	MULE	6
EM4	EMERGENCY LIGHTING UNIT, INTEGRAL LITHIUM BATTERY AND SELF DIAGNOSTICS, DUAL ADJUSTABLE HEAD, UNIVERSAL MOUNT, WHITE FINISH	SURFACE MOUNT	INT. LED	11 VA	120	INTEGRAL BATTERY	LITHONIA	ELMML-LVOLT-L TP-SDRT	LIGHTGUARD, SURE-LITES	
EX1	EXIT LIGHT, DIECAST ALUMINUM, LED, GREEN LETTERING, BRUSHED ALUMINUM FACE WITH BLACK HOUSING, SINGLE FACE	AS INDICATED ON PLANS	INT. LED	3 VA	120	INTEGRAL BATTERY	LITHONIA	LQC-1-G-EL-N	LIGHTGUARD, SURE-LITES	
GS1	GRID MOUNT LED, 2X4, VOLUMETRIC DISTRIBUTION, RIBBED ACRYLIC LINEAR PRISMATIC REFLECTOR WITH TRIM RINGS, DIMMING DRIVER	CEILING RECESSED	LED 4000 LM 3500K	32 VA	120	N/A	LITHONIA	2BLT4-RB-40L-ADPT-EZ1-LP835	HUBBELL, METALUX	2
GS2	GRID MOUNT LED, 2X2, VOLUMETRIC DISTRIBUTION, RIBBED ACRYLIC LINEAR PRISMATIC REFLECTOR WITH TRIM RINGS, DIMMING DRIVER	CEILING RECESSED	LED 3000 LM 3500K	27 VA	120	N/A	LITHONIA	2BLT2-RB-33L-ADPT-EZ1-LP835	HUBBELL, METALUX	2, 4
HB1	HIGH BAY, STEEL CONSTRUCTION, DUAL LIGHT BAR, GENERAL DISTRIBUTION PATTERN, LIGHTWEIGHT, ALUMINUM HEAT SINK, DIMMING DRIVER, AIRCRAFT CABLE SUSPENSION, CORDED CONNECTIONS	SUSPEND; HEIGHT PER DRAWINGS.	LED 24000 LM 3500K	147 VA	120	N/A	LITHONIA	IBG-12000LM-SEF-L-ENS-GND-MVOLT-GZ10-35K-80CRI-DW H-IBAC120-M100-CS11WWP	PRE APPROVED EQUAL	2, 3, 8
P4	ARCHITECTUAL ARM-MOUNTED FULL CUTOFF LUMINARE, DARK BRONZE FINISH, TYPE 4 MEDIUM OPTICS, INTEGRAL MOTION/AMBIENT SENSOR, STRAIGHT SQUARE STEEL POLE, 20', FINISH TO MATCH LUMINAIRE	SEE DETAIL 1/E1.02	LED 6272 LM 4000K	45 VA (139 LM/W)	120	N/A	LITHONIA	DSXO-LED-P2-40K-70CRI-T4M-120-SPA-PIR-DDBXD POLE NO. SSS-25-4C-DM19AS-DDBXD-BC	PRE-BID APPROVED EQUAL	
RR2	ROUND RECESSED, 2", CLEAR ALZAK REFLECTOR, MEDIUM-WIDE DISTRIBUTION, SEMI-SPECULAR REFLECTOR, DIMMING DRIVER	CEILING RECESSED	LED 1000 LM 3500K	13 VA	120	N/A	GOTHAM	EVO0-35/10-AR-MWD-L-SS-120-UGZ	PORTFOLIO	2
SL1	SURFACE LUMINARE, 8' X 48" NOMINAL, EXTRUDED ALUMINUM HOUSING WITH HIGH IMPACT PEARLESCENT POLYCARBONATE LENS, WHITE FINISH, DIMMING DRIVER, FLAT END CAPS	CEILING SURFACE	LED 4758 LM 3500K	49 VA	120	N/A	KENALL	MLHA8-48-F-MW-PP-49L35K-DCC-120	LUMINAIRE LIGHTING	2
SL2	SURFACE LUMINARE, 8" X 24" NOMINAL, EXTRUDED ALUMINUM HOUSING WITH HIGH IMPACT PEARLESCENT POLYCARBONATE LENS, WHITE FINISH, DIMMING DRIVER, FLAT END CAPS	CEILING SURFACE	LED 2379 LM 3500K	25 VA	120	N/A	KENALL	MLHA8-24-F-MW-PP-25L35K-DCC-120	LUMINAIRE LIGHTING	2
WL1	WALL MOUNTED LUMINARE, FULL CUT-OFF TYPE, TYPE IV MEDIUM DISTRIBUTION, DARK BRONZE FINISH, INTEGRAL MOTION/AMBIENT SENSOR	WALL MOUNT; HEIGHT PER DWGS	LED 2701 LM 4000K	26 VA	120	N/A	LITHONIA	DSXW1-LED-10C-700-40K-T4M-120-PIR1FC3V-DDBXD	MCGRAW-EDISON	
WL2	WALL MOUNTED LUMINARE, FULL CUT-OFF TYPE, TYPE IV MEDIUM DISTRIBUTION, DARK BRONZE FINISH, INTEGRAL MOTION/AMBIENT SENSOR	WALL MOUNT; HEIGHT PER DWGS	LED 5343 LM 4000K	46 VA	120	N/A	LITHONIA	DSXW1-LED-20C-700-40K-T4M-120-PIR1FC3V-DDBXD	MCGRAW-EDISON	

LUMINAIRE SCHEDULE NOTES

1. UTILIZE HANGER CHAINS FOR SUSPENDED MOUNTING IF FIELD CONDITIONS REQUIRE. UTILIZE TANDEM-CONNECTING HARDWARE FOR APPLICATIONS SHOWN ON PLANS.
2. WHERE DIMMING FUNCTIONS ARE NOT UTILIZED, CAP 0-10V LEADS AT DRIVER.
3. MOUNTING HARDWARE TO BE ORDERED AS NECESSARY TO PROVIDE MOUNTING AND ORIENTATION SHOWN ON PLANS.
4. ORIENT REFRACTORS IN CEILING IN CONSISTENT PATTERN DIRECTED BY ARCHITECT.
5. FIELD PAINT DOOR AND TRIM TO MATCH CEILING PAINT FINISH. PAINT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
6. LOCATE REMOTE BATTERY WITHIN DISTANCE LIMITATIONS OF MANUFACTURER. FIELD WIRE ALL CONNECTIONS.
7. CONFIGURE AND PROCURE MOUNTING KITS REQUIRED FOR INSTALLATION CONDITIONS REQUIRED FOR PLACEMENT PER PLANS.
8. CORD CONNECTIONS: FACTORY CONSTRUCTED CORDS WITH POWER AND DIMMING CONTROLS. SUFFICIENT LENGTH FOR MOUNTING HEIGHTS SCHEDULED.

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ELECTRICAL SCHEDULES

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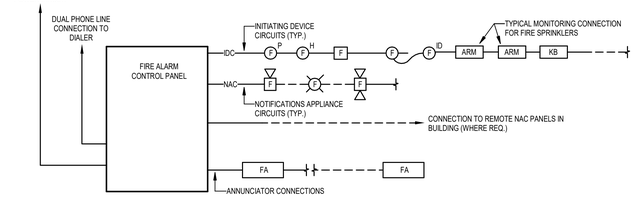
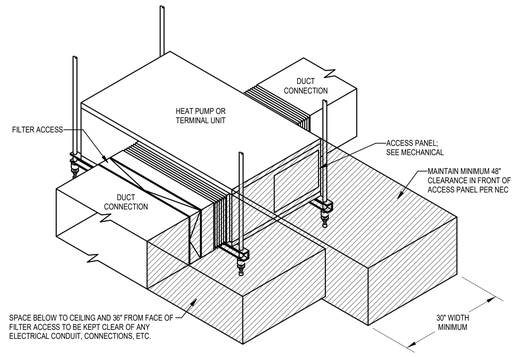


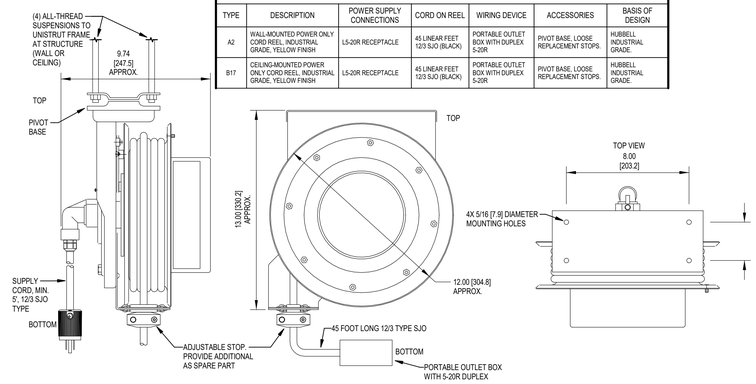
TYPICAL FIRE ALARM SYSTEM WIRING SCHEMATIC (1 / E4.00)
NOT TO SCALE



CEILING MOUNTED MECHANICAL EQUIPMENT DETAIL (2 / E4.00)
NOT TO SCALE

RETRACTABLE CORD REEL SCHEDULE

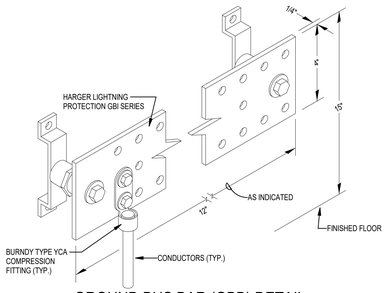
TYPE	DESCRIPTION	POWER SUPPLY CONNECTIONS	CORD ON REEL	WIRING DEVICE	ACCESSORIES	BASIS OF DESIGN
A2	WALL-MOUNTED POWER ONLY CORD REEL, INDUSTRIAL-GRADE, YELLOW FINISH.	L5-20R RECEPTACLE	45 LINEAR FEET 12/3 SJO (BLACK)	PORTABLE OUTLET BOX WITH DUPLEX 5-20R	PIVOT BASE, LOOSE REPLACEMENT STOPS.	HUBBELL INDUSTRIAL GRADE.
B17	CEILING-MOUNTED POWER ONLY CORD REEL, INDUSTRIAL GRADE, YELLOW FINISH	L5-20R RECEPTACLE	45 LINEAR FEET 12/3 SJO (BLACK)	PORTABLE OUTLET BOX WITH DUPLEX 5-20R	PIVOT BASE, LOOSE REPLACEMENT STOPS.	HUBBELL INDUSTRIAL GRADE.



RETRACTABLE CORD REEL DETAIL (3 / E4.00)
NOT TO SCALE

CONNECTION SCHEDULE

FROM	TO	CONDUCTOR(S)	NOTES
PANEL 'DS'	'GBB-114'	1-3/0(CU)	
'GBB-114'	'GBB-1'	1-6(CU)	GROUND BAR AT 'MDF1'.
'GBB-114'	'GBB-1'	1-6(CU)	GROUND BAR AT 'IDFA'.
'GBB-1'	'MDF1'	1-6(CU)	ATTACH TO GROUNDING STUD WITH RACK GROUNDING KIT.
'GBB-1'	'IDFA'	1-6(CU)	ATTACH TO GROUNDING STUD WITH RACK GROUNDING KIT.
'GBB-114'	TERMINAL BOARD	1-3/0(CU)	BOND TERMINAL BOARD SECTIONS WITH #6(CU).
'GBB-114'	CONCRETE ENCASED ELECTRODE	1-3/0(CU)	20' OF BARE CONDUCTOR IN BLDG. FOOTING; BOND TO REBAR.
'GBB-114'	STRUCTURAL STEEL	1-3/0(CU)	VISIBLE CONNECTION.
'GBB-114'	WATER SERVICE	1-3/0(CU)	VISIBLE CONNECTION.
'GBB-114'	FIRE WATER SERVICE	1-3/0(CU)	VISIBLE CONNECTION.
'GBB-114'	GAS METER PIPING	1-3/0(CU)	VISIBLE CONNECTION.
'GBB-114'	GENERATOR	1-3/0(CU)	
'GBB-114'	'GBB-135'	1-3/0(CU)	
'GBB-135'	TERMINAL BOARD	1-3/0(CU)	BOND TERMINAL BOARD SECTIONS WITH #6(CU).

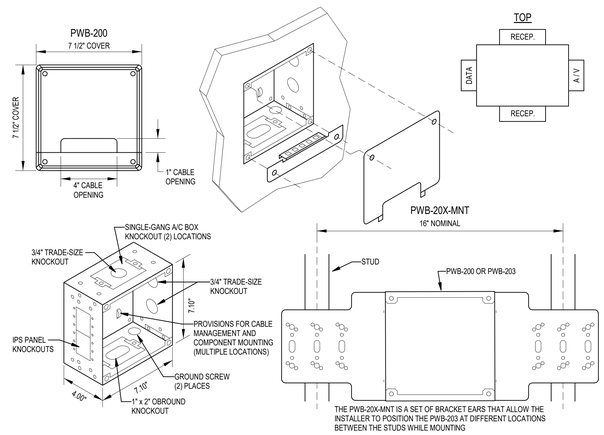


GROUND BUS BAR (GBB) DETAIL (4 / E4.00)
NOT TO SCALE

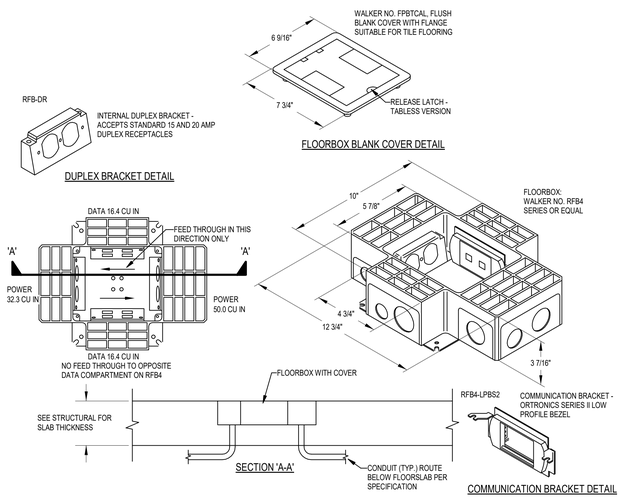
FLUSH MOUNT TELEVISION OUTLET SCHEDULE

TYPE	DESCRIPTION	POWER REQUIRED	TELECOMMUNICATIONS REQUIRED	AUDIO / VISUAL	NOTES
TV	FSR PWB-200 WITH PWB-2X0-AVBB AND PWB-20X-MNT	(1) SURGE SUPPRESSION (SPD) DUPLEX RECEPTACLE	(2) DATA DROPS EACH TO RESPECTIVE EQUIP. RACK IN 1"C	- - -	1, 2, 3, 4, 5

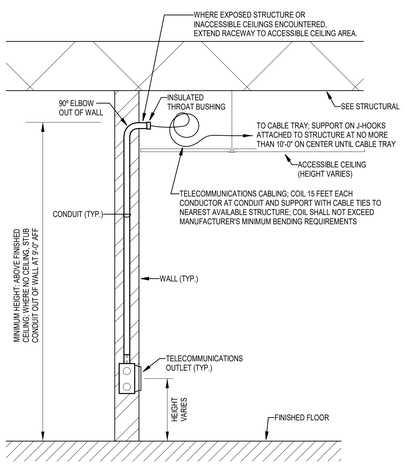
NOTES:
1. REFER TO PLAN SHEETS FOR CONDUIT DESIGNATIONS. PLAN CONDUIT ENTRIES FOR SYSTEM SPECIFIC CONNECTIONS.
2. INSTALL PWB-2X0-AVBB, AV BACKBOX PER MANUFACTURER'S INSTRUCTIONS.
3. WALLBOX CHASSIS MATERIAL 16 GA. GALVANIZED STEEL.
4. COVER MATERIAL 0.062" THICK ALUMINUM, PAINTED.
5. STANDARD EQUIPMENT INCLUDED: MOUNTING HARDWARE FOR WOOD AND STEEL STUDS, (1) JUNCTION BOX, (1) GROMMET FOR OBROUND KNOCKOUT.



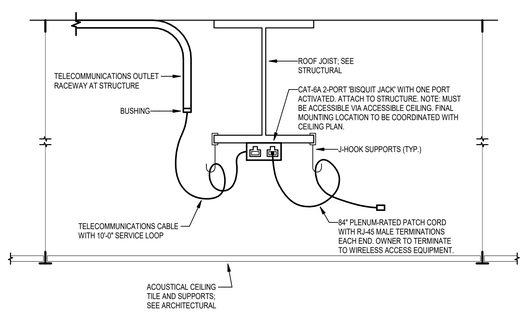
TELEVISION OUTLET ASSEMBLY DETAIL (5 / E4.00)
NOT TO SCALE



CONCRETE FLOOR FLOORBOX 'FB-1' DETAIL (6 / E4.00)
NOT TO SCALE



TELECOMMUNICATIONS OUTLET INSTALLATION DETAIL (7 / E4.00)
NOT TO SCALE

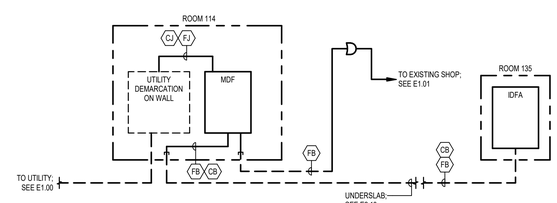


CEILING MOUNTED WIRELESS ACCESS POINT INSTALLATION DETAIL (8 / E4.00)
NOT TO SCALE

TELECOMMUNICATIONS BACKBONE CABLING SCHEDULE

TYPE	DESCRIPTION	NOTES
CB	COPPER BACKBONE, (6) CAT-6 CABLES	1, 2, 3
FB	FIBER BACKBONE, SINGLE-MODE, 12-STRAND	1, 2
CJ	COPPER JUMPER CONNECTIONS / RACK INTERCONNECTION	3
FJ	FIBER JUMPER CONNECTIONS / RACK INTERCONNECTION	3

NOTES
1. INSTALL IN 1" INNER-DUCT IN BACKBONE RACEWAY.
2. FIBER AND COPPER IN SEPARATE BACKBONE RACEWAYS.
3. JUMPER NETWORK CONNECTIONS BETWEEN RACK ASSEMBLIES.



TELECOMMUNICATIONS BACKBONE SYSTEM RISER DIAGRAM
NOT TO SCALE

LOMBARD CONRAD ARCHITECTS
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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

ELECTRICAL DETAILS

SHEET NO.
E4.00

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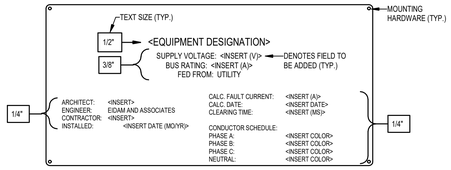
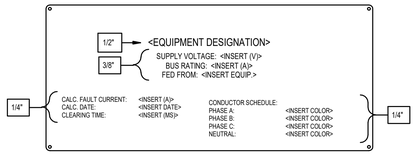
EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

EQUIPMENT LABELING REQUIREMENTS:

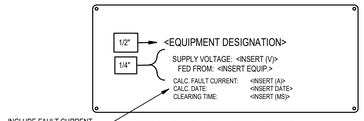
1. BASIS OF DESIGN FOR ALL EQUIPMENT LABELS SHALL BE BRIMAR ENGRAVED PHENOLIC NAMEPLATES OR EQUAL. SIZE OF NAMEPLATES SHALL BE DETERMINED BASED ON FINAL LETTERING FOR EACH EQUIPMENT LABEL TYPE. CONTRACTOR SHALL COORDINATE FIELD OF TEXT AND DATA THAT ARE TO BE INSERTED WITH FINAL EQUIPMENT CALLOUTS. CONSULT ENGINEER FOR SPECIFIC INSTRUCTIONS.
2. IN ADDITION TO THE EQUIPMENT IDENTIFIED IN THE SCHEDULE, ALL GENERAL-USE DISCONNECT SWITCHES, ENCLOSED CIRCUIT BREAKERS, ETC. FEEDING EQUIPMENT SHALL BE FURNISHED WITH EQUIPMENT IDENTIFICATION LABELS. LABELS AT DISCONNECT SWITCHES SHALL BE TYPE C.
3. IN ADDITION TO THE EQUIPMENT IDENTIFIED IN THE SCHEDULE, ALL LIGHTING CONTROL PANELS SHALL BE FURNISHED WITH EQUIPMENT IDENTIFICATION LABELS. LABELS AT LIGHTING CONTROL PANELS SHALL BE TYPE C.



EQUIPMENT LABEL TYPE 'A'



EQUIPMENT LABEL TYPE 'B'



EQUIPMENT LABEL TYPE 'C'

TYPICAL EQUIPMENT LABEL DETAILS (1 / E5.00)
NOT TO SCALE

Dist. Panelboard: DPN

Location: ELEC. 135
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4
Label Type: B

A.I.C. Rating: 22K AIC
Mains Type: MAIN LUGS
Mains Rating: 800 A
MCB Rating: N/A
Surge Protection: 19kA PER PHASE

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL 'AN'	3	200 A	200 A	40053 VA	
2	PANEL 'MP'	3	200 A	200 A	34235 VA	
3	PANEL 'WP'	3	200 A	200 A	24657 VA	
4	PANEL 'FP'	3	200 A	200 A	23768 VA	
5	SPARE	3	100 A	100 A	0 VA	
6	SPARE	3	100 A	100 A	0 VA	
				Total Conn. Load:	122713 VA	
				Total Amps:	341 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	17950 VA	100.00%	17950 VA		
HVAC	10736 VA	109.20%	11724 VA	**Total Conn. Load:**	122713 VA
Lighting	4201 VA	125.00%	5251 VA	**Total Est. Demand:**	112556 VA
Receptacle	20700 VA	74.15%	15350 VA	**Total Conn.:**	341 A
Electric Heat	5000 VA	100.00%	5000 VA	**Total Est. Demand:**	312 A
Water Heat	4500 VA	125.00%	5625 VA		
Equipment - Continuous	9909 VA	125.00%	12386 VA		
Welding	49920 VA	79.17%	39520 VA		

Notes:

Switchboard: DPS

Location: ELEC. 114
Supply From: UTILITY
Mounting: Floor
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4
Label Type: A

A.I.C. Rating: 65K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 1600 A
MCB Rating: 1600 A
Surge Protection: 160kA PER PHASE

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	ATS	3	400 A	400 A	75606 VA	5
2	PANEL 'AS'	3	200 A	200 A	47078 VA	
3	PANEL 'SP1'	3	200 A	200 A	48496 VA	
4	PANEL 'SP2'	3	200 A	200 A	23764 VA	
5	PANEL 'FBP'	3	200 A	200 A	44963 VA	
6	PANEL 'FBW'	3	400 A	400 A	114268 VA	5
7	PANEL 'DPN'	3	800 A	800 A	122713 VA	5
8	SPARE	3	100 A	100 A	0 VA	
9	SPARE	3	100 A	100 A	0 VA	
				Total Conn. Load:	476873 VA	
				Total Amps:	1324 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	149022 VA	100.00%	149022 VA		
HVAC	27760 VA	105.62%	29320 VA	**Total Conn. Load:**	476873 VA
Lighting	11397 VA	125.00%	14246 VA	**Total Est. Demand:**	426109 VA
Motor	31032 VA	113.40%	35190 VA	**Total Conn.:**	1324 A
Receptacle	41400 VA	62.08%	25700 VA	**Total Est. Demand:**	1183 A
Cooking	8000 VA	100.00%	8000 VA		
Electric Heat	5000 VA	100.00%	5000 VA		
Water Heat	9000 VA	125.00%	11250 VA		
Equipment - Continuous	31659 VA	125.00%	39574 VA		
Welding	164160 VA	67.31%	110496 VA		

Notes:
1. ASSEMBLY SHALL BE UL LISTED FOR USE AS SERVICE ENTRANCE EQUIPMENT.
2. INSTALL ON CAST-IN-PLACE 4" TALL HOUSEKEEPING PAD.
3. ALL ADJUSTABLE INSTANTANEOUS TRIP SETTINGS SHALL BE SET TO VALUE LESS THAN AVAILABLE ARCING CURRENT.
4. MAIN BREAKER: ELECTRONIC TRIP, ADJUSTABLE LONG, SHORT, AND INSTANTANEOUS PICK-UP SETTINGS.
5. ELECTRONIC TRIP, ADJUSTABLE LONG, SHORT, AND INSTANTANEOUS PICK-UP SETTINGS.

MECHANICAL FAULT CURRENT SCHEDULE

EQUIPMENT	CALC. FAULT CURRENT	EQUIP. AIC RATING
CU-1	1,737	PER EQUIP. MANUFACTURER
CU-2	1,514	PER EQUIP. MANUFACTURER
CU-3	1,824	PER EQUIP. MANUFACTURER
CU-4	3,265	PER EQUIP. MANUFACTURER
EF-1	666	PER EQUIP. MANUFACTURER
EF-2	666	PER EQUIP. MANUFACTURER
EF-3A	516	PER EQUIP. MANUFACTURER
EF-3B	587	PER EQUIP. MANUFACTURER
EF-4	1,302	PER EQUIP. MANUFACTURER
EF-5	809	PER EQUIP. MANUFACTURER
EF-6	508	PER EQUIP. MANUFACTURER
EF-7A	534	PER EQUIP. MANUFACTURER
EF-7B	610	PER EQUIP. MANUFACTURER
EF-8	534	PER EQUIP. MANUFACTURER
EF-9A	1,204	PER EQUIP. MANUFACTURER
EF-9B	2,464	PER EQUIP. MANUFACTURER
EF-10	523	PER EQUIP. MANUFACTURER
EF-11	1,350	PER EQUIP. MANUFACTURER
F-1	3,331	PER EQUIP. MANUFACTURER
F-2	1,872	PER EQUIP. MANUFACTURER
F-3	1,166	PER EQUIP. MANUFACTURER
F-4	1,603	PER EQUIP. MANUFACTURER
HR-1F	781	PER EQUIP. MANUFACTURER
HR-2F	1,060	PER EQUIP. MANUFACTURER

FAULT CURRENT SCHEDULE

EQUIPMENT	CALC. FAULT CURRENT	EQUIP. AIC RATING
AG	29,556	35K
AN	15,084	18K
AS	25,754	35K
DPN	19,488	22K
DPS	41,937	65K
FP	10,126	14K
FBP	8,422	10K
FBW	17,005	18K
MP	15,084	18K
SG	15,083	18K
SP1	14,536	18K
SP2	10,388	14K
WP	10,126	14K

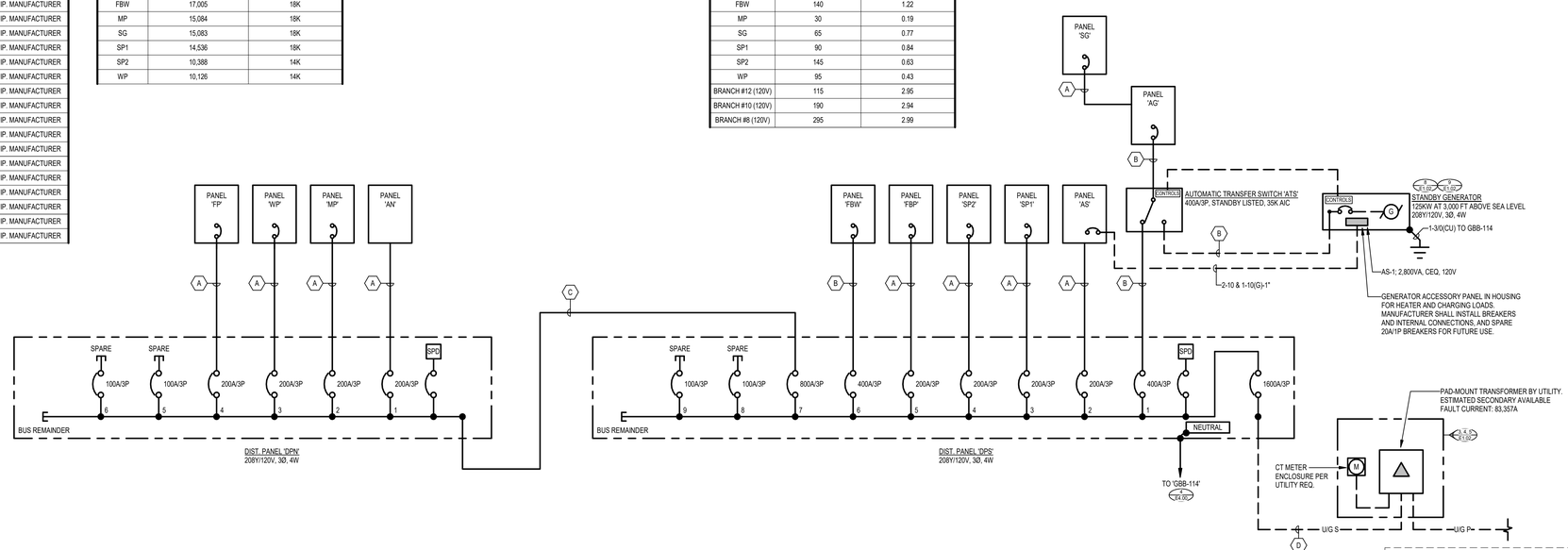
FEEDER SCHEDULE

DESIGNATOR	CONDUCTORS (IN EACH CONDUIT)	CONDUIT(S)	NOTES
A	4-4/0 & 1-6(G)	2 1/2"	
B	4-4/0 & 1-3(G)	(2) 3"	1
C	4-350KCMIL & 1-3/0(G)	(3) 4"	1
D	4-500KCMIL	(5) 4"	1

NOTES:
1. PARALLEL CONDUCTORS.

VOLTAGE DROP CALCULATIONS

FEEDER	LENGTH (FT)	CALC. VOLTAGE DROP (%)
AG	10	0.07
AN	30	0.24
AS	30	0.27
DPN	225	1.12
DPS	190	1.77
FP	95	0.42
FBP	190	1.68
FBW	140	1.22
MP	30	0.19
SG	65	0.77
SP1	90	0.84
SP2	145	0.63
WP	95	0.43
BRANCH #12 (120V)	115	2.95
BRANCH #10 (120V)	190	2.94
BRANCH #8 (120V)	295	2.99



ONE LINE DIAGRAM
NOT TO SCALE

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

ONE LINE DIAGRAM

SHEET NO.
E5.00

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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Branch Panel: AN

Location: ELEC. 135
Supply From: DPN
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 18K AIC
Mains Type: MAIN LUGS
Mains Rating: 200 A
MCB Rating: N/A
Surge Protection: 80kA PER PHASE

Label Type: B

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	BREAK / LOCKER LTG	20 A	1	LTG	869	540					CO	1	20 A	146 RECEPTS.	2	
	3	LOBBY / OFFICES LTG	20 A	1	LTG			740	540			CO	1	20 A	126 RECEPTS.	4	
	5	SPARE	20 A	1	--					0	540	CO	1	20 A	127 RECEPTS.	6	
	7	SPARE	20 A	1	--	0	720					CO	1	20 A	125 NORTH STATIONS	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	125 CENTER STATIONS	10	
	11	SPARE	20 A	1	--					0	360	CO	1	20 A	125 SOUTH STATIONS	12	
	13	SPARE	20 A	1	--	0	1200					CEQ	1	20 A	125 COPIER	14	
	15	SPARE	20 A	1	--			0	1080			CO	1	20 A	125 RECEPTS.	16	
4	17	NORTH NAC PANEL	20 A	1	CEQ					500	600	CEQ	1	20 A	ELECTRIC WATER COOLER	18	2
3	19	GUTTER HEAT TAPE	20 A	1	EQ	1160	900					CO	1	20 A	HALL 124 C.O.	20	
	21	135 TIC RACK	20 A	1	CEQ			1800	360			CO	1	20 A	EXT. RECEPTS.	22	
2	23	BREAK REFRIG.	20 A	1	CEQ					800	900	CO	1	20 A	RESTROOM C.O.	24	
2	25	LOCKER WASHER	20 A	1	CEQ	1200	360					CO	1	20 A	LOCKER COUNTER	26	
2	27	LOCKER DRYER	30 A	2	EQ			2250	900			CO	1	20 A	LOCKER C.O.	28	
	29	--	--	--	--					2250	1080	CO	1	20 A	BREAK EAST C.O.	30	
	31	WH-1	30 A	2	WH	2250	1200					EQ	1	20 A	BREAK 'DW'	32	2
	33	--	--	--	--			2250	180			CO	1	20 A	BREAK COUNTER EAST	34	
	35	EF-4, 5; RP-1	20 A	1	EQ					965	180	CO	1	20 A	BREAK COUNTER WEST	36	
	37	F-2	20 A	1	AC	1656	1176					AC	1	20 A	F-1	38	
	39	CU-2	30 A	2	AC			1976	1976			AC	2	30 A	CU-1	40	
	41	--	--	--	--					1976	1976	--	--	--	--	42	
	43	SPARE	20 A	1	--	0	--					--	1	--	BLANK	44	
	45	SPARE	20 A	1	--			0	--			--	1	--	BLANK	46	
	47	SPARE	20 A	1	--					0	--	--	1	--	BLANK	48	
	49	SPARE	20 A	1	--	0	--					--	1	--	BLANK	50	
	51	SPARE	20 A	1	--			0	--			--	1	--	BLANK	52	
	53	SPARE	20 A	1	--					0	--	--	1	--	BLANK	54	
	55	SPARE	20 A	1	--	0	--					--	1	--	BLANK	56	
	57	SPARE	20 A	1	--			0	--			--	1	--	BLANK	58	
	59	SPARE	20 A	1	--					0	--	--	1	--	BLANK	60	
					Total Load:	13190 VA		14737 VA		12127 VA							
					Total Amps:	111 A		124 A		101 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	6906 VA	100.00%	6906 VA		
Equipment - Continuous	7019 VA	125.00%	8774 VA	**Total Conn. Load:**	40053 VA
HVAC	10736 VA	109.20%	11724 VA	**Total Est. Demand:**	44304 VA
Lighting	1609 VA	125.00%	2011 VA	**Total Conn.:**	111 A
Receptacle	9360 VA	100.00%	9360 VA	**Total Est. Demand:**	123 A
Water Heat	4500 VA	125.00%	5625 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
3. 30mA 'GFP' TYPE CIRCUIT BREAKER.
4. PROVIDE WITH LOCKOUT HANDLE. PAINT RED.

Branch Panel: FP

Location: FINISH SHOP 144
Supply From: DPN
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 14K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Label Type: B

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-1 / CF-1'S	20 A	1	EQ	724	1200					EQ	1	20 A	MOTORIZED DOOR	2	
2	3	GUTTER HEAT TAPE	20 A	1	EQ			1080	180			CO	1	20 A	EQUIP: A2	4	1
	5	FINISH: EF-1	20 A	1	EQ					588	1080	CO	1	20 A	NORTH WALL RECEPTS.	6	
	7	FINISH: INTERIOR LTG	20 A	1	LTG	690	720					CO	1	20 A	WEST WALL RECEPTS.	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	SOUTH WALL RECEPTS.	10	
	11	SPARE	20 A	1	--					0	180	CO	1	20 A	WELD PANEL C.O.	12	
	13	SPARE	20 A	1	--	0	4160					WE	2	50 A	EQUIP: A3 (EAST)	14	1
	15	SPARE	20 A	1	--			0	4160			--	--	--	--	16	
	17	SPARE	20 A	1	--					0	4160	WE	2	50 A	EQUIP: A3 (WEST)	18	1
	19	SPARE	20 A	1	--	0	4160					--	--	--	--	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
	39	BLANK	--	1	--			--	--			--	1	--	BLANK	40	
	41	BLANK	--	1	--					--	--	--	1	--	BLANK	42	
					Total Load:	11621 VA		6140 VA		6008 VA							
					Total Amps:	97 A		51 A		50 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	3064 VA	100.00%	3064 VA		
Equipment - Continuous	528 VA	125.00%	660 VA	**Total Conn. Load:**	23768 VA
Lighting	690 VA	125.00%	863 VA	**Total Est. Demand:**	24065 VA
Receptacle	2880 VA	100.00%	2880 VA	**Total Conn.:**	66 A
Welding	16640 VA	100.00%	16640 VA	**Total Est. Demand:**	67 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
2. 30mA 'GFP' TYPE CIRCUIT BREAKER.

Branch Panel: MP

Location: OVERFLOW BAY 141
Supply From: DPN
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 18K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	SPARE	20 A	1	--	0	1200					EQ	1	20 A	NORTH MOTORIZED DOOR	2	
	3	SPARE	20 A	1	--			0	1200			EQ	1	20 A	SOUTH MOTORIZED DOOR	4	
	5	OVERFLOW: EF-3A	20 A	1	EQ					787	180	CO	1	20 A	EQUIP: A2 (NORTH)	6	1
	7	MECHANIC: EF-3B	20 A	1	CEQ	528	720					CO	1	20 A	NORTH WALL RECEPTS.	8	
	9	MECHANIC: CF-1'S	20 A	1	EQ			392	900			CO	1	20 A	NW WALL RECEPTS.	10	
	11	MECHANIC: UH-3, 4	20 A	1	EQ					1056	720	CO	1	20 A	SW WALL RECEPTS.	12	
	13	VGD-1	20 A	1	CEQ	500	720					CO	1	20 A	SOUTH WALL RECEPTS.	14	
2	15	GUTTER HEAT TAPE	20 A	1	EQ			1272	540			CO	1	20 A	MEZZ SOUTH RECEPTS.	16	
	17	EH-2	35 A	2	EH					2500	360	CO	1	20 A	EXT. RECEPTS.	18	
	19	--	--	--	--	2500	180					CO	1	20 A	'AN' PANEL C.O.	20	
	21	MECH BAY LTG	20 A	1	LTG			939	180			CO	1	20 A	EQUIP: A2 (SOUTH)	22	1
	23	MECH BAY MEZZANINE LTG	20 A	1	LTG					280	4160	WE	2	50 A	EQUIP: A3 (EAST)	24	1
	25	SPARE	20 A	1	--	0	4160					--	--	--	--	26	
	27	SPARE	20 A	1	--			0	4160			WE	2	50 A	EQUIP: A3 (WEST)	28	1
	29	SPARE	20 A	1	--					0	4160	--	--	--	--	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	SPARE	20 A	1	--					0	--	--	1	--	BLANK	36	
	37	SPARE	20 A	1	--	0	--					--	1	--	BLANK	38	
	39	SPARE	20 A	1	--			0	--			--	1	--	BLANK	40	
	41	SPARE	20 A	1	--					0	--	--	1	--	BLANK	42	
					Total Load:	10508 VA		9541 VA		14189 VA							
					Total Amps:	89 A		80 A		119 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Electric Heat	5000 VA	100.00%	5000 VA		
Equipment	5240 VA	100.00%	5240 VA	**Total Conn. Load:**	34235 VA
Equipment - Continuous	1695 VA	125.00%	2119 VA	**Total Est. Demand:**	34950 VA
Lighting	1219 VA	125.00%	1524 VA	**Total Conn.:**	95 A
Receptacle	4500 VA	100.00%	4500 VA	**Total Est. Demand:**	97 A
Welding	16640 VA	100.00%	16640 VA		

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
2. 30mA 'GFP' TYPE CIRCUIT BREAKER.

Branch Panel: SG

Location: DRIVE THROUGH HEAVY...
Supply From: AG
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 18K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Label Type: B (RED)

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-9, UH-10	20 A	1	EQ	1512	180					CO	1	20 A	EQUIP: B17 NORTH	2	2
	3	UH-11, UH-12	20 A	1	EQ			1512	180			CO	1	20 A	EQUIP: B17 CENTER	4	2
	5	AUTOMOTIVE: CF-1'S	20 A	1	EQ					392	180	CO	1	20 A	EQUIP: B17 SOUTH	6	2
	7	BAY LIGHTING 'A'	20 A	1	LTG	1222	1200					EQ	1	20 A	117 EAST MOTORIZED DOOR	8	
	9	BAY LIGHTING 'B'	20 A	1	LTG			1233	1200			EQ	1	20 A	116 EAST MOTORIZED DOOR	10	
	11	AUTO: LOUVERS	20 A	1	EQ					360	1200	EQ	1	20 A	115 EAST MOTORIZED DOOR	12	
	13	VGD-3	20 A	1	CEQ	500	1200					EQ	1	20 A	117 WEST MOTORIZED DOOR	14	
	15	SPARE	20 A	1	--			0	1200			EQ	1	20 A	116 WEST MOTORIZED DOOR	16	
	17	BLANK	--	1	--					--	1200	EQ	1	20 A	115 WEST MOTORIZED DOOR	18	
	19	BLANK	--	1	--	--	360					CO	1	20 A	BAY EAST RECEPTS.	20	
	21	BLANK	--	1	--			--	360			CO	1	20 A	BAY WOR STATION	22	
	23	BLANK	--	1	--					--	360	CO	1	20 A	BAY WEST RECEPTS.	24	
	25	BLANK	--	1	--	--	0					--	1	20 A	SPARE	26	
2	27	EQUIP: B4 NE	50 A	2	WE			4160	4160			WE	2	50 A	EQUIP: B4 SW	28	2
	29	--	--	--	--					4160	4160	--	--	--	--	30	
2	31	EQUIP: B20A WEST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER 1	32	2
	33	--	--	--	--			960	960			--	--	--	--	34	
	35	--	--	--	--					960	960	--	--	--	--	36	
2	37	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER 2	38	2
	39	--	--	--	--			960	960			--	--	--	--	40	
	41	--	--	--	--					960	960	--	--	--	--	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	HR-2D	20 A	1	EQ					1176	1176	EQ	1	20 A	HR-1D	48	
	49	HR-2F	20 A	3	EQ	480	480					EQ	3	20 A	HR-1F	50	
	51	--	--	--	--			480	480			--	--	--	--	52	
	53	--	--	--	--					480	480	--	--	--	--	54	
	55	EF-9B	30 A	3	MO	2400	2400					MO	3	30 A	EF-9A	56	
	57	--	--	--	--			2400	2400			--	--	--	--	58	
	59	--	--	--	--					2400	2400	--	--	--	--	60	
					Total Load:	15718 VA		23546 VA		23964 VA							
					Total Amps:	131 A		206 A		210 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	27728 VA	100.00%	27728 VA		
Equipment - Continuous	500 VA	125.00%	625 VA	**Total Conn. Load:**	63225 VA
Lighting	2455 VA	125.00%	3069 VA	**Total Est. Demand:**	65735 VA
Motor	14400 VA	112.50%	16200 VA	**Total Conn.:**	175 A
Receptacle	1620 VA	100.00%	1620 VA	**Total Est. Demand:**	182 A
Welding	16640 VA	100.00%	16640 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: WP

Location: WELDING 143
Supply From: DPN
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 14K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Label Type: B

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-2 / CF-1'S	20 A	1	EQ	952	1200					EQ	1	20 A	MOTORIZED DOOR	2	
	3	EF-6	20 A	1	EQ			528	180			CO	1	20 A	EQUIP: A2	4	1
	5	EF-2	20 A	1	EQ					727	720	CO	1	20 A	NORTH WALL RECEPT.	6	
	7	WELD INTERIOR LTG	20 A	1	LTG	683	540					CO	1	20 A	NW WALL RECEPT.	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	SW WALL RECEPT.	10	
	11	SPARE	20 A	1	--					0	720	CO	1	20 A	SOUTH WALL RECEPT.	12	
	13	SPARE	20 A	1	--	0	540					CO	1	20 A	FINISH PANEL / EXT. C.O.	14	
	15	SPARE	20 A	1	--			0	540			CO	1	20 A	MEZZ NORTH RECEPT.	16	
	17	SPARE	20 A	1	--					0	4160	WE	2	50 A	EQUIP: A3 (EAST)	18	1
	19	SPARE	20 A	1	--	0	4160					--	--	--	--	20	
	21	SPARE	20 A	1	--			0	4160			WE	2	50 A	EQUIP: A3 (WEST)	22	1
	23	SPARE	20 A	1	--					0	4160	--	--	--	--	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
	39	BLANK	--	1	--			--	--			--	1	--	BLANK	40	
	41	BLANK	--	1	--					--	--	--	1	--	BLANK	42	
					Total Load:	8044 VA		6128 VA		10487 VA							
					Total Amps:	69 A		51 A		90 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	2740 VA	100.00%	2740 VA		
Equipment - Continuous	667 VA	125.00%	834 VA	**Total Conn. Load:**	24657 VA
Lighting	683 VA	125.00%	854 VA	**Total Est. Demand:**	24986 VA
Receptacle	3960 VA	100.00%	3960 VA	**Total Conn.:**	68 A
Welding	16640 VA	100.00%	16640 VA	**Total Est. Demand:**	69 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**MKC/CRH**
CHECKED BY:	**GLJ**

PHASE: **PERMIT SET**

PANEL SCHEDULES

SHEET NO.

E5.01

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

Branch Panel: AG

Location: ELEC. 114
Supply From: ATS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B (RED)

A.I.C. Rating: 35K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 400 A
MCB Rating: 400 A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	TRAINING / LOCKER LTG.	20 A	1	LTG	971	0					--	1	20 A	SPARE	2	
	3	LOBBY / OFFICE LTG.	20 A	1	LTG			1010	1800			CEQ	1	20 A	114 NETWORK RACK	4	
	5	BLDG. EXT. LTG.	20 A	1	LTG					576	360	CO	1	20 A	114/147 RECEPTS.	6	
	7	BLANK	--	1	--	--	720					CO	1	20 A	101 NORTH FLOOR	8	
	9	BLANK	--	1	--			--	720			CO	1	20 A	101 SOUTH FLOOR	10	
	11	BLANK	--	1	--					--	900	CO	1	20 A	101 NORTH WALL C.O.	12	
	13	BLANK	--	1	--	--	540					CO	1	20 A	101 WEST WALL C.O.	14	
	15	BLANK	--	1	--			--	900			CO	1	20 A	101 SOUTH WALL C.O.	16	
	17	BLANK	--	1	--					--	0	--	1	20 A	SPARE	18	
	19	BLANK	--	1	--	--	0					--	1	20 A	SPARE	20	
	21	BLANK	--	1	--			--	0			--	1	20 A	SPARE	22	
	23	BLANK	--	1	--					--	0	--	1	20 A	SPARE	24	
	25	BLANK	--	1	--	--	0					--	1	20 A	SPARE	26	
	27	BLANK	--	1	--			--	0			--	1	20 A	SPARE	28	
	29	BLANK	--	1	--					--	0	--	1	20 A	SPARE	30	
	31	BLANK	--	1	--	--	0					--	1	20 A	SPARE	32	
	33	BLANK	--	1	--			--	0			--	1	20 A	SPARE	34	
	35	BLANK	--	1	--					--	0	--	1	20 A	SPARE	36	
	37	PANEL 'SG'	200 A	3	LTG...	15718	0					--	1	20 A	SPARE	38	
	39	--	--	--	--			23546	2000			AC	2	30 A	EH-1	40	
	41	--	--	--	--					23964	2000	--	--	--	--	42	
					Total Load:	17908 VA		29931 VA		27772 VA							
					Total Amps:	149 A		262 A		244 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	27728 VA	100.00%	27728 VA		
Equipment - Continuous	2300 VA	125.00%	2875 VA	**Total Conn. Load:**	75606 VA
HVAC	4000 VA	125.00%	5000 VA	**Total Est. Demand:**	80179 VA
Lighting	5012 VA	125.00%	6265 VA	**Total Conn.:**	210 A
Motor	14400 VA	112.50%	16200 VA	**Total Est. Demand:**	223 A
Receptacle	5760 VA	100.00%	5760 VA		
Welding	16640 VA	100.00%	16640 VA		

Notes:

Branch Panel: FBP

Location:
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B

A.I.C. Rating: 10K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	STORAGE: EF-7A	20 A	1	EQ...	588	1200					EQ	1	20 A	STORAGE MOTORIZED DOOR	2	
	3	STORAGE: UH-6 / CF-1'S	20 A	1	EQ			724	1200			EQ	1	20 A	FAB NORTH MOTORIZED DOOR	4	
	5	VGD-2	20 A	1	CEQ					500	1200	EQ	1	20 A	FAB SOUTH MOTORIZED DOOR	6	
	7	FAB: UH-7, UH-8	20 A	1	EQ	1512	1440					CO	1	20 A	STORAGE WALL RECEPTS.	8	
	9	FAB: CF-1'S	20 A	1	EQ			392	720			CO	1	20 A	FAB NORTH WALL RECEPTS.	10	
	11	STORAGE: EF-7B	20 A	1	CEQ					528	540	CO	1	20 A	FAB NW WALL RECEPTS.	12	
	13	STORAGE: LTG.	20 A	1	LTG	451	720					CO	1	20 A	FAB SW WALL RECEPTS.	14	
	15	FABRICATION BAY LTG.	20 A	1	LTG			1347	720			CO	1	20 A	FAB SOUTH WALL RECEPTS.	16	
	17	FABRICATION MEZZ. LTG.	20 A	1	LTG					251	720	CO	1	20 A	MEZZ RECEPTS.	18	
	19	FAB: EF-8	20 A	1	EQ...	1296	360					CO	1	20 A	EXTERIOR RECEPTS.	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	SPARE	20 A	1	--	0	--					--	1	--	BLANK	26	
	27	SPARE	20 A	1	--			0	--			--	1	--	BLANK	28	
	29	SPARE	20 A	1	--					0	--	--	1	--	BLANK	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	EQUIP: B9A	20 A	1	EQ					500	--	--	1	--	BLANK	36	
	37	EQUIP: B9	60 A	3	MO	5544	--					--	1	--	BLANK	38	
	39	--	--	--	--			5544	--			--	1	--	BLANK	40	
	41	--	--	--	--					5544	--	--	1	--	BLANK	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
2	49	EQUIP: B20A NE	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A EAST	50	2
	51	--	--	--	--			960	960			--	--	--	--	52	
	53	--	--	--	--					960	960	--	--	--	--	54	
2	55	EQUIP: B20A NW	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A SE	56	2
	57	--	--	--	--			960	960			--	--	--	--	58	
	59	--	--	--	--					960	960	--	--	--	--	60	
					Total Load:	16929 VA		14426 VA		13611 VA							
					Total Amps:	142 A		121 A		113 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	18428 VA	100.00%	18428 VA		
Equipment - Continuous	2732 VA	125.00%	3415 VA	**Total Conn. Load:**	44963 VA
Lighting	2049 VA	125.00%	2561 VA	**Total Est. Demand:**	50293 VA
Motor	16632 VA	125.00%	20790 VA	**Total Conn.:**	125 A
Receptacle	5220 VA	100.00%	5220 VA	**Total Est. Demand:**	140 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: AS

Location: ELEC. 114
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B

A.I.C. Rating: 35K AIC
Mains Type: MAIN LUGS
Mains Rating: 200 A
MCB Rating: N/A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	GEN. ACC. PANEL	30 A	2	CEQ	2800	540					CO	1	20 A	100 WORKSTATION	2	
	3	PARKING LTG.	20 A	1	LTG			135	540			CO	1	20 A	103 RECEPTS.	4	
	5	SPARE	20 A	1	--					0	900	CO	1	20 A	104 RECEPTS.	6	
	7	SPARE	20 A	1	--	0	1200					CEQ	1	20 A	'102 COPIER'	8	
	9	SPARE	20 A	1	--			0	900			CO	1	20 A	102 C.O.	10	
3	11	GUTTER HEAT TAPE	20 A	1	EQ					1104	600	CEQ	1	20 A	102 EWC	12	2
3	13	GUTTER HEAT TAPE	20 A	1	EQ	824	180					CO	1	20 A	LOCKER COUNTER	14	
	15	SPARE	20 A	1	--			0	720			CO	1	20 A	LOCKER RECEPTS.	16	
	17	SPARE	20 A	1	--					0	1080	CO	1	20 A	HALL C.O.	18	
	19	SPARE	20 A	1	--	0	800					CEQ	1	20 A	BREAK REFRIG.	20	2
	21	SPARE	20 A	1	--			0	540			CO	1	20 A	BREAK RECEPTS.	22	
	23	SPARE	20 A	1	--					0	360	CO	1	20 A	EXTERIOR RECEPTS.	24	
2	25	WASHER	20 A	1	CEQ	1200	480					CO...	1	20 A	BREAK COUNTER N. H-1	26	
2	27	DRYER	30 A	2	EQ			2250	180			CO	1	20 A	BREAK COUNTER CENTER	28	
	29	--	--	--	--					2250	180	CO	1	20 A	BREAK COUNTER SOUTH	30	
	31	WH-1	30 A	2	WH	2250	4000					CKG	2	50 A	RANGE	32	2
	33	--	--	--	--			2250	4000			--	--	--	--	34	
	35	EF-10, EF-11, H-1, RP-1	20 A	1	CEQ					798	0	--	1	20 A	SPARE	36	
	37	F-3	20 A	1	AC	1656	1176					AC	1	20 A	F-4	38	
	39	CU-3	30 A	2	AC			1976	3120			AC	2	50 A	CU-4	40	
	41	--	--	--	--					1976	3120	--	--	--	--	42	
	43	BLANK	--	1	--	--	500					CEQ	1	20 A	FIRE ALARM PANEL	44	4
	45	BLANK	--	1	--			--	500			CEQ	1	20 A	SOUTH NAC PANEL	46	4
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
	49	BLANK	--	1	--	--	--					--	1	--	BLANK	50	
	51	BLANK	--	1	--			--	--			--	1	--	BLANK	52	
	53	BLANK	--	1	--					--	--	--	1	--	BLANK	54	
	55	BLANK	--	1	--	--	--					--	1	--	BLANK	56	
	57	BLANK	--	1	--			--	--			--	1	--	BLANK	58	
	59	BLANK	--	1	--					--	--	--	1	--	BLANK	60	
					Total Load:	17606 VA		17104 VA		12368 VA							
					Total Amps:	153 A		149 A		103 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Cooking	8000 VA	100.00%	8000 VA		
Equipment	6728 VA	100.00%	6728 VA	**Total Conn. Load:**	47078 VA
Equipment - Continuous	8398 VA	125.00%	10498 VA	**Total Est. Demand:**	51895 VA
HVAC	13024 VA	111.98%	14584 VA	**Total Conn.:**	131 A
Lighting	135 VA	125.00%	169 VA	**Total Est. Demand:**	144 A
Receptacle	6300 VA	100.00%	6300 VA		
Water Heat	4500 VA	125.00%	5625 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
3. 30mA 'GFP' TYPE CIRCUIT BREAKER.
4. PROVIDE WITH LOCKOUT HANDLE. PAINT RED.

Branch Panel: SP1

Location: DRIVE THROUGH HEAVY...
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B

A.I.C. Rating: 18K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	SPARE	20 A	1	--	0	540					CO	1	20 A	117 N. RECEPTS.	2	
	3	SPARE	20 A	1	--			0	720			CO	1	20 A	FLEET EAST EXT. RECEPTS.	4	
	5	SPARE	20 A	1	--					0	720	CO	1	20 A	FLEET SE RECEPTS.	6	
	7	SPARE	20 A	1	--	0	--					--	1	--	BLANK	8	
	9	SPARE	20 A	1	--			0	--			--	1	--	BLANK	10	
	11	SPARE	20 A	1	--					0	--	--	1	--	BLANK	12	
	13	SPARE	20 A	1	--	0	--					--	1	--	BLANK	14	
	15	SPARE	20 A	1	--			0	--			--	1	--	BLANK	16	
	17	SPARE	20 A	1	--					0	--	--	1	--	BLANK	18	
	19	SPARE	20 A	1	--	0	--					--	1	--	BLANK	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
2	39	EQUIP: B4 SE	50 A	2	WE			4160	--			--	1	--	BLANK	40	
	41	--	--	--	--					4160	--	--	1	--	BLANK	42	
2	43	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A WEST	44	2
	45	--	--	--	--			960	960			--	--	--	--	46	
	47	--	--	--	--					960	960	--	--	--	--	48	
2	49	EQUIP: B20A CENTER	30 A	3	EQ	960	6144					EQ	3	70 A	EQUIP: B14	50	
	51	--	--	--	--			960	6144			--	--	--	--	52	
	53	--	--	--	--					960	6144	--	--	--	--	54	
	55	EQUIP: B3	20 A	3	EQ	1788	1920					EQ	3	20 A	EQUIP: B6B	56	2
	57	--	--	--	--			1788	1920			--	--	--	--	58	
	59	--	--	--	--					1788	1920	--	--	--	--	60	
					Total Load:	13272 VA		17612 VA		17612 VA							
					Total Amps:	111 A		152 A		152 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	38196 VA	100.00%	38196 VA		
Receptacle	1980 VA	100.00%	1980 VA	**Total Conn. Load:**	48496 VA
Welding	8320 VA	100.00%	8320 VA	**Total Est. Demand:**	48496 VA
				Total Conn.:	135 A
				Total Est. Demand:	135 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: FBW

Location: FABRICATION SHOP 118
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B

A.I.C. Rating: 18K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 400 A
MCB Rating: 400 A
Surge Protection: N/A

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
2	1	EQUIP: B4A	50 A	2	WE	4160	4160					WE	2	50 A	EQUIP: B4D	2	2
	3	--	--	--	--			4160	4160			--	--	--	--	4	
2	5	EQUIP: B4B	50 A	2	WE					4160	4160	WE	2	50 A	EQUIP: B4E	6	2
	7	--	--	--	--	4160	4160					--	--	--	--	8	
2	9	EQUIP: B4C	50 A	2	WE			4160	4160			CEQ	2	50 A	EQUIP: B5A	10	2
	11	--	--	--	--					4160	4160	--	--	--	--	12	
	13	EQUIP: B8	20 A	1	EQ	1200	4160					EQ	2	50 A	EQUIP: B1Z	14	2
	15	EQUIP: B8	20 A	1	EQ			1200	4160			--	--	--	--	16	
	17	EQUIP: B11	20 A	1	EQ					1600	4160	WE	2	50 A	EQUIP: B4 N	18	2
	19	EQUIP: B18	20 A	1	EQ	1600	4160					--	--	--	--	20	
	21	EQUIP: B19	20 A	1	EQ			1600	4160			WE	2	50 A	EQUIP: B4 E	22	2
	23	SPARE	20 A	1	--					0	4160	--	--	--	--	24	
	25	SPARE	20 A	1	--	0	4160					WE	2	50 A	EQUIP: B4 S	26	2
	27	SPARE	20 A	1	--			0	4160			--	--	--	--	28	
	29	SPARE	20 A	1	--					0	--	--	1	--	BLANK	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	SPARE	20 A	1	--					0	--	--	1	--	BLANK	36	
	37	SPARE	20 A	1	--	0	--					--	1	--	BLANK	38	
	39	SPARE	20 A	1	--			0	--			--	1	--	BLANK	40	
	41	SPARE	20 A	1	--					0	--	--	1	--	BLANK	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
	49	BLANK	--	1	--	--	--					--	1	--	BLANK	50	
	51	BLANK	--	1	--			--	--			--	1	--	BLANK	52	
	53	BLANK	--	1	--					--	--	--	1	--	BLANK	54	
	55	EQUIP: B7	40 A	3	EQ	3156	4800					WE	3	50 A	EQUIP: B5B	56	2
	57	--	--	--	--			3156	4800			--	--	--	--	58	
	59	--	--	--	--					3156	4800	--	--	--	--	60	
					Total Load:	39876 VA		39876 VA		34516 VA							
					Total Amps:	339 A		339 A		288 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	24988 VA	100.00%	24988 VA		
Equipment - Continuous	8320 VA	125.00%	10400 VA	**Total Conn. Load:**	114268 VA
Welding	80660 VA	74.82%	60576 VA	**Total Est. Demand:**	95964 VA
				Total Conn.:	317 A
				Total Est. Demand:	266 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: SP2

Location: DRIVE THROUGH AUTOMOTIVE...
Supply From: DPS
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

Label Type: B

A.I.C. Rating: 14K AIC
Mains Type: CIRCUIT BREAKER
Mains Rating: 200 A
MCB Rating: 200 A
Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	BLANK	--	1	--	--	180					CO	1	20 A	FAB C.O.	2	
	3	BLANK	--	1	--			--	720			CO	1	20 A	FLEET WEST EXT. C.O.	4	
	5	BLANK	--	1	--					--	540	CO	1	20 A	FLEET SW RECEPTS.	6	
	7	BLANK	--	1	--	--	0					--	1	20 A	SPARE	8	
	9	BLANK	--	1	--			--	0			--	1	20 A	SPARE	10	
	11	BLANK	--	1	--					--	0	--	1	20 A	SPARE	12	
	13	BLANK	--	1	--	--	0					--	1	20 A	SPARE	14	
	15	BLANK	--	1	--			--	0			--	1	20 A	SPARE	16	
	17	BLANK	--	1	--					--	0	--	1	20 A	SPARE	18	
	19	BLANK	--	1	--	--	0					--	1	20 A	SPARE	20	
	21	BLANK	--	1	--			--	0			--	1	20 A	SPARE	22	
	23	BLANK	--	1	--					--	0	--	1	20 A	SPARE	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
1	27	EQUIP: B4 NW	50 A	2	WE			4160	--			--	1	--	BLANK	28	
	29	--	--	--	--					4160	--	--	1	--	BLANK	30	
1	31	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER	32	1
	33	--	--	--	--			960	960			--	--	--	--	34	
	35	--	--	--	--					960	960	--	--	--	--	36	
	37	EQUIP: B10	20 A	3	EQ	1788	960					EQ	3	30 A	EQUIP: B20A WEST	38	1
	39	--	--	--	--			1788	960			--	--	--	--	40	
	41	--	--	--	--					1788	960	--	--	--	--	42	
					Total Load:	4848 VA		9548 VA		9368 VA							
					Total Amps:	40 A		85 A		84 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	14004 VA	100.00%	14004 VA		
Receptacle	1440 VA	100.00%	1440 VA	**Total Conn. Load:**	23764 VA
Welding	8320 VA	100.00%	8320 VA	**Total Est. Demand:**	23764 VA
				Total Conn.:	66 A
				Total Est. Demand:	66 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

472 W. Washington St. | Boise, ID 83702
P 208.345.6671 | F 208.344.8002

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PROFESSIONAL ENGINEER REGISTERED 11424 STATE OF IDAHO GEOFREY L. JOHNSON

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
405 S WASHINGTON ST.
MOSCOW, ID 83843
(208) 882-3520

STRUCTURAL ENGINEER
LOCHSA ENGINEERING
201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
291 E. SHORE DR., SUITE 210
EAGLE, IDAHO 83616
(208) 345-7127

MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **MKC/CRH**
CHECKED BY: **GLJ**

PHASE: **PERMIT SET**

PANEL SCHEDULES

SHEET NO.
E5.02

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

Attachment 'F'

Moscow City Shop Facility

City of Moscow
206 E. Third Street
Moscow, ID 83843

RECEIVED
NOV 0 6 2024
@ 1:48pm

WELLENS GENERAL CONTRACTORS INC. 107 [illegible] RIDER

ARTICLE 2

IN COMPLIANCE WITH THE NOTICE TO CONTRACTORS-INVITATION TO BID, AND IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS, THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS FOR THE PROJECT, THE UNDERSIGNED BIDDER, BEING DULY LICENSED TO PERFORM SUCH WORK BY THE STATE OF IDAHO AND BEING THOROUGHLY FAMILIAR WITH ALL LOCAL CONDITIONS AFFECTING THE COST OF THE PROJECT, HAVING CAREFULLY EXAMINED THE SITE, CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AND ANY ADDENDA THERETO PREPARED BY THE PROJECT ARCHITECT OR ENGINEER, PROPOSES TO PROVIDE, AND TO FURNISH FOR THE COSTS SET FORTH IN THE FOLLOWING BID SCHEDULE, ALL LABOR AND MATERIAL, TOOLS, UTILITIES, TRANSPORTATION, EQUIPMENT AND SERVICES REQUIRED TO PERFORM AND TO COMPLETE IN A WORKMANLIKE MANNER ALL THE WORK FROM THE DATE OF THE NOTICE TO PROCEED WITHIN THE ESTABLISHED CONSTRUCTION TIME, SUBJECT TO LIQUIDATED DAMAGES FOR EXCESS WORKING TIME AS ESTABLISHED UNDER ARTICLE 1.

ARTICLE 3 **BID SCHEDULE**

BASE BID **DESCRIPTION:** Base Bid.

FOR THE SUM OF:

Six Million Five hundred sixty-Seven thousand **DOLLARS ($** 6,567,000

ALTERNATE #1 **DESCRIPTION:** Pre-engineered Metal Building Envelope System.

FOR THE SUM OF:

-(Two hundred Twelve thousand) **DOLLARS ($** 212,000)

ALTERNATE #2 **DESCRIPTION:** Salt and Material Storage Building.

FOR THE SUM OF:

one Hundred seventy-seven thousand **DOLLARS ($** 177,000)

ALTERNATE #3 **DESCRIPTION:** Existing Shop Building Exterior Cladding.

FOR THE SUM OF:

Five Hundred Four thousand **DOLLARS ($** 504,000)

THE LOW BIDDER WILL BE DETERMINED ON THE BASIS OF THE BASE BID PLUS ANY ALTERNATES WHICH ARE ACCEPTED. ALTERNATES MAY BE ACCEPTED IN ANY ORDER AND ARE NOT REQUIRED TO BE ACCEPTED IN SEQUENTIAL ORDER AS THEY ARE LISTED ON THE BID PROPOSAL FORM.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good for a period of sixty (60) calendar days after the scheduled opening time for receiving bids.

Upon receipt of written Notice of Intent to Award of this bid, Bidder will execute the formal Contract within ten (10) calendar days and deliver a Surety Bond or Bonds as required by Article 7 "Performance and Payment Bonds" of the Instructions to Bidders.

ARTICLE 4 LIST OF SUBCONTRACTORS

Plumbing

(Name) K & G const.

(Address) 625 D st, Lewiston, ID 83501

Idaho Plumbing Contractors License No. RCE-17115, PLB6022528

Heating, Ventilating & Air Conditioning

(Name) Gropp Heating & Air & Elec

(Address) 225 west A Moscow ID 83843

Idaho Public Works Contractors License No. PWC-C-14557-AA-4

Idaho HVAC Contractors License No. HVC-C-1183

Electrical

(Name) Strom Electric Inc

(Address) 405 S. MAIN TROY ID. 83871-0370

Idaho Public Works Contractors License No. 022495-AAA-4

Idaho Electrical Contractors License No. 021665

Should the listing of subcontractors change due to selection of alternates or other similar circumstances, attach explanation.

Bidder warrants that bid has been prepared and that any contract resulting from acceptance of this bid is subject to Executive Order 2009-10 and the Fixed Price Construction Contract.

The undersigned notifies that it is of this date duly licensed as an Idaho Contractor and further that it possesses Idaho Contractor's License No. RCE-27040, and is domiciled in the State of OREGON.

Dated this 6TH (date) day of NOVEMBER (month), 2024 (year).

Respectfully submitted by:

WELLENS GENERAL CONTRACTORS
(Company)

(Seal - if bid is by a corporation)

107 NW ALDER ST
(Street or PO Address)

ENTERPRISE, OR 97828
(City, State and zip code)

(Authorized Signature)

OWNER
(Title)

541. 426. 4071
(Telephone Number)

541. 426. 6385
(FAX Number)

DZJXJSD3A496
(UEI Number)

Have you remembered to include bid security (bid bond or a certified or cashiers check), Contractor's Affidavit Concerning Alcohol and Drug-Free Workplace?

ALL BIDS SHALL BEAR THIS ADDRESS:
City of Moscow
206 East Third Street
Moscow, ID 83843

ARTICLE 1

PROJECT NAME AND LOCATION	Moscow City Shop Facility 650 N. Van Buren St. Moscow, ID 83843
ARCHITECT OR ENGINEER	Lombard-Conrad Architects (208) 780-0022 472 W. Washington St. Boise, Idaho 83702

CONTRACT TIME **CALENDAR DAYS:** 365 consecutive calendar days consecutive calendar days from commencement of construction, substantial completion by no later than 3/1/2026

LIQUID. DAMAGES **EACH EXCESS CALENDAR DAY:** $250.00

BID OPENING	**DATE:**	November 6, 2024
	TIME:	2:00 p.m.
	PLACE:	Bid opens at Council Chambers, Moscow City Hall 206 E. Third Street, Moscow, Idaho 83843

NAME AND ADDRESS OF BIDDER TELEPHONE NO.	WELLENS GENERAL CONTRACTORS 107 NW ALDER ST ENTERPRISE, OR 97828 541.426.4071
IF PARTNERSHIP NAMES OF PARTNERS	N/A
IF CORPORATION STATE OF INCORPORATION	OREGON
BID GUARANTEE Min. 5% of Bid	**UNDERLINE ONE:** BID BOND, CASH, CERTIFIED CHECK, CASHIER'S CHECK
ADDENDA RECEIPT ACKNOWLEDGED	**ADDENDA NUMBERED: 1** X **2** X **3** X **4**____ **(Check all that have been received)**
ALLOWANCE ACKNOWLEDGED	**NONE LISTED:** N/A

Execute and Submit with Bid

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF OREGON

COUNTY OF WALLOWA

Pursuant to the Section 72-1717, Idaho Code, I, the undersigned, being duly sworn, depose and certify that WEILENS GENERAL CONTRACTORS INC is in compliance with the provisions of Section 72-1717, Idaho Code; that WEILENS GENERAL CONTRACTORS INC provides a drug-free workplace program that complies with the provisions of Title 72, Chapter 17, Idaho Code, and will maintain such program throughout the life of a state construction contract; and that WEILENS GENERAL CONTRACTORS INC. shall subcontract Work only to subcontractors meeting the requirements of Section 72-1717(1)(a), Idaho Code.

KEITH WEILENS - WEILENS GENERAL CONTRACTORS INC.
Name of Contractor

PO BOX 658/107 NW ALDER ST.
Address

ENTERPRISE OREGON
City and State

By: _____
(Signature)

Subscribed and sworn to before me this 4th day of NOV, 2024.

Commission expires: OCT 18, 2025

OFFICIAL STAMP
SARA TIPPET
NOTARY PUBLIC - OREGON
COMMISSION NO. 1017940
MY COMMISSION EXPIRES OCTOBER 18, 2025

Sara Tippet
NOTARY PUBLIC, residing at

ENTERPRISE, OR

FAILURE TO EXECUTE THIS AFFIDAVIT AND SUBMIT IT ALONG WITH YOUR BID SHALL MAKE YOUR BID NON-RESPONSIVE.

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)
Wellens General Contractors, Inc.
P.O. Box 658
Enterprise, OR 97828

SURETY:
(Name, legal status and principal place of business)
Travelers Casualty and Surety Company of America
One Tower Square
Hartford, CT 06183

OWNER:
(Name, legal status and address)
Cody Riddle
Deputy City Supervisor, Community Development
City of Moscow – Community Development
504 South Washington Street
Moscow, ID 83843

BOND AMOUNT: $ Five Percent of the Amount Bid (5%)

PROJECT:
(Name, location or address, and Project number, if any)
Moscow City Shop Facility
650 North Van Buren Street
Moscow, ID 83843

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Init.
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User Notes:

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 6th day of November, 2024,

	Wellens General Contractors, Inc.
	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)* owner
	Travelers Casualty and Surety Company of America
	(Surety) *(Seal)*
(Witness) Sydney Schmidt, Witness	*(Title)* Travis Long, Attorney-in-Fact

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User Notes: (1751533426)

TRAVELERS	Travelers Casualty and Surety Company of America Travelers Casualty and Surety Company St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Travis Long** of **SPOKANE**, **Washington**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA — HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY — CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

State of Connecticut

By: _____
Robert L. Raney, Senior Vice President

City of Hartford ss.

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**

ANNA P. NOWIK — NOTARY PUBLIC — CONNECTICUT

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **6th** day of **November**, **2024**.

HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA — HARTFORD, CONN. — TRAVELERS CASUALTY AND SURETY COMPANY — CORPORATE SEAL — ST. PAUL FIRE AND MARINE INSURANCE COMPANY

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

LOMBARD CONRAD ARCHITECTS

ADDENDUM

Date:	October 17th, 2024	**Addendum #:**	01
Project:	Moscow City Shop	**Project #:**	24000.01
Address:	650 N Van Buren St, Moscow, ID., 83843		

	BIDS DUE
Time:	2:00 pm PST
Date:	November 6th, 2024
Place:	Moscow City Hall
Address:	206 E. Third Street,
City, State:	Moscow, ID., 83843

DOCUMENTS:
Please see attached documents: Plan Holders list, Pre-Bid Meeting Sign-In Sheet, RFI List

APPROVALS: *Approvals are based on manufacturers only. Contractors are responsible for bidding on approved equipment equivalent in size and performance to that specified. Contractor is also responsible for all special electrical, mechanical, or other field adaptations required for equipment or items used other than that shown in the original project design. All mechanical and electrical equipment shall bear the UL label.*

Architectural:

Section 084113 – Aluminum Storefront Windows: Marlin Windows

ATTACHMENT LIST: PLAN HOLDERS LIST, PRE-BID MEETING SIGN-IN, RFI LIST

SPOKANE REGIONAL PLAN CENTER

Users Tracking Moscow City Shop Bldgs

Company	User
Air Commander Test & Balance LLC	Maclay, Micheal
Air Reps LLC	Campana, Travis
Air-Ops LLC	Hinkley, Chad
All Wall Contracting Inc	Orwick, Jeff
American Ironworks & Erectors Inc	Randol, Gary
Angler Fencing and Construction LLC	Brant, Pike
C & S Glass	Reynolds, Jeff
CB Construction Inc	Farwell, Troy
CMS Inland NW Inc	Mitchell, Teresa
Consolidated Supply Co	Milford, Scott
Convoy Supply Inc	Johnston, Todd
Cosco Fire Protection Inc	Petit, Mitch
CTS Cabling & Technology Services	Jorissen, Terrance
Curtis Concrete Construction	Pea, Cissy
Custom Surveys Inc	Carpenter, Larry
Dempsey Construction	Espinoza, Marcus
Dupree Building Specialties	Dupree, Bids
Early Bird Supply	Amundson, Tony
Ferguson	Saporito, Philip
Five Star Concrete Inc	Ranniger, Greg
Ginno Construction Co	Renaldo, Dave
Hajoca Corp	Figler, Eric
Herco Inc	Wenstrom, Sabrina
HGC Inc	Holcomb, Lance
Industrial Air Systems Inc	Pierce, Scott
Inland Northwest Precast	Lindberg, Rick
IRS Environmental.	Blankenship, Mike
JC Wright Lighting	Yochum, Sara
JC Wright Lighting	Zhang, Harris
K & G Construction LLC	Messick, Kevin
Kilgore Construction Inc (KCI)	Kilgore, Jad
Kilgore TEC Products (KTP)	Lund, Jacob
Kilgore TEC Products (KTP)	Walker, Kevin
Lake City Fence LLC	Pesaturo, Dominic
Legacy Contractors	May, John
Legacy Contractors	Salmeri, Dave
Leone & Keeble Inc	Moore, Brandon
Lewiston-Clarkston Plan Service	Weibler, Ceila
Linx Integrated	Gray, Bryan
M & L Supply Company Inc	Cofone, Richard
M & L Supply Company Inc	Denny, Steven

Mangum Construction LLC	Mangum, Marshall
Marlin Windows Inc	Kuiper, Reese
Mechanical Sales Inc	Goodman, Nick
ML Albright & Sons	Albright , Marvin Jr
Modern Glass Company	Culpepper, Kevin
Modern Glass Company	Huber, Michael
Moon Security Services Inc	Crawford, Don
Noise Control of Washington Inc	Cramer, Scott L.
Noise Control of Washington Inc	Loomis, Dave
Northwest Fence Co Inc	Reid, Darby
Platt Electric Supply Inc	Howe, Dan
Quality Contractors LLC	McElroy, James
RM Mechanical Inc	Davidson, Christine
SeaTac Lighting & Controls, LLC.	Enyeart, Whitney
Specialty Construction Services LLC	Mattern, Rick
Specialty Environmental Group LLC (Specialty Insulation)	Kjeldgaard, Larry
Specialty Environmental Group LLC (Specialty Insulation)	Sobota, Kim
Spilker Precast LLC	Spilker, Kevin
Spokane Acoustics Inc	Gotfredson, Jon
Spokane Metals LLC	Kuchin, Sergey
Stoneway Electric Supply	Solutions, Project
Strom Electric Inc	Styer, Lance
Suntoya Corp	Young, Stacia
System Tech Washington	Bautista, Randy
Tombari Structural Products	Comfort, Josh
TW Clark Construction LLC	Rountree, Scott
TW Enterprises Inc	Sales, TWE
Universal Plastering 2 LLC	Quiroz, Alfredo
Western Rebar.	Storer, Joey
Western States Equipment Company Inc	Kissler, Matt
White Block Co Inc	Jones, Derek
White Diamond Concrete	Wayman, Clarence
Wilbert Precast Inc	Gonwick, Jason
Yadon Construction Specialties Inc	Rieckers, Eric

TRI-CITY CONSTRUCTION COUNCIL

Moscow City Shop - City of Moscow

Project Details have been reviewed by:

Contractor

(3) Rattlesnake Construction
Phone: (509) 840-3654

General Contractor

(1) Banlin Construction LLC
Phone: (509) 586-2000

(7) Castillo Interiors LLC
Phone: (425) 765-9058

(4) Columbia River Steel & Construction
Phone: (509) 882-4680

(6) Faber Construction Corporation
Phone: (360) 354-3500

(7) G2 Commercial Construction, Inc.
Phone: (509) 783-8900

(8) Kirby Nagelhout Construction Company
Phone: (541) 389-7119

(1) MH Construction Inc
Phone: (509) 308-6489

(2) Nelson Construction Corp.
Phone: (509) 526-5249

(1) S&K Mountain Construction Inc
Phone: (509) 520-3627

(3) Trademark Builders LLC
Phone: (509) 945-5701

(2) Walker Construction Inc
Phone: (509) 535-3354

(3) Wellens General Contractors Inc
Phone: (541) 426-4071

Glass & Glazing Contractor

(7) Tri-City Glass, Inc.
Phone: (509) 586-0454

HVAC Contractor

(1) MBI Construction Services Inc

Phone: (509) 453-3326

Manufacturers Rep

(2) Pacific Lighting Systems Inc (PLS)
Phone: (206) 323-2200

(1) Sea Tac Lighting & Controls
Phone: (206) 575-6865

Plancenter

(1) Tri-City Construction Council
Phone: (509) 582-7424

Roofing Contractor

(2) C&C Construction
Phone: (509) 727-2134

(3) Saucedo Contracting
Phone: (509) 531-0275

Sub / Specialty Contractor

(1) Continental Door Co
Phone: (509) 921-2260

(2) D&R Insulation LLC
Phone: (509) 619-4931

(2) D9 Contractors, Inc.
Phone: (509) 545-3390

(6) Kilgore TEC Products, Inc.
Phone: (509) 893-0750

(12) TruFrame LLC
Phone: (360) 667-0344

Supplier

(2) Airefco Inc
Phone: (509) 536-1811

(1) Bargreen Ellingson Inc
Phone: (509) 453-7137

(2) Convoy Supply Inc
Phone: (509) 533-1531

(2) H2 Precast Inc
Phone: (509) 884-6644

(1) Industrial Air Systems Inc

Phone: (206) 367-5115

(2) **Pella Inland Northwest**
Phone: (509) 999-9654

(3) **Platt Electric Supply**
Phone: (541) 564-0102

(1) **Stoneway Electric Supply**
Phone: (509) 943-4664

(3) **Stoneway Roofing Supply**
Phone: (509) 638-4736

(2) **Trane**
Phone: (509) 867-5747

Union

(2) **Ironworkers Local 14**
Phone: (509) 927-8288

Close this Window

BLUEPRINT SPECIALITIES - BOISE

Moscow City Shop

The work includes construction of new shop and material storage building, and recladding of existing shop.

Plan Holders

Date	Company	Contact
10/1/24 8:28 am	**Carlton Commercial** 4660 Steakhouse ln Moscow, ID 83843	**Micah Shryer** **Manager** Tel: 208-892-9048
9/27/24 10:33 am	**Carlton Electric, LLC** PO Box 9552 Moscow, ID 83843	**Jesse Landis** **Owner/Member** Tel: 509-592-7283
10/1/24 2:31 am	**Dodge Data & Analytics** 2860 S State Hwy 161 Ste 160 #501 Grand Prairie, TX 75052	**Jayalakshmi L** Tel: 413-376-7032
10/1/24 2:37 pm	**iSqFt** 1914 North Ave West Missoula, MT 59801	**Construct Connect** Tel: 800-364-2059
9/27/24 10:01 am	**Plan Center Northwest** PO Box 2486 Clackamas, OR 97015	**Brie Kidwell** Tel: 503-650-0148
10/1/24 7:54 am	**Stancraft Construction Group** 2936 W Dakota Ave Hayden, ID 83835	**Roy Aeschlimann** **Project Manager** Tel: 208-457-1034

MISSOULA PLANS EXCHANGE

Company Name	Phone	Fax	Email	Action Date	Action	Planroom
Missoula Plans Exchange	(406) 549-5002	(406) 721-2941	tbrooks@mpe.us	10/11/2024	VIEWED	MIPE
Industrial Technologies Corporation	(406) 239-4870	(406) 543-6829	dennis.doran@montana.com	10/11/2024	VIEWED	MIPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/10/2024	VIEWED	MTPE
Industrial Technologies Corporation	(406) 239-4870	(406) 543-6829	dennis.doran@montana.com	10/09/2024	VIEWED	MIPE
Industrial Technologies Corporation	(406) 239-4870	(406) 543-6829	dennis.doran@montana.com	10/09/2024	VIEWED	MIPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/09/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/08/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/08/2024	VIEWED	MTPE
TA Enterprises	(406) 253-5004	(406) 253-5004	timallen@taetaenterprisesllc.com	10/07/2024	VIEWED	MTPE
Oswood Construction	(406) 761-1465	(406) 453-9862	troyoswood@oswoodconstruction.com	10/07/2024	VIEWED	GFBE
Anderson Steel Supply Inc	(406) 761-4354	(406) 761-6441	marthaj@mrrebar.net	10/07/2024	VIEWED	GFBE
Anderson Steel Supply Inc	(406) 761-4354	(406) 761-6441	joanna@andersonsteel.net	10/05/2024	VIEWED	GFBE
Anderson Steel Supply Inc	(406) 761-4354	(406) 761-6441	joanna@andersonsteel.net	10/05/2024	VIEWED	GFBE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/03/2024	SAVED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/03/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/03/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	10/03/2024	VIEWED	MTPE
L.O.D. 600 Construction Technology Services	(406) 813-8117		jason@lod600.com	10/02/2024	VIEWED	GFBE
L.O.D. 600 Construction Technology Services	(406) 813-8117		jason@lod600.com	10/02/2024	SAVED	GFBE
L.O.D. 600 Construction Technology Services	(406) 813-8117		jason@lod600.com	10/02/2024	VIEWED	GFBE
Rios Erectors LLC	(406) 202-0303		rioserectors@gmail.com	10/01/2024	SAVED	MIPE
Rios Erectors LLC	(406) 202-0303		rioserectors@gmail.com	10/01/2024	VIEWED	MIPE
IRS Environmental	(509) 927-7867	(509) 928-3933	maureen@irsenviro.com	10/01/2024	VIEWED	GFBE
Muonio Mechanical, Inc.	(406) 257-4119	(406) 892-0927	craig@muoniomechanical.com	10/01/2024	VIEWED	MTPE
Loenbro	(406) 281-4257	(406) 453-1472	bkautz@loenbro.com	10/01/2024	VIEWED	GFBE
Loenbro	(406) 281-4257	(406) 453-1472	bkautz@loenbro.com	10/01/2024	VIEWED	GFBE
Loenbro	(406) 281-4257	(406) 453-1472	bkautz@loenbro.com	10/01/2024	VIEWED	GFBE
Loenbro	(406) 281-4257	(406) 453-1472	bkautz@loenbro.com	10/01/2024	VIEWED	GFBE
Doors & Hardware Unlimited	(406) 761-4465	(406) 761-4638	paul@dhudoors.com	09/30/2024	VIEWED	GFBE
Liberty Electric	(406) 532-1100	(406) 532-1158	matthew.smith@libertyelectricinc.com	09/30/2024	VIEWED	MIPE
TrueNorth Steel	(406) 542-0345	(406) 542-1941	glenda.tilden@truenorthsteel.com	09/30/2024	VIEWED	MIPE
TrueNorth Steel	(406) 542-0345	(406) 542-1941	glenda.tilden@truenorthsteel.com	09/30/2024	VIEWED	MIPE
Jimmy's Roofing	(509) 408-3486		c.nugen@jimmysroofing.com	09/30/2024	VIEWED	MIPE
Convoy Supply Inc	(406) 594-9947	(406) 422-5617	kedwards@convoy-supply.com	09/30/2024	SAVED	MIPE

Company Name	Phone	Fax	Email	Action Date	Action	Planroom
Convoy Supply Inc	(406) 594-9947	(406) 422-5617	kedwards@convoy-supply.com	09/30/2024	VIEWED	MIPE
Sierra Pacific Windows	(406) 728-6142	(406) 728-6143	dsears@spi-ind.com	09/30/2024	VIEWED	MIPE
IRS Environmental	(509) 927-7867	(509) 928-3933	mblankenship@irsenviro.com	09/30/2024	SAVED	GFBE
IRS Environmental	(509) 927-7867	(509) 928-3933	mblankenship@irsenviro.com	09/30/2024	VIEWED	GFBE
Anderson Steel Supply Inc	(406) 761-4354	(406) 761-6441	marthaj@mrrebar.net	09/30/2024	VIEWED	GFBE
Metalworks of Montana dba Missoula Sheetmetal & Roofing	(406) 728-1680	(406) 728-5087	aidenc@missoula-sheet-metal.com	09/30/2024	VIEWED	MIPE
TrueNorth Steel	(406) 542-0345	(406) 542-1941	glenda.tilden@truenorthsteel.com	09/30/2024	VIEWED	MIPE
Benchmark Masonry, Inc.	(406) 366-6257		mike@benchmarkmasonryinc.com	09/30/2024	VIEWED	GFBE
Thomas, Dean & Hoskins (TD&H)	(406) 761-3010		Kayla.Palagi@tdhengineering.com	09/30/2024	VIEWED	GFBE
Industrial Technologies Corporation	(406) 239-4870	(406) 543-6829	dennis.doran@montana.com	09/29/2024	VIEWED	MIPE
Diversions Contract Window Coverings	(208) 765-8084	(866) 765-8412	lsiglin@gmail.com	09/28/2024	SAVED	MIPE
Diversions Contract Window Coverings	(208) 765-8084	(866) 765-8412	lsiglin@gmail.com	09/28/2024	VIEWED	MIPE
Industrial Technologies Corporation	(406) 239-4870	(406) 543-6829	dennis.doran@montana.com	09/28/2024	VIEWED	MIPE
Doors & Hardware Unlimited	(406) 761-4465	(406) 761-4638	paul@dhudoors.com	09/27/2024	VIEWED	GFBE
Great Falls Builders Exchange	(406) 453-2513	(406) 727-7548	gfbe@greatfallsplans.com	09/27/2024	VIEWED	GFBE
C & C Construction of the Pacific NW Inc	(406) 389-2253		Mtpm@roofing32425.com	09/27/2024	VIEWED	MIPE
Razz Construction, Inc	(360) 752-0011	(360) 752-0011	bids@razzconstruction.com	09/27/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	09/27/2024	VIEWED	MTPE
Acutech, LLC	(406) 892-4030	(406) 892-1415	colin@acutechworks.com	09/27/2024	VIEWED	MTPE
Great Falls Builders Exchange	(406) 453-2513	(406) 727-7548	gfbe@greatfallsplans.com	09/27/2024	VIEWED	GFBE
Anderson Steel Supply Inc	(406) 761-4354	(406) 761-6441	joanna@andersonsteel.net	09/27/2024	VIEWED	GFBE
Great Falls Builders Exchange	(406) 453-2513	(406) 727-7548	gfbe@greatfallsplans.com	09/27/2024	SAVED	GFBE
Great Falls Builders Exchange	(406) 453-2513	(406) 727-7548	gfbe@greatfallsplans.com	09/27/2024	VIEWED	GFBE
Valley Electrical Contracting Inc.	(406) 541-4444	(406) 541-4445	mnurse@valleyec.com	09/27/2024	VIEWED	MIPE
Missoula Plans Exchange	(406) 549-5002	(406) 721-2941	tbrooks@mpe.us	09/27/2024	SAVED	MIPE
Missoula Plans Exchange	(406) 549-5002	(406) 721-2941	tbrooks@mpe.us	09/27/2024	VIEWED	MIPE
Missoula Plans Exchange	(406) 549-5002	(406) 721-2941	tbrooks@mpe.us	09/27/2024	VIEWED	MIPE

Abadan Plan Center Services

Moscow City Shop - Moscow

Company Name	Phone	Fax	Email	Action Date	Action
Grotberg Electric	(208) 618-2019		michael_koch@grotbergelectric.com	10/10/2024	VIEWED
Petersen Brothers Construction	(208) 734-6303	(208) 734-6304	ryelee@pbcbuilds.com	10/10/2024	VIEWED
Petersen Brothers Construction	(208) 734-6303	(208) 734-6304	ryelee@pbcbuilds.com	10/10/2024	SAVED
Petersen Brothers Construction	(208) 734-6303	(208) 734-6304	ryelee@pbcbuilds.com	10/10/2024	VIEWED
Meridian Construction & Development, Inc.	(509) 443-0252		mkudronowicz@meridianco.com	10/10/2024	VIEWED
Earthtech NW	(208) 620-6548		chuck@earthtechnw.com	10/09/2024	VIEWED
Inland Northwest Precast	(509) 226-5050		whitley@inwprecast.com	10/09/2024	VIEWED
Idaho Fence	(208) 687-2296		jim@idahofence.com	10/09/2024	VIEWED
Dan Eveland Cabinets LLC	(509) 529-0500		cabbman.felicia@gmail.com	10/09/2024	VIEWED
RM Mechanical, Inc.	(208) 750-0496	(208) 798-8013	rmlewiston@rmmechanical.net	10/09/2024	VIEWED
Fisher Systems, Inc.	(208) 713-0447		aaron@fishersystems.com	10/09/2024	VIEWED
ACM, Inc.	(208) 559-3300		ttownsend@alpineconstructionmanagement.com	10/09/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/09/2024	VIEWED
Wright Brothers - The Building Company	(208) 938-6000	(208) 938-6069	bellway@wbnation.com	10/08/2024	VIEWED
Wright Brothers - The Building Company	(208) 938-6000	(208) 938-6069	bellway@wbnation.com	10/08/2024	SAVED
Wright Brothers - The Building Company	(208) 938-6000	(208) 938-6069	bellway@wbnation.com	10/08/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/08/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/08/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		bids@walkerconstructioninc.com	10/07/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		bids@walkerconstructioninc.com	10/07/2024	SAVED
Walker Construction, Inc.	(509) 535-3354		bids@walkerconstructioninc.com	10/07/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/07/2024	VIEWED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	10/07/2024	VIEWED
Faber Construction	(360) 354-3500		noah@faberconstruction.com	10/07/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/07/2024	VIEWED
G2 Commercial Construction, Inc.	(509) 783-8900		tyler@g2construction.net	10/07/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/07/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	10/07/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	10/07/2024	VIEWED

Company Name	Phone	Fax	Email	Action Date	Action
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	10/07/2024	VIEWED
LaRiviere Inc	(208) 683-2646		joshp@lariviere.co	10/07/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	10/07/2024	VIEWED
Forge Building Co.	(208) 629-2952		manderson@forgebuildings.com	10/07/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/07/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/04/2024	VIEWED
Faber Construction	(360) 354-3500		noah@faberconstruction.com	10/04/2024	VIEWED
Kilgore Construction, Inc.	(509) 238-0703	(509) 238-0704	johnl@kcispokane.com	10/04/2024	VIEWED
Syman, LLC	(208) 287-8420		h.provancher@symancompany.com	10/04/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/04/2024	VIEWED
Faber Construction	(360) 354-3500		bids@faberconstruction.com	10/03/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/03/2024	VIEWED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	10/03/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/03/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/03/2024	SAVED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/03/2024	VIEWED
Mackin & Little Inc	(509) 838-2529		dclark@mackinlittle.com	10/03/2024	VIEWED
Sparrow Homes, LLC	(509) 397-4492		j.mccully@sgwindowsanddoors.com	10/03/2024	VIEWED
RLH Fire Protection, Inc.	(661) 322-9344		dnorton@rlhfp.com	10/03/2024	SAVED
RLH Fire Protection, Inc.	(661) 322-9344		dnorton@rlhfp.com	10/03/2024	VIEWED
SimCo Development	(208) 946-6382	(208) 691-6985	John@simcodg.com	10/03/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/03/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/02/2024	VIEWED
SimCo Development	(208) 946-6382	(208) 691-6985	John@simcodg.com	10/02/2024	SAVED
SimCo Development	(208) 946-6382	(208) 691-6985	John@simcodg.com	10/02/2024	VIEWED
Idaho Fence	(208) 687-2296		jim@idahofence.com	10/02/2024	SAVED
Idaho Fence	(208) 687-2296		jim@idahofence.com	10/02/2024	VIEWED
Veksel Consulting and Contracting	(509) 293-0506		joshuah@vekselcc.com	10/02/2024	VIEWED
Syman, LLC	(208) 287-8420	(208) 887-4927	Bidding@symancompany.com	10/02/2024	VIEWED
Syman, LLC	(208) 287-8420	(208) 887-4927	Bidding@symancompany.com	10/02/2024	VIEWED
J. ADDINGTON GENERAL CONTRACTORS, INC.	(208) 765-5000	(208) 765-5002	jeremy@j-addington.com	10/02/2024	VIEWED
Baldwin Sign Company	(509) 489-9191		harvey@baldwinsigns.com	10/02/2024	VIEWED
G2 Commercial Construction, Inc.	(509) 783-8900		tyler@g2construction.net	10/02/2024	VIEWED
G2 Commercial Construction, Inc.	(509) 783-8900		tyler@g2construction.net	10/02/2024	VIEWED
Arrow Construction Supply, Inc.	(509) 922-7847		jturner@asphaltsupply.net	10/02/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/02/2024	VIEWED

Company Name	Phone	Fax	Email	Action Date	Action
Faber Construction	(360) 354-3500		bids@faberconstruction.com	10/01/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	10/01/2024	VIEWED
Excav8 LLC	(208) 267-2220		excav8llc@gmail.com	10/01/2024	VIEWED
Faber Construction	(360) 354-3500		bids@faberconstruction.com	10/01/2024	VIEWED
Faber Construction	(360) 354-3500		bids@faberconstruction.com	10/01/2024	SAVED
Faber Construction	(360) 354-3500		bids@faberconstruction.com	10/01/2024	VIEWED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	10/01/2024	VIEWED
Syman, LLC	(208) 287-8420		h.provancher@symancompany.com	10/01/2024	VIEWED
Veksel Consulting and Contracting	(509) 293-0506		joshuah@vekselcc.com	10/01/2024	SAVED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	10/01/2024	SAVED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	10/01/2024	VIEWED
Cliff Thorn Construction	(509) 380-8357		j.prince@ctcbuilds.com	10/01/2024	VIEWED
Core & Main	(907) 351-4796		randy.roberdeau@coreandmain.com	10/01/2024	VIEWED
Arrow Construction Supply, Inc.	(208) 209-7259		mpowers@asphaltsupply.net	10/01/2024	VIEWED
Teton West of Idaho	(208) 356-7979		kristina@tetonweststeel.com	10/01/2024	VIEWED
Cole Industrial	(425) 774-6602	(425) 775-2272	rwheaton@coleindust.com	10/01/2024	VIEWED
RM Mechanical, Inc.	(208) 750-0496	(208) 798-8013	rmlewiston@rmmechanical.net	10/01/2024	VIEWED
RM Mechanical, Inc.	(208) 750-0496	(208) 798-8013	rmlewiston@rmmechanical.net	10/01/2024	SAVED
RM Mechanical, Inc.	(208) 750-0496	(208) 798-8013	rmlewiston@rmmechanical.net	10/01/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	bmoore@leone-keeble.com	10/01/2024	VIEWED
Oldcastle Precast Inc.	(208) 522-6150	(208) 522-9701	whitney.wells@oldcastle.com	10/01/2024	VIEWED
Dalrymple Construction Services	(208) 473-0895		dcsllcmccall@gmail.com	09/30/2024	VIEWED
Dalrymple Construction Services	(208) 473-0895		dcsllcmccall@gmail.com	09/30/2024	VIEWED
ALLWEST Testing & Engineering, LLC	(208) 743-5710		swolfe@allwesttesting.com	09/30/2024	VIEWED
Jagged Pine llc	(509) 720-9080		patrick.a.harrington@outlook.com	09/30/2024	SAVED
Jagged Pine llc	(509) 720-9080		patrick.a.harrington@outlook.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	sstoner@leone-keeble.com	09/30/2024	VIEWED
Fisher Systems, Inc.	(208) 713-0447		aaron@fishersystems.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Copper State Bolt & Nut Co.	(509) 638-8608	(509) 638-8608	cdykman@copperstate.com	09/30/2024	SAVED
Copper State Bolt & Nut Co.	(509) 638-8608	(509) 638-8608	cdykman@copperstate.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Ginno Construction Company	(208) 667-5560	(208) 665-0471	dave@ginnoconstruction.com	09/30/2024	VIEWED
Ginno Construction Company	(208) 667-5560	(208) 665-0471	dave@ginnoconstruction.com	09/30/2024	SAVED
Stancraft Construction Group	(208) 457-1034		hiede.g@stancraft.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		hiede.g@stancraft.com	09/30/2024	SAVED
Stancraft Construction Group	(208) 457-1034		hiede.g@stancraft.com	09/30/2024	VIEWED

Company Name	Phone	Fax	Email	Action Date	Action
Ginno Construction Company	(208) 667-5560	(208) 665-0471	dave@ginnoconstruction.com	09/30/2024	VIEWED
Cold Tech Refrigeration, LLC	(208) 344-5644		mike.smith@cold-tech.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
H.D. Fowler Co.	(208) 772-9060		coreyb@hdfowler.com	09/30/2024	VIEWED
H.D. Fowler Co.	(208) 772-9060		johndot@hdfowler.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Ken Spilker Masonry Company	(509) 489-7311		emily@spilkermasonryco.com	09/30/2024	VIEWED
Budinger & Associates, Inc.	(509) 535-8841		helkin@budingerinc.com	09/30/2024	VIEWED
LaRiviere Inc	(208) 667-2456		allisonb@lariviere.co	09/30/2024	SAVED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	sstoner@leone-keeble.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	SAVED
G2 Commercial Construction, Inc.	(509) 783-8900		tyler@g2construction.net	09/30/2024	SAVED
Graham Construction	(509) 534-1030		jake.marrujo@grahamus.com	09/30/2024	SAVED
LaRiviere Inc	(208) 667-2456		allisonb@lariviere.co	09/30/2024	VIEWED
G2 Commercial Construction, Inc.	(509) 783-8900		tyler@g2construction.net	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		hiede.g@stancraft.com	09/30/2024	VIEWED
Graham Construction	(509) 534-1030		jake.marrujo@grahamus.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Industrial Air Systems, Inc.	(509) 418-2522	(206) 363-0653	scott.p@indair.net	09/30/2024	VIEWED
Mackin & Little Inc	(509) 838-2529		grenner@mackinlittle.com	09/30/2024	VIEWED
Wellens General Contractors Inc.	(541) 426-4071		tanner@wellensgc.com	09/30/2024	VIEWED
Continental Door Co	(509) 921-2260		bids@continentaldoorco.com	09/30/2024	VIEWED
Geopier Northwest	(208) 401-9567		dciani@geopiernorthwest.com	09/30/2024	VIEWED
Continental Door Co	(509) 921-2260		bids@continentaldoorco.com	09/30/2024	VIEWED
Wellens General Contractors Inc.	(541) 426-4071		tanner@wellensgc.com	09/30/2024	VIEWED
Northwest Fence Company	(509) 928-8084		chrisl@northwestfencecompany.com	09/30/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		hchambers@walkerconstructioninc.com	09/30/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		smaxwell@walkerconstructioninc.com	09/30/2024	VIEWED
Leone and Keeble, Inc.	(509) 327-4451	(509) 325-9200	sstoner@leone-keeble.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		hchambers@walkerconstructioninc.com	09/30/2024	SAVED
Walker Construction, Inc.	(509) 535-3354		hchambers@walkerconstructioninc.com	09/30/2024	VIEWED
Stancraft Construction Group	(208) 457-1034		roy.a@stancraft.com	09/30/2024	VIEWED
Walker Construction, Inc.	(509) 535-3354		hchambers@walkerconstructioninc.com	09/30/2024	VIEWED
Motley Motley	(509) 872-3511	(509) 872-3512	lchek@motleymotley.com	09/30/2024	VIEWED

Company Name	Phone	Fax	Email	Action Date	Action
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	09/30/2024	VIEWED
Idaho Fence	(208) 687-2296		jim@idahofence.com	09/30/2024	VIEWED
Faber Construction	(360) 354-3500		todd@faberconstruction.com	09/30/2024	VIEWED
Fisher Systems, Inc.	(208) 713-0447		aaron@fishersystems.com	09/30/2024	SAVED
Fisher Systems, Inc.	(208) 713-0447		aaron@fishersystems.com	09/30/2024	VIEWED
Core & Main	(509) 425-6760		david.busto@coreandmain.com	09/29/2024	VIEWED
Custom Mechanical Solutions	(206) 973-3900	(509) 692-2628	teresa@cmswa.com	09/29/2024	VIEWED
A. E. Goodrick	(253) 581-2198		candler@comcast.net	09/28/2024	VIEWED
A. E. Goodrick	(253) 581-2198		candler@comcast.net	09/28/2024	VIEWED
A. E. Goodrick	(253) 581-2198		candler@comcast.net	09/28/2024	VIEWED
RedBuilt LLC	(509) 995-8685	(509) 847-0146	tsaunders@redbuilt.com	09/28/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	09/28/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	09/28/2024	SAVED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	09/28/2024	VIEWED
Wright Brothers - The Building Company	(208) 695-5440		amitzel@wbnation.com	09/28/2024	VIEWED
LaRiviere Inc	(208) 667-2456		ronnie@lariviere.co	09/27/2024	VIEWED
Jensen Sales & Marketing, Inc.	(801) 746-4476		travis@jsaminc.com	09/27/2024	VIEWED
Marlin Windows, Inc	(509) 535-3015	(509) 535-2050	reese@marlinwindows.com	09/27/2024	VIEWED
Continental Steel Works, Inc.	(406) 782-3922		patsys@continentalsteelworks.com	09/27/2024	VIEWED
ML Albright & Sons, Inc.	(208) 743-2100		marva@mlalbright.com	09/27/2024	SAVED
ML Albright & Sons, Inc.	(208) 743-2100		marva@mlalbright.com	09/27/2024	VIEWED
NNAC, Inc.	(208) 635-5400		Estimator@nnacinc.com	09/27/2024	VIEWED

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SIGN IN SHEET

Meeting Date:	October 16th 2024	**Time:**	1:00PM	**Location:**	650 Van Buren St.
Type of Meeting:	Pre-Bid Meeting				
Project Name:	Moscow City Shop	**Project #:**	24000.01		

(PLEASE PRINT)

Attendee's Name	Company or Address	E-Mail Address/Phone Number
Samuel McDonald	Liberty landworks	E: Samuel@Libertylands.com P: 208-262-1325
Brandon Moore	KLK	E: bmoore@leone-keeble.com P: 509-327-4451
Mason Hewett	KLK	E: mhewett@kenaston.com P: 208-553-9954
Mike Zimmerman	Z&H construction	E: mike@versoindustries.com P: 208-250-4305
Zane Shipp	Z&H Construction	E: zane@zandhhomebuilders.com P: 208-941-0268
Trevor Blose	Hiller Fire	E: Trevor.Blose@hiller-companies.com P: 509-564-4673
Brian Ellway	Wright Brothers the building co	E: bellway@wbnation.com P: 208-869-9236
JOHN LIBENOW	KILGONG CONSTRUCTION Inc	E: John L@KCISPOKANE.com P: 509 899 7941
Chad Hinkley	Air-Ops HVAC	E: Chad.hinkley@air-opshvac.com P: 208-791-7916
John May	Legacy contractors	E: John@legacycontractorsusa.com P: 208-596-0256
Jeremiah Thompson	Wireworks Electric	E: jeremiah.wireworks@gmail P: 208 301 1707

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ARCHITECTS

SIGN IN SHEET

Meeting Date:	October 16th 2024	**Time:**	1:00PM	**Location:**	650 Van Buren St.
Type of Meeting:	Pre-Bid Meeting				
Project Name:	Moscow City Shop	**Project #:**	24000.01		

(PLEASE PRINT)

Attendee's Name	Company or Address	E-Mail Address/Phone Number
Travis Schlunager	Gropp Heating Air & Electric	E: Groppestimator@gmail.com P: 509-595-8114
MATT Grove	Gropp heating Air & Electric	E: MattGrove30@Gmail.com P: 208-301-8623
Ryan Collins	Wellens GC Enterprise	E: Ryan@wellensgc.com P: 541-426-4071
JERRY HANSEN	GROPP HTG AIR & ELECTRIC	E: JHANSEN@MOSCOW.com P: 509 336 3872
Aaron Alexander	AA Construction + Plumbing	E: aaron@aa-construction.com P: (208) 596-7893
Micah Shryer	Carlton Builders	E: micah@carlton-builders.com P: 208-892-9048
Joe French	QC, LLC	E: joe@quality-contractors.com P: (208) 596-1892
Kenny Oakes	RM	E: Kenny@rmmechanical.net P: 208-750-0496
David Loree	Quality Con. LLC	E: dloree@quality-contractors.com P: 208-596-5943
Dave Renaldo	Ginno Construction	E: dave@ginnoconstruction.com P: 208-691.5232
		E: P:

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10/17/2024

RFI List – Moscow City Shop

RFI	**Answer:**
All exterior windows and doors are Kawneer 451T-center glaze storefront, in a #14 clear anodized finish with Kawneer 500T thermal doors.	Confirmed
I see a spec section for 085113-Alluminum windows. If this is the interior windows, details show insulated storefront, with an insulated sliding window. Could this be Kawneer 450 single glaze storefront with a CRL siding window? Or would you like a CRL siding window with single glaze glass?	We were intending for the interior sliding window to be a prefabricated aluminum window.
Will 3rd party testing be contracted through the owner or the GC?	3rd party testing will be contracted through owner

LOMBARD CONRAD ARCHITECTS, INC. | lombardconrad.com
472 W Washington Street | Boise, ID | 83702 | **O:** 208.345.6677

Ernest J. Lombard (Retired) & Joe Ed Conrad (Retired) | **FOUNDING PRINCIPALS**
Alexis Townsend, Ken Gallegos, Mark Heazle | **BOARD OF DIRECTORS**

LOMBARD CONRAD ARCHITECTS

ADDENDUM

0Date:	October 30th, 2024	**Addendum #:**	02
Project:	Moscow City Shop	**Project #:**	24000.01
Address:	650 N Van Buren St, Moscow, ID., 83843		

	BIDS DUE
Time:	2:00 pm
Date:	November 6th, 2024
Place:	Moscow City Hall
Address:	206 E. Third Street,
City, State:	Moscow, ID., 83843

To All Planholders: Please notify everyone concerned as your sub-contractors and suppliers of the issuance and contents of this addendum prior to date of bid opening.

SPECIFICATIONS

Procurement and Contracting:

Section 004 – Bid Proposal Form:

- Add line for Contractor's UEI Number on the bid form.

Architectural:

Section 087100 – Door Hardware:

- Revise Section 087100 2.5.A.1.a
- Remove Section 087100 2.6 (Cylindrical Locks – Grade 2)
- Revise Section 087100 2.6.A.1.a (Cylinders)
- Revise Section 087100 3.5 HW Sets

DRAWINGS

MOSCOW CITY SHOP:

General:

Sheet 0.0 – COVER SHEET:

- Added Landscape sheets to Sheet Index.
- Included Landscape Contact information on titleblock.

Civil:

Sheet C1 – DEMOLITION PLAN:

- Added note to remove and retain 42 L.F. chain link fence.
- Added note to remove and dispose 52 L.F. curb and gutter.
- Added note to remove and dispose 34 S.Y. concrete sidewalk.
- Added note to remove and relocate storage tanks to an on site location as directed by the City.
- Added note to remove and relocate retaining wall blocks to an on site location as directed by the City.

Sheet C2 – EROSION CONTROL AND GRADING PLAN:

- Revised detention pond geometry and perimeter fencing.
- Added swing gate for maintenance access to detention pond.
- Added site entrance from N. Polk Street.

Sheet C4 – UTILITY LAYOUT PLAN:

- Added driveway approach with fence and gate along N. Polk Street.
- Revised detention pond layout and perimeter fencing.
- Added maintenance access to detention pond.

Sheet C5 – GENERAL NOTES & DETAILS 1:

- Renamed Sheet to General Notes and Details 1.

Sheet C6 – GENERAL NOTES & DETAILS 1:

- Removed R-Tank Cut Sheets from C6 & C7. Tank no longer in scope.
- Added Sheet.
- Added Chain Link Fence Detail.

Landscape:

Added Landscape design into scope. See sheets:

- CV0.01 – LANDSCAPE COVER SHEET
- LS1.00 – LANDSCAPE PLAN
- LI1.00 – LANDSCAPE IRRIGATION PLAN
- LI5.00 – LANDSCAPE IRRIGATION DETAILS
- LI5.01 – LANDSCAPE IRRIGATION DETAILS

Architectural:

Sheet A1.00 – ARCHITECTURAL SITE PLAN:

- Revised East Entry Gate per City of Moscow preferences.
- Revised keynote #10.

Sheet A2.11 – FIRST FLOOR – AREA A:

- Revised door 135 to open in opposite direction.

Sheet A2.11 – FIRST FLOOR – AREA B:

- Revised door 114 to open in opposite direction.

Sheet A7.0 – EXTERIOR DETAILS:

- Added Condoc (071900.01) on details E1, D3, C1 at exposed concrete condition.

Sheet A7.1 – EXTERIOR DETAILS:

- Revised detail A5 to cast-in-place concrete (033000.A).

Sheet A9.1 – STAIR DETAILS:

- Removed Condoc 096513.B1 Resilient Stair Treads with Integral Riser.

Structural:

Sheet S0.01 – STRUCTURAL COVER SHEET

- Added Sheet List dates to reflect sheets with changes.

Sheet S1.01B – FOUNDATION PLAN – AREA B:

- Added continuous footing callout CF2 at multiple locations.

Mechanical:

Sheet M1.11 – HVAC PLAN – AREA A:

- Removed furnaces and condensing units and added electric fan coils and heat pumps.

Sheet M1.12 – HVAC PLAN – AREA B:

- Removed furnaces and condensing units and added electric fan coils and heat pumps.

Sheet M2.02 – HVAC DETAILS:

- Updated details C1 and C3.

Sheet M3.00– HVAC SCHEDULES:

- Removed furnace schedule and added electric fan coil schedule.

Sheet P1.12 - PLUMBING FOUNDATION PLAN AREA – B:

- Added keynote #7.
- Added S-1 to BREAKROOM 112.

Sheet P2.11 - PLUMBING PLAN AREA – A:

- Removed gas piping to furnaces.

Sheet P2.12 - PLUMBING PLAN AREA – B:

- Added keynote #14
- Removed gas piping to furnaces.
- Added S-1 to BREAKROOM 112.
- Added keynote #12 and #13. Added compressed air line to bead blaster.

Sheet P4.00 - PLUMBING SCHEDULES:

- Updated gas sizing chart.

Electrical:

Sheet E1.00 – SITE ELECTRICAL DEMOLITION PLAN:

- E2 – Site Electrical Demolition Plan
  - Add demolition of existing pole luminaire and connection at east end of property.

Sheet E1.01 – SITE ELECTRICAL PLAN:

- B4 - Motorized Entry Gate Enlarged Electrical Plan

  - Adjust layout to coordinate with updated gate and entry layout.
  - Add pole luminaire P4 and associated connection.
  - Revise circuit connections to motorized gate.
- E2 – Site Electrical Plan
  - Adjust position of east motorized entry gate.
  - Omit branch circuit connection for motorized gate to existing shop building and re-route circuit to Materials Storage Structure.
  - Add electrical panelboard, receptacles, luminaires, and all associated connections at Materials Storage Structure
- Sheet Keynotes
  - Revise keynote #7
  - Add keynote #8

<u>Sheet E2.11M– MECHANICAL POWER PLAN – AREA A:</u>

- E2 – Mechanical Power Plan – Area A
  - Revise circuit callouts at new mechanical equipment FC-1, FC-2, HP-1, and HP-2.
  - Revise equipment callouts at thermostats for FC-1 and FC-2.
- Mechanical Equipment Connection Schedule
  - Revise circuit loads and connection requirements associated with equipment FC-1, FC-2, HP-1, and HP-2.

<u>Sheet E2.12M– MECHANICAL POWER PLAN – AREA B:</u>

- E2 – Mechanical Power Plan – Area B
  - Revise circuit callouts at new mechanical equipment FC-3, FC-4, HP-3, and HP-4.
  - Revise equipment callouts at thermostats for FC-3 and FC-4.
- Mechanical Equipment Connection Schedule
  - Revise circuit loads and connection requirements associated with equipment FC-3, FC-4, HP-3, and HP-4.

<u>Sheet E2.12P – POWER PLAN – AREA B:</u>

- E2 – Power Plan – Area B
  - Add receptacle and associated circuit connections for device at irrigation controller in room 113.
  - Add underground raceway for irrigation control conductors between landscape area on site and irrigation controller in room 113.

<u>Sheet E2.12S– SYSTEMS PLAN – AREA B:</u>

- E2 – Systems Plan – Area B
  - Add network outlet and cabling for outlet at irrigation controller in room 113.

<u>Sheet E5.00 – ONE LINE DIAGRAM:</u>

- One Line Diagram
  - Add connections for Panel MS, FC-2, and FC-1 to distribution panel DPN.
  - Add connections for FC-4, and FC-3 to distribution panel DPS.
  - Revise DPS main circuit breaker to 2,000A rated device.
  - Revise AIC rating required for automatic transfer switch ‘ATS’.
- Mechanical Fault Current Schedule
  - Revise calculated fault current values for mechanical equipment scheduled.
- Fault Current Schedule
  - Revise calculated fault current values for electrical equipment scheduled and add calculation for new panel ‘MS’.
- Feeder Schedule

  - Revise feeder type D.
  - Add feeder types E, F, and G.
- Dist. Panelboard DPN Schedule
  - Revise connection schedule and load calculations.
- Dist. Panelboard DPS Schedule
  - Revise connection schedule and load calculations.
  - Revise Mains and MCB Rating to 2,000A.

Sheet E5.01 – PANEL SCHEDULES:

- Branch Panel AN
  - Revise circuit connections for new equipment HP-1 and HP-2.
- Branch Panel MS
  - Add panel schedule to plan.

Sheet E2.12S – PANEL SCHEDULES:

- Branch Panels AS
  - Revise circuit connections for new equipment HP-3 and HP-4.

EXISTING MOSCOW CITY SHOP:

Sheet A2.1 – ROOF PLAN:

- Added 2 rows of Snow Guards (077253.A) on each edge of roof.
- Included Condoc callout 077253.A at snow guard locations.

SALT AND MATERIALS STORAGE BUILDING:

Sheet S1.0 Foundation Plan, Sections and Details (Narrated Revision):

- Remove “Work Constructed by Others (CBO)” note related to ACP, concrete paving and compacted base. The contractor will be responsible for this work.

APPROVALS: *Approvals are based on manufacturers only. Contractors are responsible for bidding on approved equipment equivalent in size and performance to that specified. Contractor is also responsible for all special electrical, mechanical, or other field adaptations required for equipment or items used other than that shown in the original project design. All mechanical and electrical equipment shall bear the UL label.*

Architectural:

Section 071326 – Self-Adhering Sheet Waterproofing: WR Meadows

Section 093013 – Ceramic Tiling: Ardex Americas

Section 102113.13 – Metal Toilet Compartments: ASI Group

Section 105113 – Metal Lockers: ASI Storage Solutions

Section 107113 – Exterior Sun Control Devices: American Warming

Mechanical:

Vehicle Exhaust Hose Reel: AQC

Electrical:

Luminaire Approvals:

LUMINAIRE TYPE	MANUFACTURER	NOTES
BL1	HE Williams	
EM1	Evenlite, HLI Compass	
EM2	Evenlite, HLI Dual-Lite, Isolite	
EM3	Evenlite, Barron/Exitronix	
EM4	Evenlite, HLI Compass	
EX1	Evenlite, HLI Compass	
GS1	Day-Brite, HLI Columbia	
GS2	Day-Brite	
HB1	Day-Brite	'FBY' Series
P4	LSI Industries, HLI Beacon	
P4 (Pole)	LSI Industries, EXO	
RR2	HE Williams	
SL1	LC Doane	
SL2	LC Doane	
WL1	LSI Industries, HLI Beacon	
WL2	LSI Industries, HLI Beacon	

ATTACHMENT LIST:

MOSCOW CITY SHOP

General Sheets:	0.0
Civil Sheets:	C1, C2, C3, C4, C5, C6
Landscape Sheets:	CV0.01, LS1.00, LI1.00, LI5.00, LI5.01
Architectural Sheets:	A1.00, A2.11, A2.12, A7.0, A7.1, A9.1
Structural Sheets:	S0.01, S1.01B
Mechanical Sheets:	M1.11, M1.12, M2.02, M3.00, P1.12, P2.11, P2.12, P4.00
Electrical Sheets:	E1.00, E1.01, E2.11M, E2.12M, E2.12P, E2.12S, E5.00, E5.01, E5.02

EXISTING MOSCOW CITY SHOP

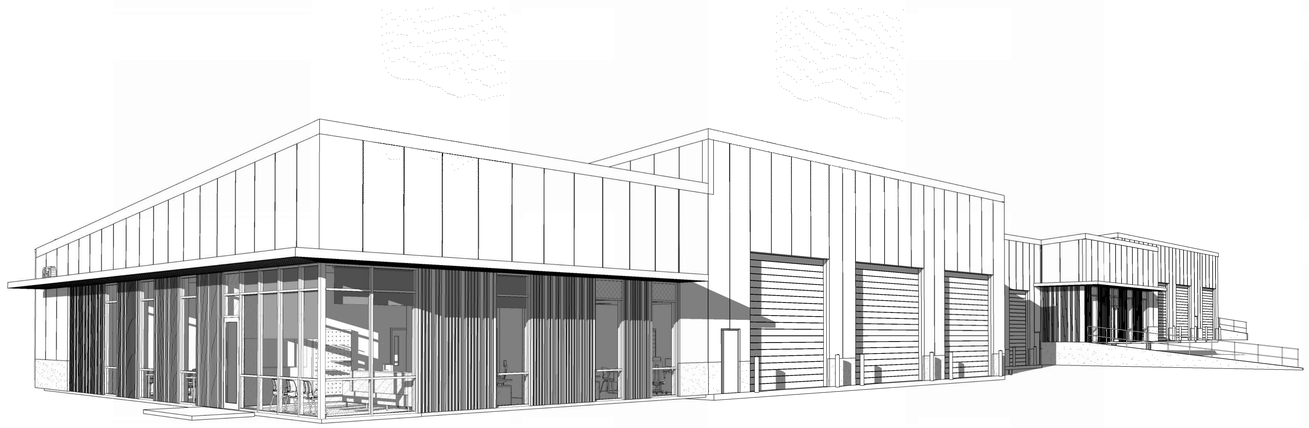
Architectural Sheets: A2.1

SPECIFICATIONS: 071900, 087100

RFI List

MOSCOW CITY SHOP

650 N VAN BUREN ST, MOSCOW, ID 83843



PERMIT SET
JULY 24, 2024

SHEET INDEX

GENERAL

0.00	COVER SHEET
0.10	CODE INFORMATION
0.20	LIFE SAFETY PLANS

CIVIL

C1	DEMOLITION PLAN
C2	EROSION CONTROL AND GRADING PLAN
C3	EROSION CONTROL AND GRADING NOTES AND DETAILS
C4	UTILITY LAYOUT PLAN
C5	GENERAL NOTES AND DETAILS 1
C6	GENERAL NOTES AND DETAILS 2

LANDSCAPE

CV0.01	LANDSCAPE COVER SHEET
LI1.00	LANDSCAPE IRRIGATION PLAN
LI5.00	LANDSCAPE IRRIGATION DETAILS
LI5.01	LANDSCAPE IRRIGATION DETAILS
LS1.00	LANDSCAPE PLAN

ARCHITECTURAL

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A2.12	FIRST FLOOR - AREA B
A2.31	FINISH FLOOR PLAN - AREA A
A2.32	FINISH FLOOR PLAN - AREA B
A2.41	REFLECTED CEILING PLAN - AREA A
A2.42	REFLECTED CEILING PLAN - AREA B
A2.50	EQUIPMENT PLANS
A2.60	OVERALL ROOF PLAN
A3.00	DOOR SCHEDULE
A3.10	FRAME TYPES
A3.20	ASSEMBLY TYPES
A4.00	EXTERIOR ELEVATIONS
A4.10	EXTERIOR ELEVATIONS
A4.20	BUILDING SECTIONS
A5.00	WALL SECTIONS
A5.10	WALL SECTIONS
A6.00	ENLARGED PLANS / INTERIOR ELEVATIONS
A6.10	ENLARGED PLANS / INTERIOR ELEVATIONS
A6.20	ENLARGED PLANS - MEZZANINE
A7.0	EXTERIOR DETAILS
A7.1	EXTERIOR DETAILS
A8.0	INTERIOR DETAILS
A8.1	INTERIOR DETAILS
A8.2	CABINET SECTIONS / ELEVATIONS
A9.0	STAIR PLANS / SECTIONS
A9.1	STAIR DETAILS

STRUCTURAL

S0.01	STRUCTURAL COVER SHEET
S0.02	STRUCTURAL DESIGN NOTES
S0.03	SPECIAL INSPECTION TABLES
S1.01	FOUNDATION PLAN - OVERALL
S1.01A	FOUNDATION PLAN - AREA A
S1.01B	FOUNDATION PLAN - AREA B
S2.01	ENLARGED MEZZANINE FRAMING PLANS
S4.01	SCHEDULES
S5.01	GENERAL CONCRETE DETAILS
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S5.31	GENERAL CFS DETAILS
S5.32	GENERAL CFS DETAILS
S6.01	FOUNDATION DETAILS
S6.02	FOUNDATION DETAILS
S7.01	FLOOR FRAMING DETAILS

MECHANICAL

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M1.13	HVAC ROOF PLAN
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M3.00	HVAC SCHEDULES
M3.01	HVAC SCHEDULES
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P1.10	FOUNDATION OVERALL PLAN
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E2.11F	FIRE ALARM PLAN - AREA A
E2.11L	LIGHTING PLAN - AREA A
E2.11M	MECHANICAL POWER PLAN - AREA A
E2.11P	POWER PLAN - AREA A
E2.11S	SYSTEMS PLAN - AREA A
E2.12F	FIRE ALARM PLAN - AREA B
E2.12L	LIGHTING PLAN - AREA B
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E2.12S	SYSTEMS PLAN - AREA B
E2.60	ROOF ELECTRICAL PLAN
E3.00	ELECTRICAL SCHEDULES
E4.00	ELECTRICAL DETAILS
E5.00	ONE LINE DIAGRAM
E5.01	PANEL SCHEDULES
E5.02	PANEL SCHEDULES

ABBREVIATIONS

A-E

A.B.	ANCHOR BOLT
ACOUS.	ACOUSTICAL
ADJ.	ADJUSTABLE
A.F.F.	ABOVE FINISH FLOOR
AGGR.	AGGREGATE
AL.	ALUMINUM
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BOT.	BOTTOM
CAB.	CABINET
C.F.O.I.	CONTRACTOR-FURNISHED/OWNER-INSTALLED
C.L.	CENTERLINE
CLG.	CEILING
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONT.	CONTINUOUS
CORR.	CORRIDOR
CTSK.	COUNTERSUNK
CNTR.	COUNTER
CTR.	CENTER
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DRINKING FOUNTAIN
DET.	DETAIL
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
DN.	DOWN
EA.	EACH
E.I.F.S.	EXTERIOR INSULATION AND FINISH SYSTEM
E.J.	EXPANSION JOINT
ELEC.	ELECTRICAL
ELEV.	ELEVATION
ELEV.	ELEVATOR
ENCL.	ENCLOSURE
EQ.	EQUAL
EQUIP.	EQUIPMENT
EXP.	EXPANSION
EXST.	EXISTING
EXT.	EXTERIOR

F-M

F.A.	FIRE ALARM
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH
FLR.	FLOOR
F.O.B.	FACE OF BUILDING
F.O.C.	FACE OF CONCRETE
F.O.E.	FACE OF EXISTING
F.O.F.	FACE OF FINISH
F.O.S.	FACE OF STUDS
FT.	FEET/FOOT
FTG.	FOOTING
FURR.	FURRING
GA.	GAUGE
GALV.	GALVANIZED
GND.	GROUND
GR.	GRADE
GYP.	GYPSUM BOARD
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HGT.	HEIGHT
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
LAB.	LABORATORY
LAV.	LAVATORY
MAX.	MAXIMUM
MECH.	MECHANICAL
MTL.	METAL
MFR.	MANUFACTURER
MH.	MANHOLE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MTD.	MOUNTED

N-R

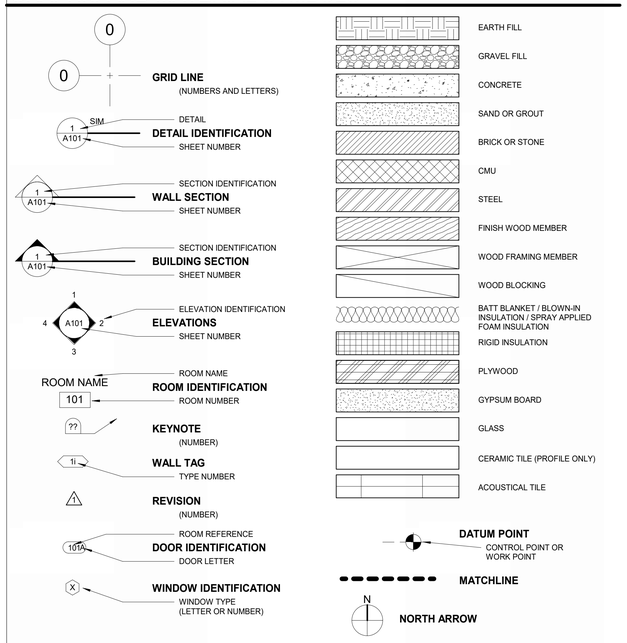
N/C	NON-COMBUSTIBLE
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVERALL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.F.C.I.	OWNER FURNISHED/ CONTRACTOR-INSTALLED
O.F.O.I.	OWNER FURNISHED/ OWNER INSTALLED
OFF.	OFFICE
OPNG.	OPENING
OPP.	OPPOSITE
PL.	PLATE
PL.	PLASTIC LAMINATE
PLAS.	PLASTER
PLYWD.	PLYWOOD
PR.	PAIR
PT.	POINT
P.T.D.	PAPER TOWEL DISPENSER
P.T.R.	PAPER TOWEL RECEPTACLE
Q.T.	QUARRY TILE
RAD.	RADIUS
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCED
REQ.	REQUIRED
RESIL.	RESILIENT
RM.	ROOM
R.O.	ROUGH OPENING
R.W.L.	RAIN WATER LEADER

S-Z

S.C.	SOLID CORE
SECT.	SECTION
SHTH'G.	SHEATHING
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ.	SQUARE
S.S.	STAINLESS STEEL
STA.	STATION
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRL.	STRUCTURAL
SUSP.	SUSPENDED
T.C.	TOP OF CURB
TEL.	TELEPHONE
T.O.	TOP OF
T.O.B.	TOP OF BLOCK
T.O.C.	TOP OF CURB
T.O.P.	TOP OF PLATE
T.O.W.	TOP OF WALL
TRD.	TREAD
T.V.	TELEVISION
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UR.	URINAL
VERT.	VERTICAL
VEST.	VESTIBULE
W/	WITH
W/O	WITHOUT
W.C.	WATER CLOSET
WD.	WOOD
W.P.	WATERPROOF
W.R.	WATER RESISTANT
WT.	WEIGHT

FOR ADDITIONAL MATERIAL FINISH ABBREVIATIONS, SEE MATERIAL LEGEND ON ROOM FINISH SHEETS.

GRAPHIC AND MATERIAL SYMBOLS



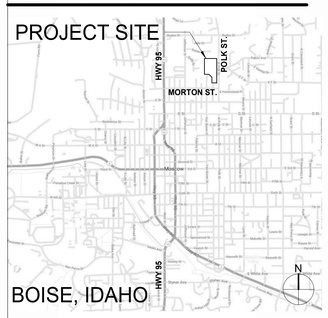
ZONING INFORMATION

LAND USE ZONE = R3
PARCEL # = 650, 660, 851
CUP# = N/A
DR # = N/A

IBC CODE 2018
OCCUPANCY GROUPS: B, S-1
CONSTRUCTION TYPE : V-B
AREA OF BUILDING W/ADDITION = 18,800 SF
FIRE SPRINKLERS: NFPA 13
FIRE ALARM SYSTEM: YES

SEE SHEET A0.1 FOR ADDITIONAL INFORMATION.

VICINITY MAP



LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
472 W. Washington St. | Boise, ID 83702
P 208.345.6671 | F 208.344.9002

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STAMP:

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07-24-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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(208) 384-0585

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(208) 345-7127

LANDSCAPE ARCHITECT
PLACE LANDSCAPE
1325 W. 1ST AVE., SUITE 204
SPOKANE, WA 99201
(509) 293-6163

MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **RB/BC/SB**
CHECKED BY: **MG**

PHASE: **PERMIT SET**

COVER SHEET

SHEET NO.
0.00

10/30/2024 4:29:54 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V23_bchurch4DWZ7.rvt

PROJECT:

MOSCOW CITY SHOP

650 VAN BUREN ST
MOSCOW, ID 83843
AIN/PARCEL # :

GENERAL NOTES:

1. GENERAL CONTRACTOR TO PROVIDE 11O-VOLT ELECTRICAL SERVICE FROM ELECTRICAL SOURCE TO IRRIGATION AND LIGHTING CONTROLLERS AS WELL AS CONDUITS EXITING THE STRUCTURE.
2. GENERAL CONTRACTOR TO PROVIDE GALVANIZED STANDARD THREADED STUB WITH THREADED CAP IMMEDIATELY DOWNSTREAM OF IRRIGATION WATER SOURCE/METER.
3. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF ALL REQUIRED PERMITS AND INSPECTIONS. LOCAL CODES PREVAIL.
4. UNLESS OTHERWISE NOTED, ALL DRAWINGS ARE DERIVED FROM A LEGAL SURVEY. ADJUSTMENT OF LANDSCAPE IMPROVEMENTS MAY BE REQUIRED. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS.
5. CONTRACTOR TO LOCATE UNDERGROUND UTILITIES, I.E., BURIED FIBER OPTIC LINE, CABLES, CONDUIT, GAS, WATER, SEWER, ETC. PRIOR TO DIGGING; CONTRACTOR TO BE LIABLE AND PAY FOR REPAIR TO ANY AND ALL UTILITY DAMAGES AT NO EXTRA COST TO THE OWNER. CALL BEFORE YOU DIG: TELEPHONE #811.
6. GENERAL CONTRACTOR TO PROVIDE ROUGH GRADE IN ALL LANDSCAPE AREAS WITHIN 0.10 FOOT OF GRADE SHOWN ON CIVIL DRAWINGS MINUS DEPTH OF SPECIFIED TOPSOIL.
7. THE CONTRACTOR SHALL MAINTAIN A QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES DURING CONSTRUCTION THROUGH COMPLETION OF FINAL PUNCHLIST WORK.
8. GENERAL CONTRACTOR TO CLEAR AND GRUB TURF AREAS AND PLANTING BEDS OF ALL WEEDS, ROOTS, LAWN, AND DEBRIS; SPECIFIED LANDSCAPE AREAS TO BE SMOOTH AND CONTOURED AS SHOWN ON CIVIL DRAWINGS; ANY ROCK/DEBRIS LARGER THAN 1.5" TO BE REMOVED FROM TOP 12" OF SOIL AS MEASURED FROM FINISH GRADES SHOWN ON CIVIL DRAWINGS.
9. CONTRACTOR TO LEGALLY DISPOSE OF (OFF-SITE) ALL MATERIALS REMOVED FROM THIS PROJECT NOT IDENTIFIED AS SALVAGED OR RE-PURPOSED.
10. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF SITE CONDITIONS. FIELD VERIFY ALL NECESSARY DIMENSIONS.
11. OWNER SHALL BE RESPONSIBLE FOR VERIFICATION OF PROPERTY LINES AND SETBACKS. CONTRACTOR SHALL COORDINATE THIS WORK WITH THE OWNER PRIOR TO BEGINNING ANY WORK.
12. ALL FINISH GRADES IN PLANTED AREAS SHALL BE 1" BELOW ADJACENT PAVING SURFACE UNLESS NOTED OTHERWISE.

WARRANTY:

1. ALL PLANT MATERIAL INSTALLED BY CONTRACTOR SHALL BE WARRANTED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE ALL DEAD AND/OR DYING PLANT MATERIAL (EXCEPT THOSE DUE TO VANDALISM OR NEGLECT) WITH PLANT MATERIAL EQUAL TO THE INSTALLED MATERIAL. GUARANTEE TO BE WRITTEN, DATED, AND SIGNED BY CONTRACTOR ON CONTRACTOR'S LETTERHEAD.
2. ALL IRRIGATION SYSTEM MATERIALS INSTALLED BY CONTRACTOR SHALL BE WARRANTED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THIS GUARANTEE TO COVER MATERIAL, WORKMANSHIP, AND ENSURE 100% HEAD TO HEAD COVERAGE. GUARANTEE TO BE WRITTEN, DATED, AND SIGNED BY CONTRACTOR ON CONTRACTOR'S LETTERHEAD.

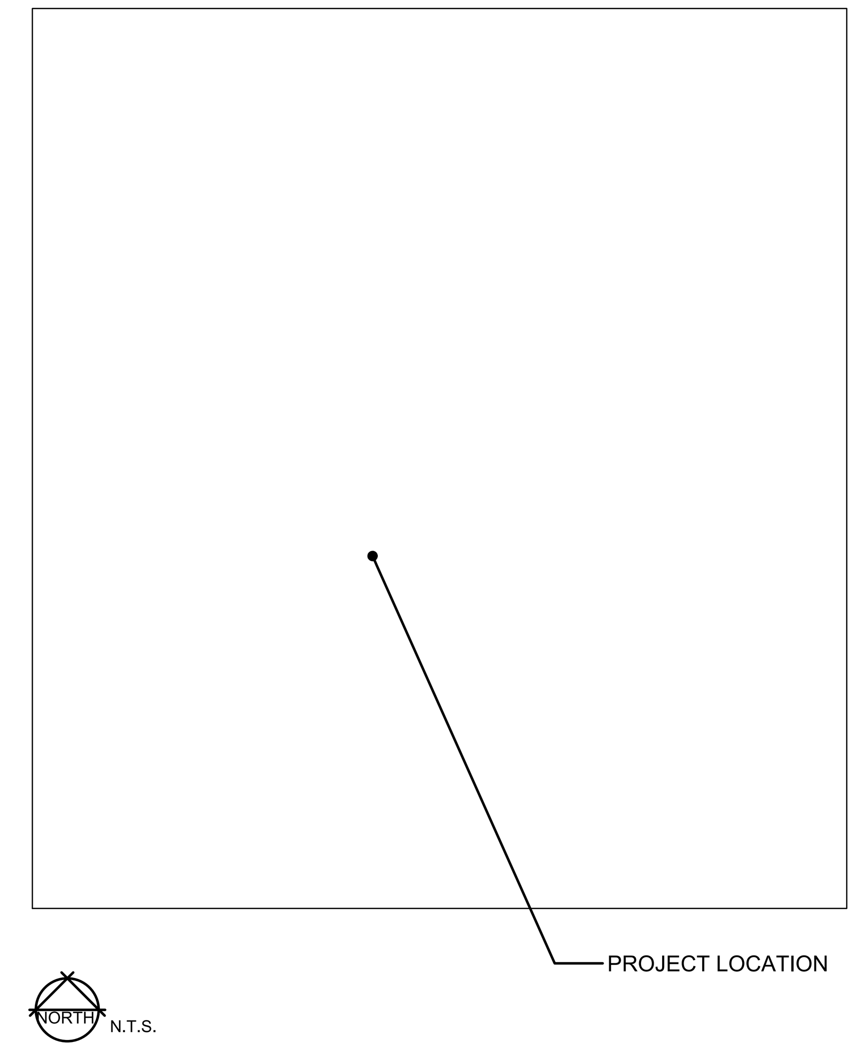
PLANTING NOTES:

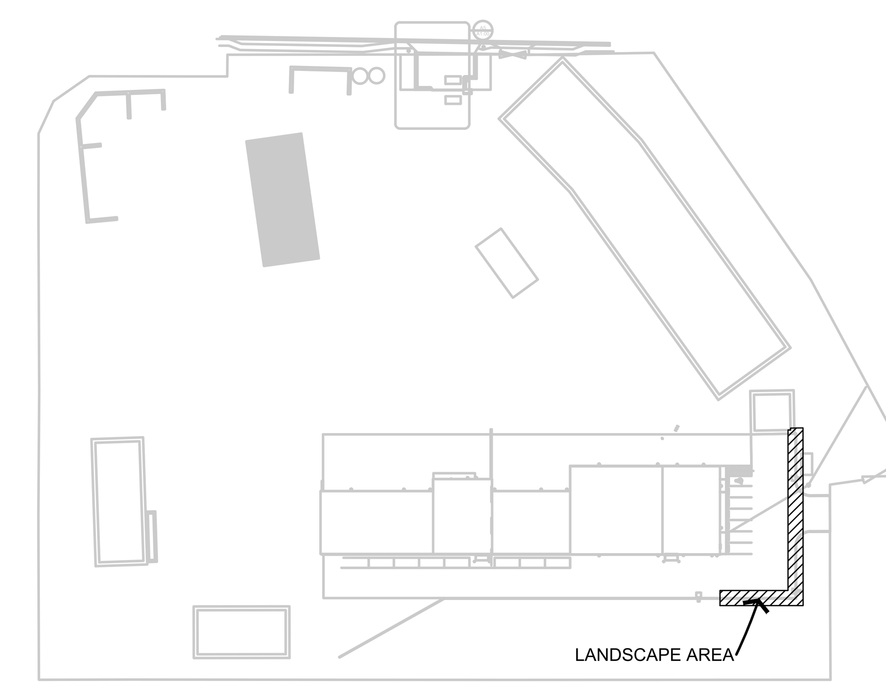
1. IN CASE OF DISCREPANCY IN PLANT QUANTITIES SHOWN ON THE PLANT LEGEND AND THOSE SHOWN ON THE PLANTING PLAN, THE QUANTITIES SHOWN ON THE PLAN SHALL GOVERN. CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO BID AND INSTALLATION. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY DISCREPANCIES IN QUANTITIES BETWEEN THE PLANTING PLAN AND THE PLANT LIST.
2. IF THERE IS A DISCREPANCY IN THE FIELD OR NURSERY BETWEEN THE CONTAINER SIZE CALLED OUT UNDER "REMARKS" AND HEIGHT & SPREAD CALLED OUT UNDER "SIZE", THE SPECIFIED PLANT MUST MEET HEIGHT & SPREAD REQUIREMENTS SPECIFIED UNDER "SIZE", EVEN IF A LARGER CONTAINER SIZE IS REQUIRED TO MEET THESE SPECIFICATIONS, AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL FURNISH AND PAY FOR ALL CONTAINER OR FIELD GROWN TREES, SHRUBS AND VINES, INCLUDING SEEDED AND SODDED TURF, HYDROMULCHES AND FLATTED GROUNDCOVERS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE AND PAY FOR: PLANTING OF ALL PLANT MATERIALS; THE SPECIFIED GUARANTEE OF ALL PLANT MATERIALS; THE STAKING AND GUYING OF TREES AND THE CONTINUOUS PROTECTION OF ALL PLANT MATERIALS UPON THEIR ARRIVAL AT THE SITE.
4. ALL INSTALLED PLANT MATERIAL SHALL CONFORM TO THE CURRENT AMERICAN ASSOCIATION OF NURSERYMAN'S NATIONAL STANDARD SPECIFICATIONS AND BE WARRANTED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE ALL DEAD AND/OR DYING PLANT MATERIAL (EXCEPT THOSE DUE TO VANDALISM OR NEGLECT) WITH PLANT MATERIAL EQUAL TO THE INSTALLED MATERIAL. GUARANTEE TO BE WRITTEN, DATED, AND SIGNED BY CONTRACTOR ON CONTRACTOR'S LETTERHEAD.
5. GROUNDCOVER PLANTING (WHERE SPECIFIED) SHALL BE CONTINUOUS UNDER ALL TREES AND SHRUB MASSES AS SHOWN ON PLAN.
6. ALL PLANT MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE LANDSCAPE ARCHITECT AND/OR OWNER PRIOR TO INSTALLATION.
7. ALL SPECIMEN TREES SHALL BE SELECTED AND SPOTTED BY THE LANDSCAPE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
8. NO SUBSTITUTIONS ARE PERMITTED WITHOUT THE WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT.
9. CONTRACTOR SHALL PRUNE LOWER BRANCHES OF DECIDUOUS TREES AS DIRECTED BY LANDSCAPE ARCHITECT IN THE FIELD.
10. AMEND PLANTING PITS WITH TOP SOIL AND NATIVE SOIL BLEND. TOP SOIL SHALL BE 3-WAY MIX OR BETTER.
11. THE SOIL AMENDMENTS (IF SPECIFIED) ARE FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL PROVIDE FOR A SOILS AGRONOMY REPORT FROM AN APPROVED SOILS LABORATORY AND/OR ANY ADDITIONAL SPECIFICATION PROVIDED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF PLANT MATERIALS.
12. CONTRACTOR TO PLACE TOP SOIL TO A DEPTH OF 4", UNLESS OTHERWISE NOTED. IMPORT TOPSOIL SHALL CONSIST OF SANDY LOAM; NONTOXIC, FREE OF NOXIOUS WEEDS, GRASS, BRUSH, STICKS, OR ROCKS GREATER THAN 1/2" IN DIAMETER UNLESS OTHERWISE NOTED. SUBMIT SAMPLE TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT.
13. CONTRACTOR TO RAKE FINISH GRADE SMOOTH AND NATURAL. NO SLOPE TO EXCEED 3:1.
14. CONTRACTOR TO PLACE TWO APPLICATIONS OF PRE-EMERGENT HERBICIDE (ABOVE AND BELOW) TOP DRESSING (MULCH) IN PLANTER BEDS; PRE-EMERGENT TO CONSIST OF +/-2% ACTIVE INGREDIENT (A-A-A TRIFLORD-2, 6-DINTRO-N, N-DIPROPYL-P-TOLUIDINE) & +/-98% INACTIVE INGREDIENT. "GREEN GOLD" BY LEBANON CHEMICAL OR APPROVED EQUAL.
15. WEED BARRIER FABRIC SHALL BE MIN. 4 OZ. WOVEN, POLYPROPYLENE (DEWITT 20 YEAR, OR EQUIVALENT). OVERLAP ENDS 3" AND TURN DOWN EDGES 6".
16. ALL MULCHES TO BE PLACED OVER WEED BARRIER FABRIC. MULCH DEPTH SHALL BE AS NOTED ON PLAN. IF NO DEPTH IS LISTED, THE CONTRACTOR SHALL ENSURE A MINIMUM DEPTH OF 2" IS INSTALLED.
17. THE TOP OF MULCH SHALL BE 1" BELOW TOP OF ADJACENT CONCRETE SURFACES.

IRRIGATION NOTES:

1. IRRIGATION SYSTEM WAS DESIGNED AT A MINIMUM STATIC PRESSURE SHOWN ON PLAN/CRITICAL ANALYSIS SCHEDULE AT THE POINT OF CONNECTION. CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT ANY DIFFERENCE BETWEEN THE WATER PRESSURE INDICATED ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION TO THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO BEGINNING WORK.
2. WHERE SLEEVING IS SHOWN ON THE PLAN, INSTALLATION SHALL BE COORDINATED WITH ALL TRADES TO ENSURE THAT PIPE AND SLEEVES ARE INSTALLED AT PROPER DEPTHS AND PRIOR TO INSTALLATION OF CURB AND GUTTER, ASPHALT PAVEMENT, SIDEWALKS, CONCRETE PADS, ETC.
4. PROVIDE 4" DIAMETER (MINIMUM) SCH. 40 PVC IRRIGATION SLEEVES AS REQUIRED. ALL SLEEVES SHALL EXTEND A MIN. OF 18" BEYOND THE FEATURES THEY CROSS & SHALL BE CAPPED WITH DUCT TAPE TO PREVENT DEBRIS FROM PLUGGING THE ENDS. MARK SLEEVE LOCATIONS WITH SURVEY LATH, PAINTED FLORESCENT ORANGE AND LABELED WITH SIZE AND QTY INFORMATION.
5. IN ADDITION TO THE SLEEVES AND CONDUITS SHOWN ON THE DRAWINGS, THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ANY NECESSARY SLEEVES AND CONDUITS UNDER ALL PAVED AREAS.
6. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT PROPOSED IRRIGATION SYSTEM IN ACCORDANCE WITH PLANS, WRITTEN SPECIFICATIONS (IF APPLICABLE), AND DETAILS.
7. THE LOCATION AND SIZE OF IRRIGATION EQUIPMENT ON THE PLAN IS SHOWN DIAGRAMMATICALLY FOR GRAPHIC CLARITY. THE LOCATION OF CONTROLLERS, PUMPS, BACKFLOW PREVENTERS, VALVES, ETC. SHALL BE APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE IN THE FIELD.
8. IRRIGATION CONTRACTOR TO NOTIFY ALL LOCAL JURISDICTIONS FOR INSPECTION AND TESTING OF INSTALLED BACKFLOW PREVENTION DEVICE.
9. DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC., WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF HIS/HER WORK AND PLAN THEIR WORK ACCORDINGLY, FURNISHING SUCH FITTINGS, ETC., AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. THE WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEMS, PLANTING, AND ARCHITECTURAL FEATURES.
10. THE LOCATION OF IRRIGATION MAIN AND LATERAL LINES ON THE PLAN IS SHOWN DIAGRAMMATICALLY FOR GRAPHIC CLARITY. UNLESS OTHERWISE NOTED ON THE PLAN, ANY IRRIGATION LINES SHOWN IN HARDSCAPE AREAS IS FOR GRAPHIC CLARITY ONLY. IRRIGATION LINES SHALL BE LOCATED IN IMMEDIATELY ADJACENT LANDSCAPE AREAS.
11. NOTIFY LANDSCAPE ARCHITECT OF ANY ASPECTS OF LAYOUT THAT WILL PROVIDE INCOMPLETE OR INSUFFICIENT WATER COVERAGE OF PLANT MATERIAL AND DO NOT PROCEED UNTIL FURTHER INSTRUCTIONS ARE OBTAINED.
12. VALVE LOCATIONS SHOWN ARE DIAGRAMMATIC. INSTALL IN GROUND COVER/SHRUB AREAS WHERE POSSIBLE (NOT IN LAWN AREA.)
13. INSTALL VALVE BOXES MINIMUM 12" FROM AND PERPENDICULAR TO WALK, CURB, LAWN, BUILDING OR LANDSCAPE FEATURE. AT MULTIPLE VALVE BOX GROUPS, EACH BOX SHALL BE AN EQUAL DISTANCE FROM THE WALK, CURB, LAWN, ETC. AND EACH BOX SHALL BE MINIMUM 12" APART. SHORT SIDE OF VALVE BOXES SHALL BE PARALLEL TO WALK, CURB, LAWN, ETC.
14. DO NOT WILLFULLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES OR DIFFERENCES IN THE AREA DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
15. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE THEMSELVES WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALLS, ETC. THEY SHALL COORDINATE THEIR WORK WITH THE GENERAL CONTRACTOR AND OTHER SUBCONTRACTORS FOR THE LOCATION AND THE INSTALLATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, PAVING, STRUCTURES, ETC.
16. ALL VALVE BOXES IN TURF OR SEED AREAS SHALL BE GREEN WITH GREEN BOLT-DOWN LIDS. VALVE BOXES IN MULCH AREAS SHALL BE TAN WITH TAN BOLT-DOWN LIDS.
17. ELECTRICAL CONTRACTOR SHALL PROVIDE ONE (1) 120-VOLT, 2.5 AMP SERVICE TO CONTROLLER LOCATION. IRRIGATION CONTRACTOR TO MAKE FINAL CONNECTION FROM ELECTRICAL STUB-OUT TO CONTROLLER, COORDINATE WITH GENERAL CONTRACTOR. ALL WORK AND MATERIALS SHALL MEET LOCAL CODES AND THE NATIONAL ELECTRIC CODE (N.E.C.). REFERENCE ELECTRICAL PLANS.
18. INSTALL A NEW BACK-UP BATTERY (IF REQUIRED) IN EACH CONTROLLER TO RETAIN PROGRAM IN MEMORY DURING TEMPORARY POWER FAILURE.
19. OPERATE IRRIGATION CONTROLLER(S) BETWEEN THE HOURS OF 9:00 PM AND 5:00 AM TO MINIMIZE CONFLICTS WITH PEDESTRIANS AND VEHICULAR PARKING OR TRAFFIC.
20. REMOTE CONTROL VALVES SHALL BE WIRED TO CONTROLLER IN SEQUENCE AS SHOWN ON PLANS. RUN WIRE FROM EACH RCV TO THE CONTROLLER. SPLICING WIRES TOGETHER OUTSIDE OF VALVE BOXES WILL NOT BE PERMITTED.
21. SPLICING OF 24-VOLT WIRES WILL NOT BE PERMITTED EXCEPT IN VALVE BOXES. LEAVE A 24" COIL OF EXCESS WIRE AT EACH SPLICE AND 100 FEET ON CENTER ALONG WIRE RUN. TAPE WIRE IN BUNDLES 10 FEET ON CENTER. NO TAPING PERMITTED INSIDE SLEEVES.
22. INSTALL A SPARE CONTROL WIRE OF A DIFFERENT COLOR ALONG THE ENTIRE MAIN LINE. LOOP 36" EXCESS WIRE INTO EACH SINGLE VALVE BOX AND INTO ONE VALVE BOX IN EACH GROUP OF VALVES.
23. LOCATE QUICK COUPLING VALVES 12" FROM HARDSCAPE (IF SHOWN).
24. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISH GRADE OF THE AREA TO BE IRRIGATED UNLESS OTHERWISE DESIGNATED ON THE PLANS.
25. IN LOCATIONS WHERE LOW HEAD DRAINAGE WILL CAUSE EROSION AND EXCESS WATER, USE POP-UP SPRINKLER MODELS WITH INTEGRAL CHECK VALVE OR A KING BROS. CV SERIES CHECK VALVE ON SHRUB RISERS IN LIEU OF SCHEDULE 80 COUPLING.
26. THE IRRIGATION CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS FOR OPTIMUM PERFORMANCE AND TO PREVENT OVERSPRAY ONTO WALKS, ROADWAYS AND/OR BUILDINGS AS MUCH AS POSSIBLE. THIS SHALL INCLUDE SELECTING THE BEST DEGREE OF ARC TO FIT THE EXISTING SITE CONDITIONS AND TO THROTTLE THE FLOW CONTROL AT EACH VALVE TO OBTAIN THE OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM.
27. WHEN VERTICAL OBSTRUCTIONS (STREET LIGHTS, TREES, FIRE HYDRANTS, ETC.) INTERFERE WITH THE SPRAY PATTERN OF THE HEADS SO AS TO PREVENT PROPER COVERAGE, THE IRRIGATION CONTRACTOR SHALL FIELD ADJUST THE SPRINKLER SYSTEM SO AS TO PROVIDE PROPER COVERAGE. ALL ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
28. FOLLOWING FINAL ACCEPTANCE, SCHEDULE AND PERFORM A "WALK-THROUGH" WITH OWNER/OWNER REPRESENTATIVE TO INSTRUCT AS TO PROPER OPERATION, REPAIR, WINTERIZATION AND START-UP OF IRRIGATION SYSTEM.
29. PROVIDE ONE (1) SHUTDOWN AND/OR WINTERIZATION AND ONE (1) SPRING START UP, TO INCLUDE ADJUSTMENT OF ALL HEADS, REPAIR OF ANY LEAKS.
30. GUARANTEE TOTAL IRRIGATION SYSTEM FOR ONE-YEAR PERIOD FROM DATE OF FINAL ACCEPTANCE BY OWNER. THIS GUARANTEE TO COVER - MATERIAL, WORKMANSHIP AND 100% HEAD TO HEAD COVERAGE.
31. PROVIDE LANDSCAPE ARCHITECT WITH ONE (1) SET OF "AS-BUILT" DRAWINGS, ONE (1) COPY OF OPERATIONS & MAINTENANCE MANUAL, AND ONE (1) COPY OF WRITTEN GUARANTEE, EACH IN ELECTRONIC PDF FORMAT.

VICINITY MAP





A LANDSCAPE PROJECT AREA
SCALE: NTS

DRAWING INDEX:

1. CV0.01 LANDSCAPE COVER SHEET
2. LS1.00 LANDSCAPE PLAN
3. LI1.01 LANDSCAPE IRRIGATION PLAN
4. LI5.00 IRRIGATION DETAILS
5. L15.01 IRRRIGATION DETAILS

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STAMP:
REGISTERED LANDSCAPE ARCHITECT NO. LA-16894
TAMRA E. CRISPELL-LEHUTA
STATE OF IDAHO

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB N0.:	24-069
DATE:	10/30/2024
DRAWN BY:	TECL
CHECKED BY:	JW

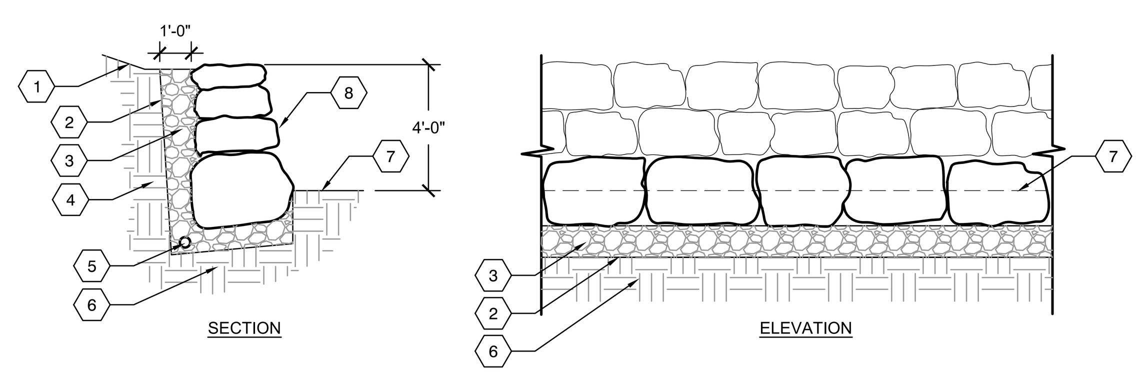
PHASE: **PERMIT SET**

LANDSCAPE COVER SHEET

SHEET NO.
CV0.01

ROCKERY WALL TABLE

ROCKERY HEIGHT	BASE WIDTH	BASE DEPTH	MINIMUM ROCK SIZE*			
			BASE OF WALL		TOP OF WALL	
			SIZE	WEIGHT	SIZE	WEIGHT
12" - 24"	1'-0"	0'-3"	1'-6"	215 lbs	1'-0"	51 lbs
25" - 48"	2'-0"	0'-6"	2'-2"	706 lbs	1'-6"	512 lbs



GENERAL NOTES

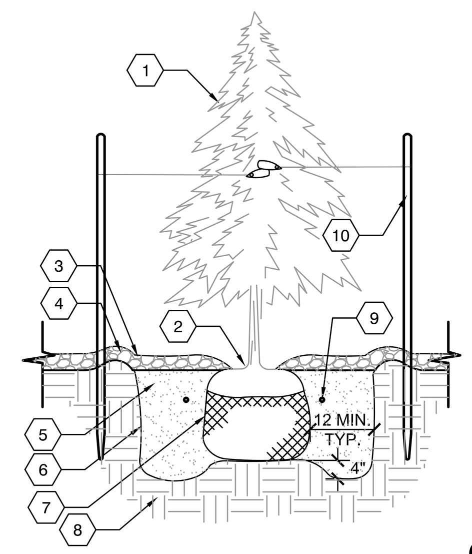
A. IF WALL HEIGHT EXCEEDS 4', WORK WILL REQUIRE AN ENGINEERING DESIGN REPORT PREPARED BY A GEOTECHNICAL OR STRUCTURAL ENGINEER TO BE SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION.

KEYED NOTES

1. 3:1 MAX SLOPE OF SOIL SURCHARGE.
2. GEOTEXTILE FILTER FABRIC, SEE PLANTING NOTES FOR ADDITIONAL INFORMATION.
3. BACKFILL 2"-4" SCREENED ROCK OR DRAIN ROCK.
4. UNDISTURBED NATIVE SOIL.
5. 6" PERFORATED PVC DRAIN PIPE, CONTINUOUS AT BASE OF WALL TO DAYLIGHT. PROVIDE MINIMUM 3" COVER ALL AROUND PIPE.
6. SUB-GRADE, COMPACT TO 95%.
7. FINISH GRADE.
8. BATTER WALL FACING, SEE TABLE FOR MINIMUM ROCK SIZE.

8 BOULDER RETAINING WALL

1/4" = 1'-0" P-CO-11-MOSC-15



KEYED NOTES

1. TREE LOCATION AND SPECIES PER PLAN.
2. REMOVE EXISTING SOIL (FROM NURSERY) AS NEEDED TO EXPOSE ROOT FLARE. INSTALL WITH ROOT FLARE FLUSH WITH SUB-GRADE (BOTTOM OF MULCH).
3. MULCH SHALL BE FEATHERED TO A 2" DEPTH ON TOP OF ROOT BALL AND SHALL BE HELD BACK 2" FROM TREE TRUNK.
4. CONSTRUCT EARTHEN SAUCER 2-1/2 TIMES THE ROOTBALL DIAMETER AND 3" MIN. HEIGHT.
5. BACKFILL AND SOIL AMENDMENTS (SEE PLAN NOTES/SPECIFICATIONS). THOROUGHLY MIX BACKFILL AND AMENDMENTS PRIOR TO INSTALLATION.
6. SCARIFY EDGE OF PLANTING HOLE, CONTINUOUS ALL SIDES.
7. REMOVE WIRE BASKET, WOOD BOX, PLASTIC TWINE, AND/OR ROPE PRIOR TO BACKFILL. REMOVE BURLAP EXCEPT FROM BOTTOM OF ROOT BALL.
8. UNDISTURBED NATIVE SOIL.
9. FERTILIZER TABLETS, AGRIFORM (21 GRAM 20-10-5) 1 PER 4" OF ROOTBALL DIAMETER PLACED MIN. 3" BELOW.
10. TREE STAKING - SEE DETAIL.

GENERAL NOTES

A. PRUNE ONLY CROSSOVER LIMBS AND DEAD OR BROKEN BRANCHES.
B. TOP OF ROOTBALL (AT CROWN BASE) TO BE EQUAL ELEVATION AS ADJACENT GRADE.
C. INSTALL ARBORGARD+ TREE TRUNK PROTECTOR FOR ALL TREES PLANTED IN LAWN AREAS,

3 EVERGREEN TREE PLANTING

N.T.S. P-CO-11-MOSC-05

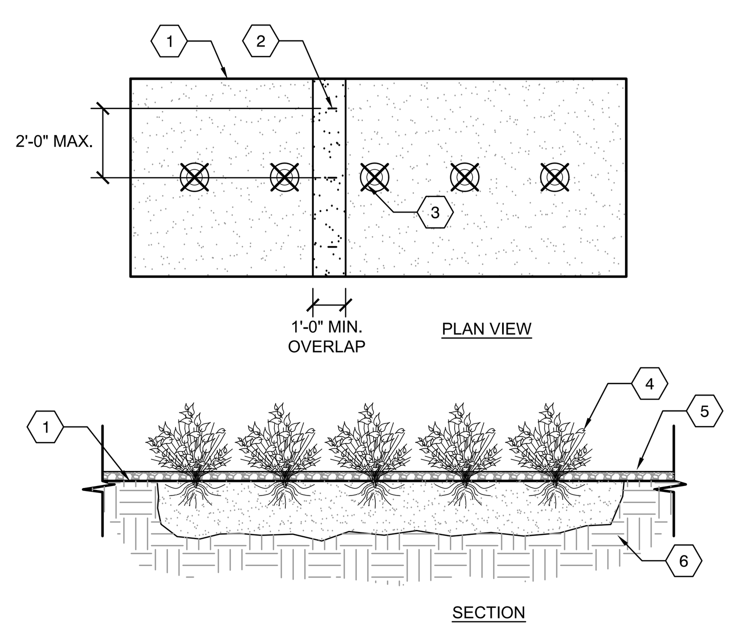
PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	CAL	MIN. SIZE	DETAIL
DECIDUOUS TREES							
	GP	2	GINKGO BILOBA 'PRINCETON SENTRY' PRINCETON SENTRY MAIDENHAIR TREE	B & B	3" CAL	14` HEIGHT MIN.	1/LS1.00
EVERGREEN TREES							
	PI	3	PICEA PUNGENS 'ISELI FASTIGIATE' FASTIGIATE COLORADO SPRUCE	B & B	N/A	6` HEIGHT MIN.	3/LS1.00

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	-	MIN. SIZE	DETAIL
DECIDUOUS SHRUBS							
	CS	12	CORNUS SERICEA `KELSEYI` KELSEY`S DWARF RED TWIG DOGWOOD	3 GAL		N/A	4/LS1.00
EVERGREEN SHRUBS							
	PA	12	PINUS MUGO 'MINIMA KALOUS' MINIMA KALOUS MUGO PINE	3 GAL		N/A	4/LS1.00
GRASSES							
	FI	8	FESTUCA IDAHOENSIS IDAHO FESCUE	1 GAL		N/A	5/LS1.00

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
1	EXISTING GATE.		
2	EXISTING FENCE.		
3	DRIVEWAY.		
4	PARKING.		
5	GENERATOR. SEE ELCTRICAL PLANS.		
6	LIGHT. SEE ELCTRICAL PLANS.		
7	WALLED DETENTION POND. SEE CIVIL PLANS.		
8	BOULDER RETAINING WALL @ 12" HIGH.		8/LS1.00
9	METAL EDGING.	67 LF	6/LS1.00
	PLANTING BED (1-1/2-2" MED. BROWN BASALT @ 6" DEEP OVER WEED FABRIC).	375 SF	7/LS1.00
	HYDROSEED LITTLE BLUESTEM (ANDROPOGON SCOPARIUS) @ 4 LBS PER ACRE OVER BIRORETENTION SOIL MIX (SEE CIVIL PLANS).	784 SF	

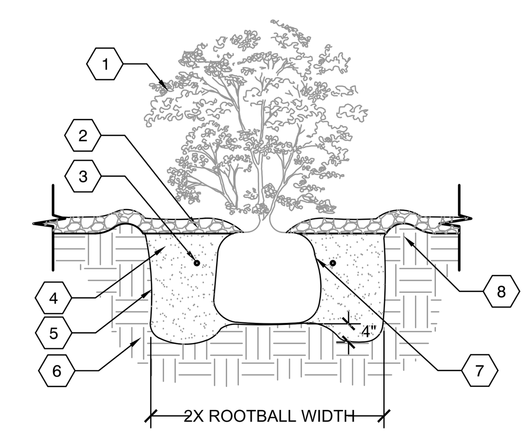


KEYED NOTES

1. WEED BARRIER FABRIC.
2. 6" MIN. LANDSCAPE STAPLE, "U" SHAPED.
3. CUT "X" SLIT IN FABRIC NO LARGER THAN THE DIAMETER OF THE ROOTBALL.
4. PLANT MATERIAL, SEE PLANTING PLAN.
5. INSTALL MULCH OVER WEED BARRIER. SEE PLAN FOR TYPE AND DEPTH.
6. UNCOMPACTED / UNDISTURBED SOIL.

7 WEED BARRIER FABRIC INSTALLATION

N.T.S. P-CO-11-MOSC-01



KEYED NOTES

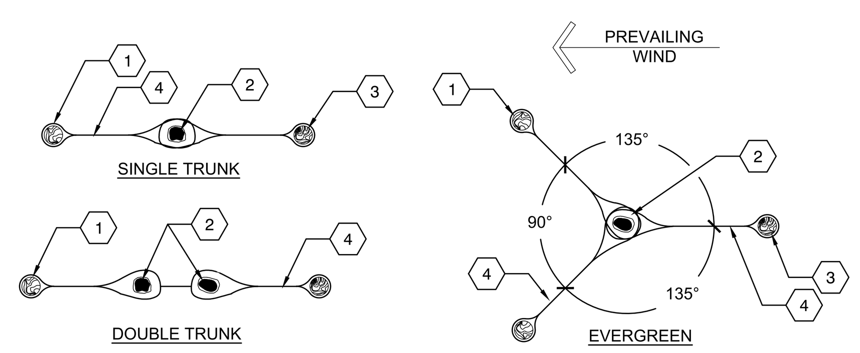
1. SHRUB LOCATION AND SPECIES PER PLAN.
2. MULCH SHALL BE FEATHERED TO A 2" DEPTH ON TOP OF ROOT BALL AND HELD BACK 2" FROM STEM(S).
3. FERTILIZER TABLETS AT HALF ROOTBALL DEPTH, SEE GENERAL NOTE C.
4. BACKFILL AND SOIL AMENDMENTS (SEE PLAN NOTES/SPECIFICATIONS).
5. SCARIFY EDGE OF PLANTING HOLE CONTINUOUS ON ALL SIDES.
6. UNDISTURBED NATIVE SOIL.
7. REMOVE PLANT FROM CONTAINER.
8. CONSTRUCT EARTHEN SAUCER 2-1/2 TIMES THE ROOTBALL DIAMETER AND 3" MIN. HEIGHT.

GENERAL NOTES

A. PRUNE ONLY CROSSOVER LIMBS AND DEAD OR BROKEN BRANCHES.
B. TOP OF ROOTBALL (AT CROWN BASE) TO BE EQUAL ELEVATION AS ADJACENT GRADE.
C. FERTILIZER TABLET SCHEDULE:
1 AND 2 GAL = 1 TAB
3 TO 5 GAL = 3 TABS
10 TO 15 GAL = 4 TABS

4 SHRUB PLANTING

N.T.S. P-CO-11-MOSC-02



KEYED NOTES

1. 2" DIA LODGEPOLE PINE TREE STAKES DRIVEN MIN. 24" INTO UNDISTURBED SOIL. STAKES SHALL BE PARALLEL OR SLIGHTLY ANGLED AWAY FROM TRUNK. STAKE LEANING IN TOWARDS TREE ARE UNACCEPTABLE.
2. TREE TRUNK, MULTI-TRUNKED TREES SHALL HAVE ALL MAJOR LEADERS STAKED OR SUPPORTED.
3. WRAP TREE WEBBING AROUND LODGEPOLE STAKE, SECURE CHAIN IN PLACE BY NOTCHING POLE AND SETTING STRAP IN NOTCH, FASTEN WITH STAPLE.
4. ARBORBRACE 3/4" WIDE POLYPROPYLENE TREE TIE WEBBING.

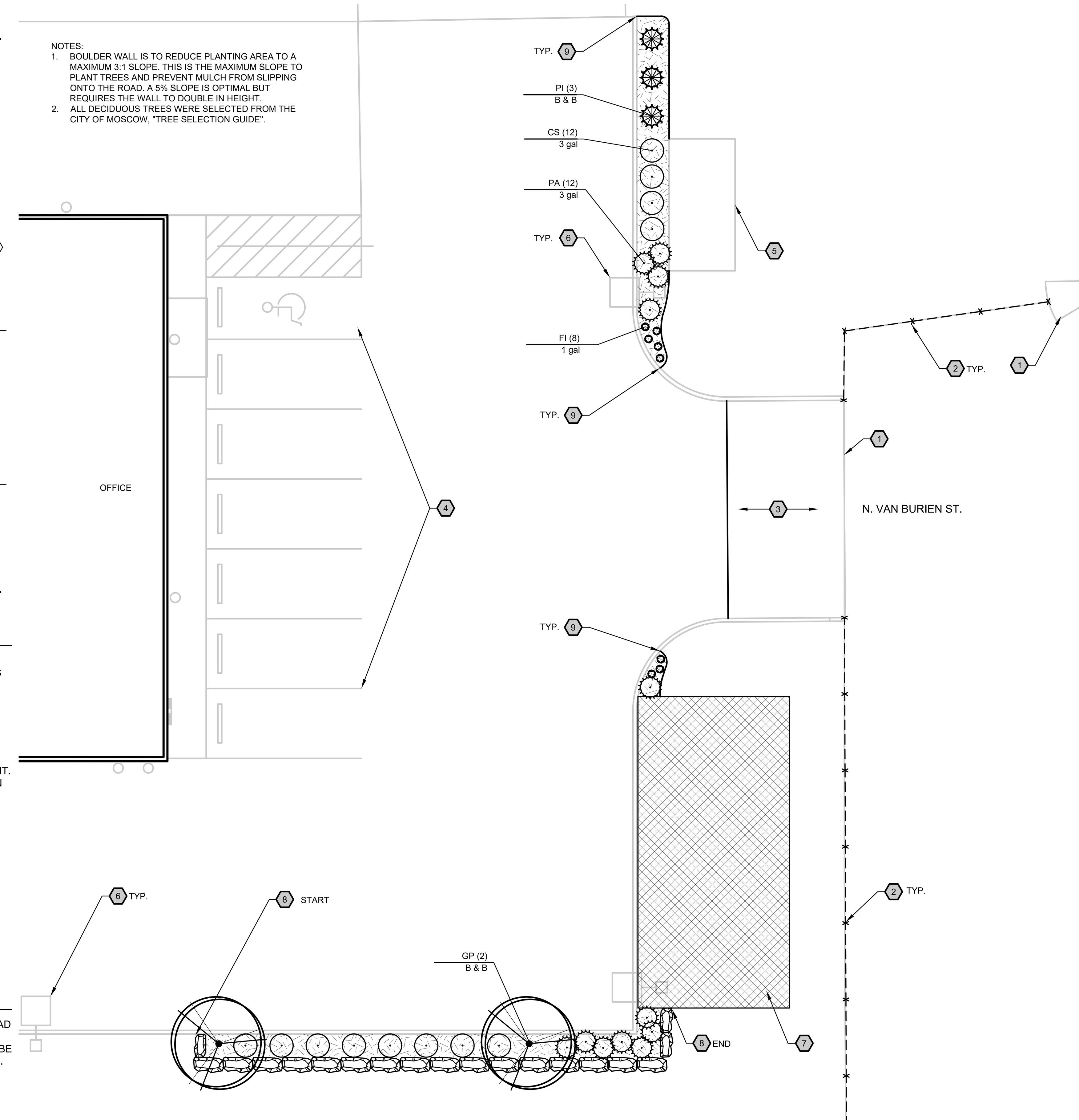
GENERAL NOTES

A. ALL TREE STAKES SHALL BE DRIVEN OUTSIDE THE EDGE OF THE PLANTING PIT.
B. TREE WEBBING SHALL BE PLACED 3' TO 4' ABOVE FINISH GRADE.
C. AFTER PLANTING, IF TREES ARE UNSTABLE, STAKING MAY BE USED TO SUPPORT TREE. AFTER 6 MONTHS, ALL STAKING MATERIAL SHALL BE REMOVED. IF TREE IS STILL UNSTABLE, THE TREE SHALL BE REPLACED DUE TO LACK OF STRUCTURAL ROOT ESTABLISHMENT.

2 TREE STAKING

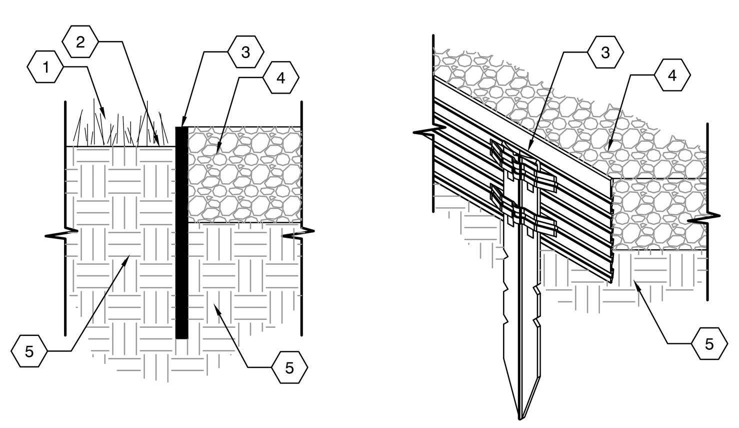
N.T.S. P-CO-11-MOSC-03

NOTES:
1. BOULDER WALL IS TO REDUCE PLANTING AREA TO A MAXIMUM 3:1 SLOPE. THIS IS THE MAXIMUM SLOPE TO PLANT TREES AND PREVENT MULCH FROM SLIPPING ONTO THE ROAD. A 5% SLOPE IS OPTIMAL BUT REQUIRES THE WALL TO DOUBLE IN HEIGHT.
2. ALL DECIDUOUS TREES WERE SELECTED FROM THE CITY OF MOSCOW, "TREE SELECTION GUIDE".



A LANDSCAPE PLAN

SCALE: AS SHOWN



KEYED NOTES

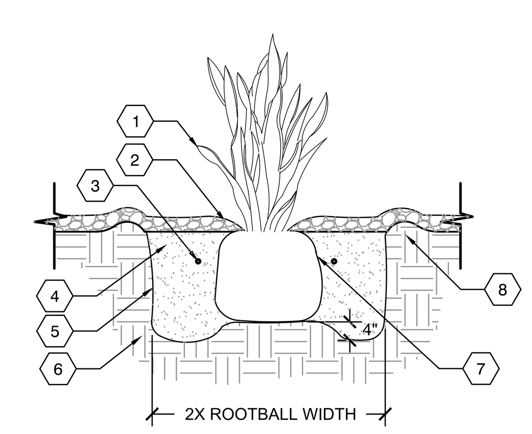
1. ADJACENT LANDSCAPE (LAWN OR BED).
2. FINISH GRADE (1/2" BELOW TOP OF EDGING).
3. 3/16" x 4" ALUMINUM SURE-LOC LAWN EDGING, OR APPROVED EQUAL WITH 9"x1" WIDE-ANGLE STEEL STAKES AT 4' ON CENTER. TOP OF STAKE DESIGNED TO LOCK 1/2" BELOW TOP OF EDGING.
4. MULCH PER PLAN.
5. SUBGRADE, COMPACT GRADE ADJACENT TO EDGING TO AVOID SETTLING.

GENERAL NOTES

A. INSTALL EDGING IN SMOOTH, CONTINUOUS, NON-BROKEN, ARCS AND CURVES. "PINCHED OR BROKEN ARCS" WILL BE REJECTED.
B. ALL STRAIGHT EDGING LINES SHALL BE FREE OF DEFECTS. MAXIMUM DEVIATION FROM CENTERLINE OF EDGING SHALL NO GREATER THAN 1/2" LEFT-TO-RIGHT.
C. TOP OF EDGING SHALL BE INSTALLED PARALLEL TO ADJACENT FINISH GRADE. HIGH OR LOW POINTS WILL BE REJECTED.

6 ALUMINUM EDGING

N.T.S. P-CO-11-MOSC-07



KEYED NOTES

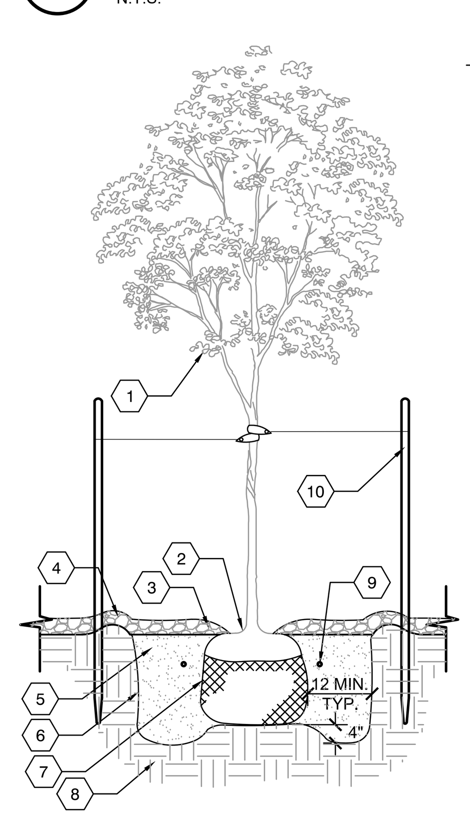
1. PLANT LOCATION AND SPECIES PER PLAN.
2. MULCH SHALL BE FEATHERED TO A 2" DEPTH ON TOP OF ROOT BALL AND HELD BACK 2" FROM STEM(S).
3. FERTILIZER TABLETS AT HALF ROOTBALL DEPTH, SEE GENERAL NOTE C.
4. BACKFILL AND SOIL AMENDMENTS (SEE PLAN NOTES/SPECIFICATIONS).
5. SCARIFY EDGE OF PLANTING HOLE CONTINUOUS ON ALL SIDES.
6. UNDISTURBED NATIVE SOIL.
7. REMOVE PLANT FROM CONTAINER.
8. CONSTRUCT EARTHEN SAUCER 2-1/2 TIMES THE ROOTBALL DIAMETER AND 3" MIN. HEIGHT.

GENERAL NOTES

A. TOP OF ROOTBALL (AT CROWN BASE) TO BE EQUAL ELEVATION AS ADJACENT GRADE.
B. FERTILIZER TABLET SCHEDULE:
1 AND 2 GAL = 1 TAB
3 TO 5 GAL = 3 TABS
10 TO 15 GAL = 4 TABS

5 PERENNIAL PLANTING

N.T.S. P-CO-11-MOSC-18



KEYED NOTES

1. TREE LOCATION AND SPECIES PER PLAN.
2. REMOVE EXISTING SOIL (FROM NURSERY) AS NEEDED TO EXPOSE ROOT FLARE. INSTALL WITH ROOT FLARE FLUSH WITH SUB-GRADE (BOTTOM OF MULCH).
3. MULCH SHALL BE FEATHERED TO A 2" DEPTH ON TOP OF ROOT BALL AND SHALL BE HELD BACK 2" FROM TREE TRUNK.
4. CONSTRUCT EARTHEN SAUCER 2-1/2 TIMES THE ROOTBALL DIAMETER AND 3" MIN. HEIGHT.
5. BACKFILL AND SOIL AMENDMENTS (SEE PLAN NOTES/SPECIFICATIONS). THOROUGHLY MIX BACKFILL AND AMENDMENTS PRIOR TO INSTALLATION.
6. SCARIFY EDGE OF PLANTING HOLE, CONTINUOUS ALL SIDES.
7. REMOVE WIRE BASKET, WOOD BOX, PLASTIC TWINE, AND/OR ROPE PRIOR TO BACKFILL. REMOVE BURLAP EXCEPT FROM BOTTOM OF ROOT BALL.
8. UNDISTURBED NATIVE SOIL.
9. FERTILIZER TABLETS, AGRIFORM (21 GRAM 20-10-5) 1 PER 4" OF ROOTBALL DIAMETER PLACED MIN. 3" BELOW.
10. TREE STAKING - SEE DETAIL.

GENERAL NOTES

A. PRUNE ONLY CROSSOVER LIMBS AND DEAD OR BROKEN BRANCHES.
B. TOP OF ROOTBALL (AT CROWN BASE) TO BE EQUAL ELEVATION AS ADJACENT GRADE.
C. INSTALL ARBORGARD+ TREE TRUNK PROTECTOR FOR ALL TREES PLANTED IN LAWN AREAS,

1 DECIDUOUS TREE PLANTING

N.T.S. P-CO-11-MOSC-04

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB N0.:	24-069
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LANDSCAPE PLAN

SHEET NO.
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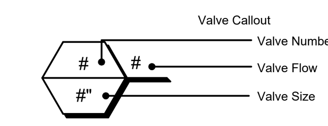
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	HUNTER ICZ-101-25 DRIP CONTROL ZONE KIT. 1IN. ICV GLOBE VALVE WITH 1IN. HY100 FILTER SYSTEM. PRESSURE REGULATION: 25PSI. FLOW RANGE: 2 GPM TO 20 GPM. 150 MESH STAINLESS STEEL SCREEN.	3	4/LI5.00
	AREA TO RECEIVE DRIP EMITTERS HUNTER HE-B POINT SOURCE DRIP EMITTER WITH SELF PIERCING BARB. COLOR CODED EMITTERS FOR FLOW RATES OF 0.5 GPH, 1.0 GPH, 2.0 GPH, 4.0 GPH, AND 6.0 GPH. CAN BE INSERTED INTO 1/2IN. AND 3/4IN. TUBING AND HAVE PRESSURE COMPENSATING FROM 15 PSI-50 PSI. OPTIONAL DIFFUSER CAP (HE) AVAILABLE.	374.1 S.F.	6/LI5.00
	Emitter Notes: 05 emitters (2 assigned to each 1 gal plant)	16	
	05 emitters (2 assigned to each 3 gal plant)	48	
	05 emitters (2 assigned to each 5 gal plant)		
	05 emitters (4 assigned to each B & B, 2.5" Cal, 12' Height Min. plant)		
	05 emitters (4 assigned to each B & B, 3" Cal, 14` Height Min. plant)	8	
	05 emitters (4 assigned to each B & B, N/A, 6` Height Min. plant)	12	
	05 emitters (4 assigned to each B & B, N/A, 14` Height Min. plant)		
	AREA TO RECEIVE DRIPLINE HUNTER HDL-06-12-CV HDL-06-12-CV: HUNTER DRIPLINE W/ 0.6 GPH EMITTERS AT 12" O.C. CHECK VALVE, DARK BROWN TUBING WITH GRAY STRIPING. DRIPLINE LATERALS SPACED AT 12" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. INSTALL WITH HUNTER PLD BARBED OR PLD-LOC FITTINGS.	783.5 L.F.	5/LI5.00

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	HUNTER HQ-44LRC QUICK COUPLER VALVE, YELLOW RUBBER LOCKING COVER, RED BRASS AND STAINLESS STEEL, WITH 1IN. NPT INLET, 2-PIECE BODY.	1	1/LI5.00
	NIBCO T-113-K CLASS 125 BRONZE GATE SHUT OFF VALVE WITH CROSS HANDLE, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. SIZE RANGE - 1/4IN. - 3IN.	1	2/LI5.00
M	HUNTER IBV MASTER VALVE 2" 1IN., 1-1/2IN., 2IN., AND 3IN. BRASS ELECTRIC MASTER VALVE, GLOBE CONFIGURATION, WITH NPT THREADED INLET/OUTLET, FOR COMMERCIAL/MUNICIPAL USE.	1	3/LI1.00
D	DRAIN VALVE SIZE PER LINE SIZE.	2	9/LI5.00
BF	WATTS LF909M1 2" LEAD FREE REDUCED PRESSURE BACKFLOW PREVENTER.	1	2/LI1.00
C	HUNTER HCC-800-PL 8 STATION OUTDOOR WI-FI ENABLED, FULL-FUNCTIONING CONTROLLER WITH TOUCHSCREEN, COMMERCIAL USE. PLASTIC CABINET.	1	3/LI5.00
FS	HUNTER HC-200-FLOW 2IN. FOR USE WITH HYDRAWISE ENABLED CONTROLLER TO MONITOR FLOW AND PROVIDE SYSTEM ALERTS. ALSO FUNCTIONS AS STAND ALONE FLOW TOTALIZER/SUB METER ON ANY RESIDENTIAL OR COMMERCIAL IRRIGATION SYSTEM.	1	4/LI1.00
POC	POINT OF CONNECTION STUB OUT FROM NEW WATER LINE. SEE CIVIL PLANS. FIELD CONFIRM AVAILABLE PRESSURE AND FLOW.	1	1/LI1.00
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	106.1 L.F.	2/L15.01
	IRRIGATION MAINLINE: PVC SCHEDULE 40	81.2 L.F.	2/L15.01
	PIPE SLEEVE: PVC SCHEDULE 40	98.9 L.F.	3/L15.01



VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	WIRE	PSI	PSI @ POC	PRECIP
1	HUNTER ICZ-101-25	1"	AREA FOR DRIP EMITTERS	0.32	84.0	33.0	43.8	0.37 in/h
2	HUNTER ICZ-101-25	1"	AREA FOR DRIP EMITTERS	0.38	126.6	33.0	43.8	0.39 in/h
3	HUNTER ICZ-101-25	1"	AREA FOR DRIPLINE	7.84	142.1	21.8	33	0.96 in/h
	Common Wire				81.2			

CRITICAL ANALYSIS

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P.O.C. NUMBER: 01
Water Source Information: STUB OUT FROM NEW WATER LINE. SEE CIVIL, MECHANICAL AND ELECTRICAL PLANS. FIELD CONFIRM AVAILABLE PRESSURE AND FLOW.

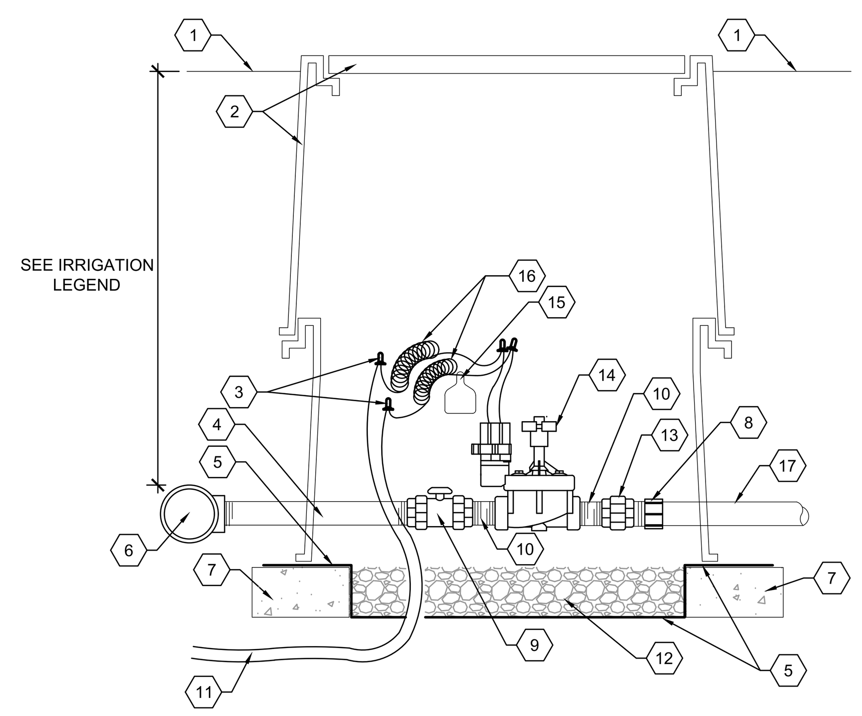
FLOW AVAILABLE
Custom Max Flow: 15 GPM
Flow Available 15 GPM

PRESSURE AVAILABLE
Static Pressure at POC: 68 PSI
Pressure Available: 68 PSI

DESIGN ANALYSIS
Maximum Station Flow: 7.84 GPM
Flow Available at POC: 15 GPM
Residual Flow Available: 7.16 GPM

Critical Station: 2
Design Pressure: 30 PSI
Friction Loss: 0 PSI
Fittings Loss: 0 PSI
Elevation Loss: 0 PSI
Loss through Valve: 3 PSI
Pressure Req. at Critical Station: 33.0 PSI
Loss for Fittings: 0.0 PSI
Loss for Main Line: 0.0 PSI
Loss for POC to Valve Elevation: 0 PSI
Loss for Backflow: 10 PSI
Loss for Master Valve: 0.8 PSI
Critical Station Pressure at POC: 43.8 PSI
Pressure Available: 68 PSI
Residual Pressure Available: 24.2 PSI

NOTES
1. CONFIRM LOCATION OF CONTROLLER WITH PROJECT MANAGER PRIOR TO CONSTRUCTION.
2. AVAILABLE PRESSURE CALCULATED FROM IRRIGATION POC FROM A 1" IRRIGATION SERVICE LINE AND 5/8" IRRIGATION METER.
3. FIRE HYDRANT TESTING ESTIMATED PRESSURE TO BE BEWTEEN 82-88 PSI. FLOW TESTING OF THE FIRE HYDRANT IS IN PROGRESS.
4. THE CIVIL ENGINEER HAS ESTIMATED THE AVAILABLE PRESSURE ON SITE TO BE +/- 73 PSI.



KEYED NOTES

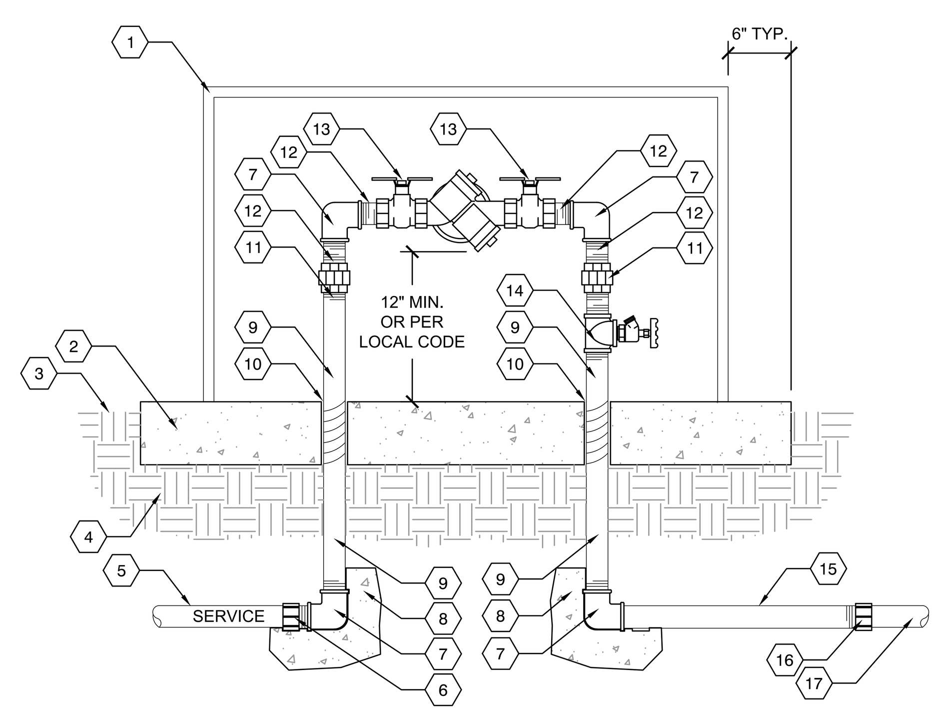
1. FINISH GRADE.
2. APPLIED ENGINEERING 1730-18P2P VALVE BOX W/ BOLT DOWN FLUSH COVER AND 8" EXTENSIONS (1730-XG) AS REQUIRED.
3. WATERPROOF WIRE CONNECTOR.
4. SCH. 80 PVC NIPPLE - LENGTH AS REQUIRED.
5. FILTER FABRIC.
6. SCH. 80 PVC MAINLINE TEE/ELL.
7. SOLID CMU BLOCK, FOUR PER BOX.
8. MALE ADAPTER.
9. SPEARS TRUE UNION SCH. 80 PVC BALL VALVE WITH UNIONS.
10. SCH. 80 PVC NIPPLE - 3" LENGTH.
11. CONTROL WIRE - SEE PLAN.
12. 6" DEPTH 1" WASHED GRAVEL, WITH 2" CLEARANCE TO BOTTOM OF VALVE ASSEMBLY.
13. SPEARS SCH. 80 PVC UNION.
14. REMOTE CONTROL VALVE, SEE IRRIGATION LEGEND.
15. WATERPROOF VALVE TAG.
16. 36" WIRE EXPANSION LOOPS.
17. PVC MAINLINE, SIZE PER PLAN.

GENERAL NOTES

A. DECODER TYPE AND QUANTITY PER PLAN.

3 MASTER VALVE ASSEMBLY

N.T.S. P-CO-11-MOSC-10



KEYED NOTES

1. BACKFLOW ENCLOSURE - SEE SPECIFICATIONS. SURFACE MOUNT TO CONCRETE PAD PER MANUFACTURER'S RECOMMENDATIONS.
2. 3500 PSI CONCRETE PAD, 6" THICK WITH TOOLED EDGES.
3. FINISH GRADE.
4. SUBGRADE COMPACTED TO 95%.
5. SERVICE LINE - SEE PLAN.
6. SCH. 40 PVC MALE ADAPTER.
7. GALVANIZED ELBOW.
8. THRUST BLOCKS AS REQUIRED (IF OVER 3" PIPE).
9. GALVANIZED NIPPLE, LENGTH AS REQUIRED.
10. PVC SLEEVE, PROTECT RISERS WITH 20 MIL PROTECTIVE TAPE
11. GALVANIZED UNION.
12. GALVANIZED NIPPLE- 3" LENGTH.
13. REDUCED PRESSURE BACKFLOW PREVENTER, SEE IRRIGATION LEGEND.
14. 3/4" MALE HOSE BIB TO 1" FPT ATTACHED WHEEL HANDLE AND TEE AS REQD FOR WINTERIZATION.
15. GALVANIZED NIPPLE, LENGTH AS REQUIRED, SEE GENERAL NOTE B.
16. SCH. 40 PVC FEMALE ADAPTER.
17. IRRIGATION MAINLINE, SEE PLAN.

GENERAL NOTES

A. ALL ASSEMBLY PARTS (NIPPLES, FITTINGS, ETC.) SHALL BE GALVANIZED OR BRASS PER LOCAL CODES AND REQUIREMENTS.
B. GALVANIZED NIPPLE SHALL EXTEND 12" PAST THE EDGE OF THE CONCRETE FOOTING.
C. BACKFLOW PREVENTION DEVICE SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE LANDSCAPE METER.
D. ALL BACKFLOW ENCLOSURES SHALL BE TAN IF LOCATED IN PLANTING AREA, GREEN IF LOCATED WITHIN TURF AREA.
E. BACKFLOW PREVENTION DEVICE SHALL BE LOCATED IN PLANTING AREA UNLESS APPROVED BY OWNER'S REPRESENTATIVE.
F. GALVANIZED CONNECTIONS SHALL BE MADE USING PIPE THREAD SEALANT. ALL SCH. 80 PVC TO GALVANIZED CONNECTIONS TO BE MADE USING TEFLON TAPE.

2 REDUCED PRESSURE BACKFLOW PREVENTER

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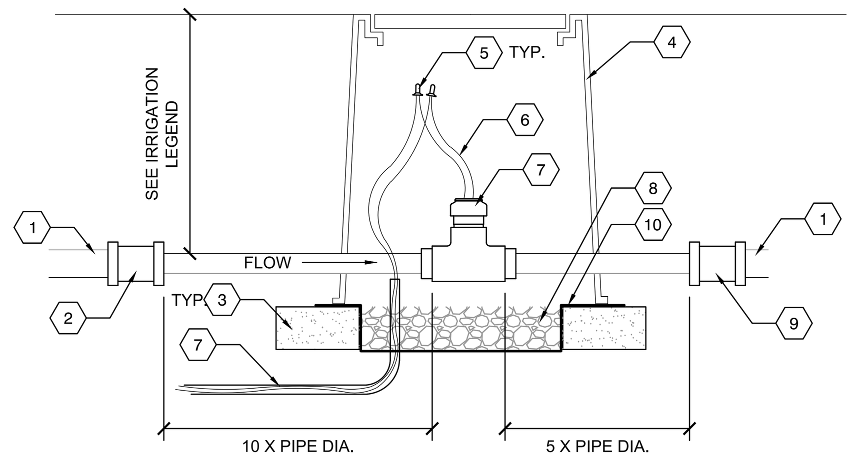
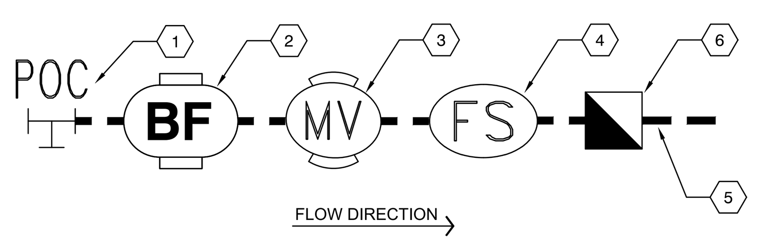


KEYED NOTES

1. PVC IRRIGATION MAINLINE, SEE PLAN.
2. SIZE OR DIRECTION CHANGE AT DISTANCE EQUAL TO 10X PIPE DIAMETER FROM FLOW SENSOR.
3. 8"X8"X16" SOLID CMU BLOCK - 4 PER VALVE BOX.
4. APPLIED ENGINEERING PRODUCTS MODEL 1730 VALVE BOX WITH EXTENSIONS AS REQUIRED AND FLUSH BOLT-DOWN COVER.
5. WATERPROOF CONNECTIONS.
6. SHIELDED COMMUNICATION CABLE CONNECTED TO IRRIGATION CONTROLLER - SEE IRRIGATION LEGEND.
7. FLOW SENSOR - SEE IRRIGATION LEGEND, TO BE LOCATED A MINUMUM OF 2" ABOVE WASHED ROCK.
8. 1" DIAMETER WASHED ROCK, 8" DEPTH.
9. SIZE OR DIRECTION CHANGE AT DISTANCE EQUAL TO 5X PIPE DIAMETER FROM FLOW SENSOR.
10. FILTER FABRIC.

4 FLOW SENSOR

N.T.S. P-CO-11-MOSC-11



KEYED NOTES

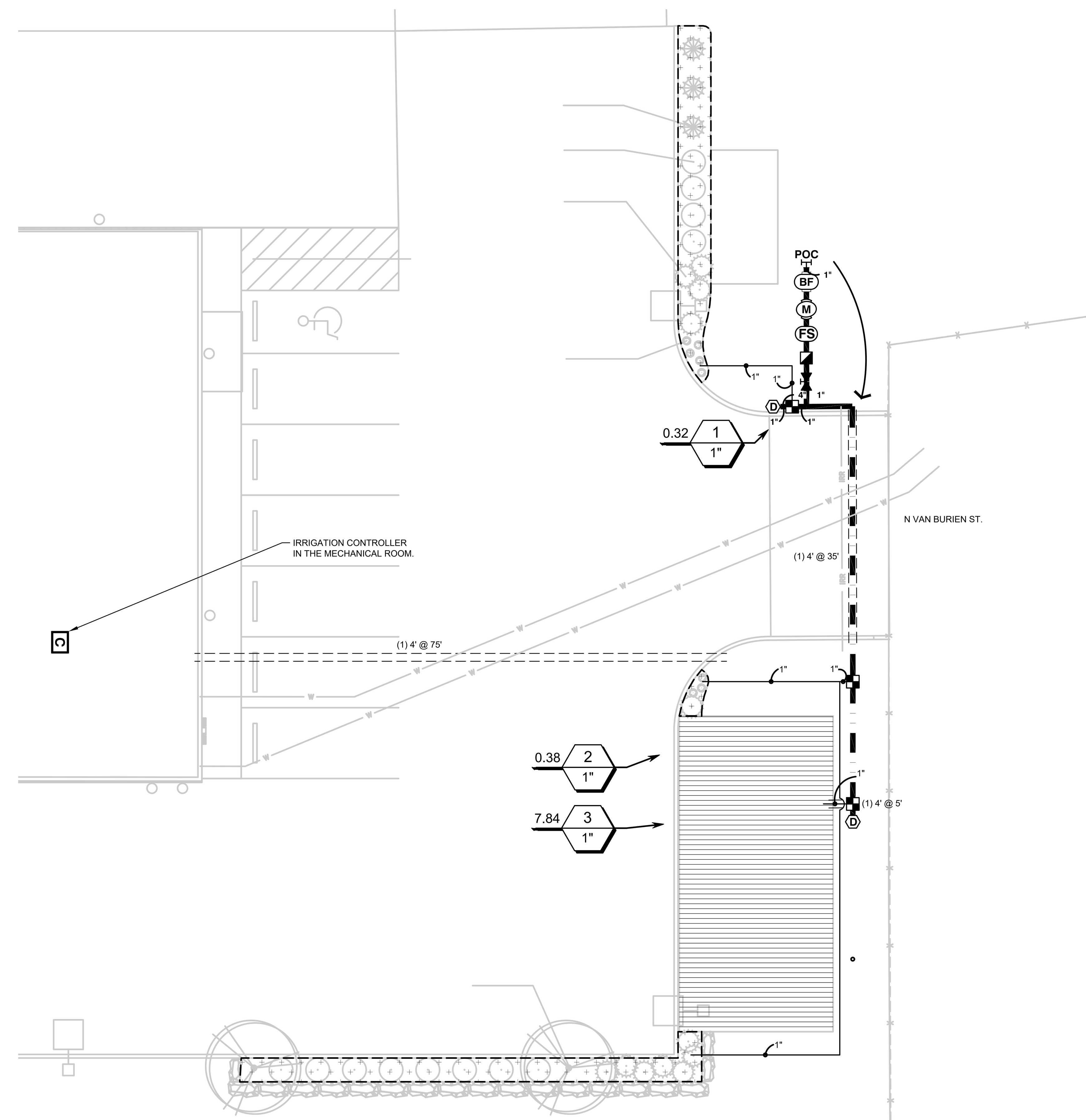
1. POINT OF CONNECTION, SEE PLAN.
2. BACKFLOW PREVENTER, SEE IRRIGATION LEGEND.
3. MASTER VALVE, SEE IRRIGATION LEGEND. INCLUDE DECODER FOR TWO-WIRE SYSTEMS.
4. FLOW SENSOR, SEE IRRIGATION LEGEND. INCLUDE DECODER FOR TWO-WIRE SYSTEMS.
5. IRRIGATION MAINLINE, SEE PLAN FOR SIZE AND TYPE.
6. QUICK COUPLER FOR WINTERIZATION, SEE IRRIGATION LEGEND.

GENERAL NOTES

A. ALL PIPE AND FITTINGS FROM POC TO MAINLINE SHALL BE GALVANIZED WITH A MAXIMUM TOTAL LENGTH OF 10' PER 1" DIAMETER OF MAINLINE PIPE SERVICED.

1 POC ASSEMBLY WITH BACKFLOW

N.T.S. P-CO-11-MOSC-08



A LANDSCAPE IRRIGATION PLAN

SCALE: AS SHOWN

LOMBARD CONRAD ARCHITECTS

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB N0.:	24-069
DATE:	10/30/2024
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LANDSCAPE IRRIGATION PLAN

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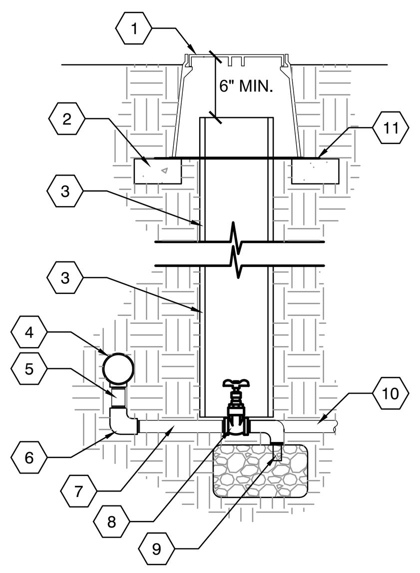
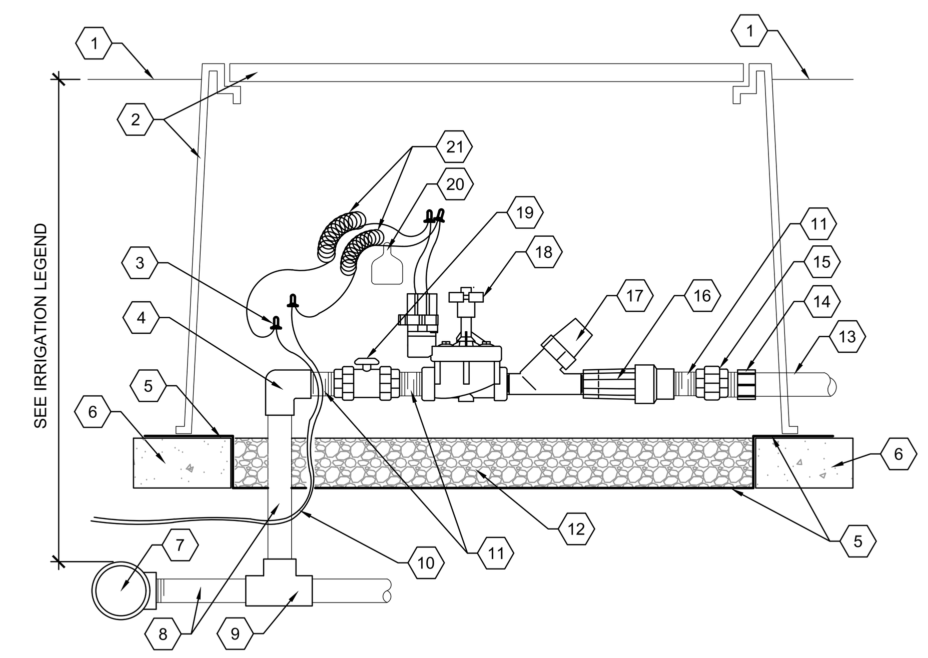


KEYED NOTES

1. 10" ROUND VALVE BOX, WRAP BOTTOM AND SIDES IN FILTER FABRIC.
2. (2) SUPPORT BRICKS.
3. 8" DIAMETER PVC PIPE, LENGTH AS REQUIRED.
4. LOW POINT IN MAINLINE, PVC THREADED SERVICE TEE.
5. 1" SCH. 80 PVC NIPPLE, 3" LENGTH.
6. 1" SCH. 80 PVC 90.
7. 1" SCH. 80 PVC NIPPLE, 6" LENGTH.
8. 1" BRASS GATE VALVE WITH CROSS-HANDLE AS SPECIFIED.
9. EXTEND 6" SCH. 80 PVC NIPPLE INTO 2" DIAMETER WASHED DRAIN ROCK BASIN. MINIMUM VOLUME OF WRAPPED DRAIN ROCK IS 3'-0"x3'-0"x3'-0". DRAIN ROCK BASIN TO BE WRAPPED IN FILTER FABRIC TO PREVENT INFILTRATION OF SEDIMENT. INSTALL AT LOW POINTS AND/OR WHERE SHOWN ON PLANS.
10. SLOPE DRAIN TO STRUCTURE IF FEASIBLE (WITHIN 60 L.F.).
11. FILTER FABRIC.

9 MANUAL DRAIN VALVE

N.T.S. P-CO-11-MOSC-26



KEYED NOTES

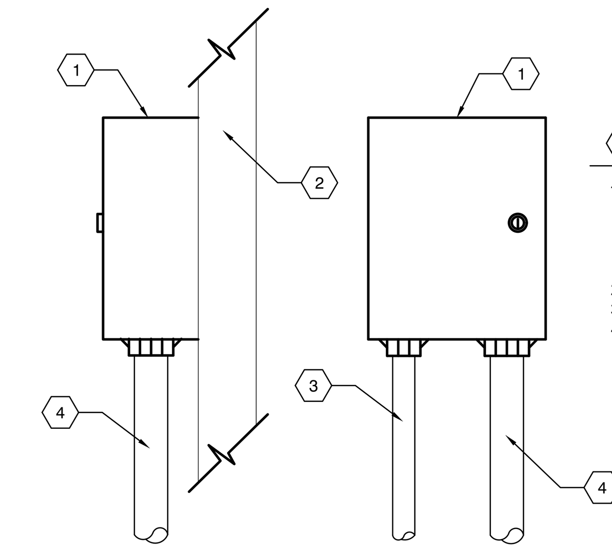
1. FINISH GRADE.
2. APPLIED ENGINEERING 1730-18P2P VALVE BOX W/ BOLT DOWN FLUSH COVER AND 8" EXTENSIONS (1730-XG) AS REQUIRED.
3. WATERPROOF WIRE CONNECTOR.
4. SCH. 80 PVC ELL.
5. FILTER FABRIC 1/2" WIRE CLOTH GOPHER SCREEN, WRAP UP SIDES.
6. SOLID CMU BLOCK, FOUR PER BOX.
7. PVC MAINLINE.
8. SCH. 80 PVC NIPPLE, LENGTH AS REQUIRED.
9. SCH. 80 PVC TEE OR ELL.
10. WIRE - SEE PLAN.
11. SCH. 80 PVC NIPPLE - 3" LENGTH.
12. 6" DEPTH 1" WASHED GRAVEL, WITH 2" CLEARANCE TO BOTTOM OF VALVE ASSEMBLY.
13. LATERAL PIPING (SEE LEGEND).
14. 40 PVC MALE ADAPTER.
15. SPEARS SCH. 80 PVC UNION.
16. PRESSURE REGULATOR.
17. FILTER.
18. REMOTE CONTROL VALVE, SEE IRRIGATION LEGEND.
19. SPEARS TRUE UNION SCH. 80 PVC BALL VALVE WITH UNIONS.
20. WATERPROOF VALVE TAG.
21. 36" WIRE EXPANSION LOOPS.

GENERAL NOTES

A. CONTRACTOR SHALL INSTALL ONE AUTOMATIC VALVE ASSEMBLY PER VALVE BOX.
B. DECODER TYPE AND QUANTITY PER PLAN.

4 DRIP REMOTE CONTROL VALVE ASSEMBLY

N.T.S. P-CO-11-MOSC-40



KEYED NOTES

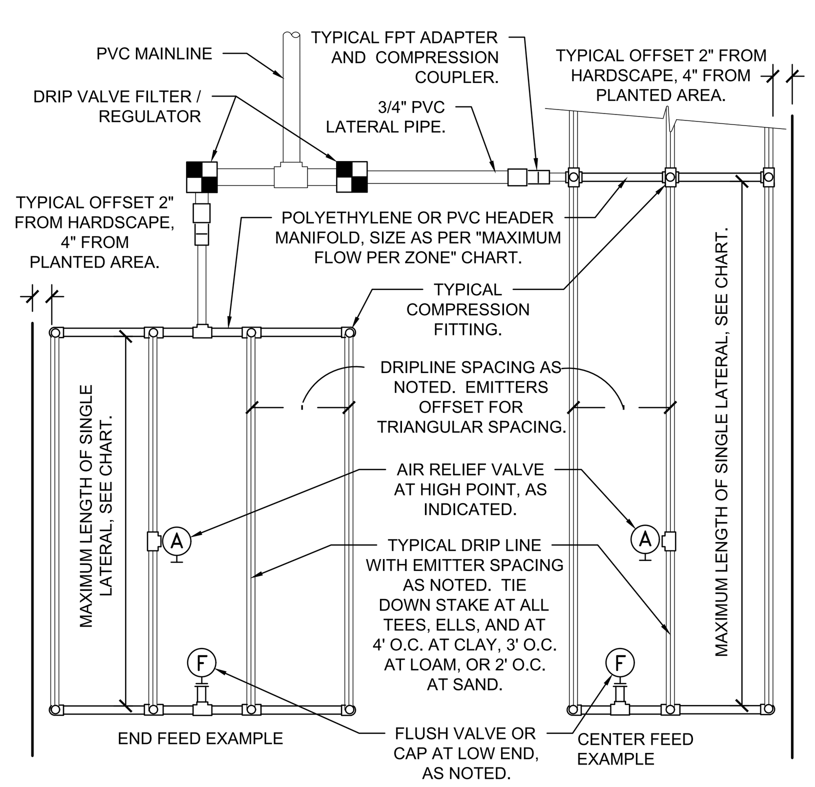
1. AUTOMATIC CONTROLLER - SEE LEGEND. SET TOP OF CONTROLLER 60" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED.
2. WALL.
3. 120 VOLT WIRE CONDUIT.
4. 24 VOLT WIRE CONDUIT.

GENERAL NOTES

A. COORDINATE CONTROLLER LOCATION WITH GENERAL CONTRACTOR AND ELECTRICIAN.
B. CONTROLLER SHALL BE MOUNTED SECURELY TO WALL USING APPROPRIATE FASTENERS FOR WALL TYPE.
C. ALL EXPOSED CONDUIT SHALL BE E.M.T. OR EQUAL AND APPROVED BY LOCAL CODES.
D. ALL CONDUIT CONNECTIONS SHALL BE MADE USING WATERTIGHT CONNECTORS.

3 WALL MOUNTED CONTROLLER

N.T.S. P-CO-11-MOSC-09



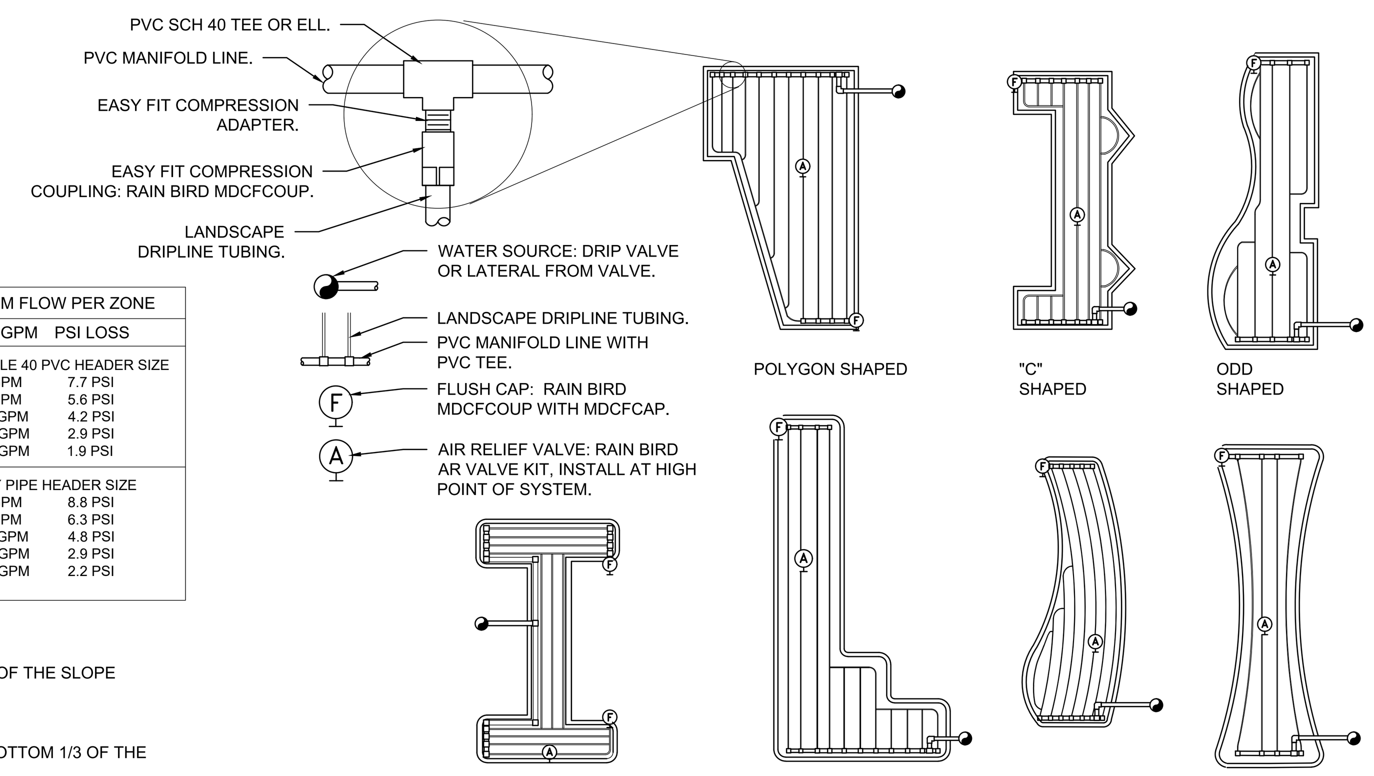
MAXIMUM LATERAL LENGTH (FEET)						
	EMITTER FLOW RATE GPH					
PSI	12" SPACING 0.6	0.9	18" SPACING 0.6	0.9	24" SPACING 0.6	0.9
10	125	96	175	135	218	171
20	249	191	350	171	442	340
30	307	236	434	333	550	422
40	350	268	495	380	627	171
50	125	96	175	135	218	171
60	125	96	175	135	218	171

GRID PRECIPITATION RATES (IN/HR)			
EMITTER SPACING	LATERAL SPACING	EMITTER FLOW RATE 0.6	0.9
12	12	0.96	1.44
18	18	0.69	1.03
24	24	0.28	0.41

LATERAL FLOW PER 100 FT (GPM)			
EMITTER FLOW	12" SPACING	18" SPACING	24" SPACING
0.6 GPH	1.0 GPM	0.67 GPM	0.50 GPM
0.9 GPH	1.5 GPM	1.0 GPM	0.75 GPM

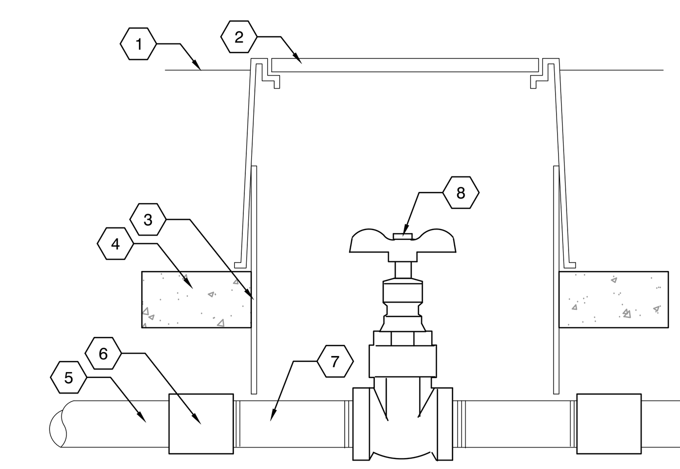
MAXIMUM FLOW PER ZONE		
	MAX GPM	PSI LOSS
SCHEDULE 40 PVC HEADER SIZE		
1/2"	4.7 GPM	7.7 PSI
3/4"	8.3 GPM	5.6 PSI
1"	13.5 GPM	4.2 PSI
1-1/2"	33.9 GPM	2.9 PSI
2"	52.4 GPM	1.9 PSI
POLY PIPE HEADER SIZE		
1/2"	4.7 GPM	8.8 PSI
3/4"	8.3 GPM	6.3 PSI
1"	13.5 GPM	4.8 PSI
1-1/2"	31.8 GPM	2.9 PSI
2"	52.4 GPM	2.2 PSI

SLOPED CONDITON NOTES:
1. DRIPLINE LATERALS SHOULD FOLLOW THE CONTOURS OF THE SLOPE WHENEVER POSSIBLE.
2. INSTALL AIR RELIEF VALVE AT HIGHEST POINT.
3. NORMAL SPACING WITHIN THE TOP 2/3 OF SLOPE.
4. INSTALL DRIPLINE AT 25% GREATER SPACING AT THE BOTTOM 1/3 OF THE SLOPE.
5. WHEN ELEVATION CHANGE IS 10 FT OR MORE, ZONE THE BOTTOM 1/3 ON A SEPARATE VALVE.



5 TYPICAL DRIPLINE LAYOUT

N.T.S. P-CO-11-MOSC-33

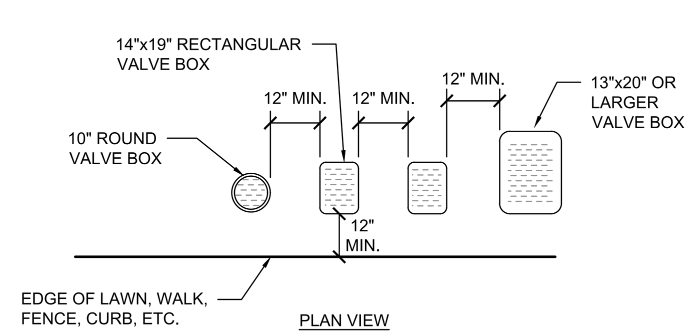


KEYED NOTES

1. FINISH GRADE, SET VALVE BOX 1" ABOVE AT LAWN AREAS.
2. 1'-0" DIAMETER ROUND VALVE BOX W/ BOLT DOWN FLUSH COVER.
3. 1'-0" DIAMETER PVC PIPE EXTENSION, LENGTH AS REQUIRED.
4. SOLID CMU BLOCK, TWO PER BOX.
5. PVC MAINLINE.
6. SLIP x THREADED COUPLING.
7. SCH. 80 PVC NIPPLE - LENGTH AS REQUIRED.
8. BRASS ISOLATION VALVE. SIZE AND DEPTH TO MATCH MAINLINE, SEE PLAN.

2 BRONZE ISOLATION VALVE

N.T.S. P-CO-11-MOSC-38

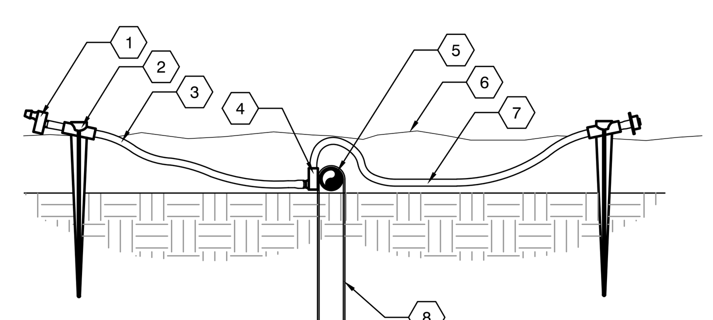


GENERAL NOTES

A. CENTER BOX OVER VALVE TO FACILITATE SERVICING VALVE.
B. SET BOXES 1" ABOVE FINISH GRADE.
C. SET VALVE BOX ASSEMBLY IN GROUND COVER/SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN AREA ONLY IF GROUND COVER/SHRUB AREA DOES NOT EXIST ADJACENT TO LAWN.
D. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE.
E. AVOID HEAVILY COMPACTING SOIL AROUND VALVE BOX EDGES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
F. VALVE BOXES SHALL HAVE BOLT DOWN LIDS WITH BOLTS INSTALLED.
G. VALVE BOXES SHALL BE BY CARSON INDUSTRIES OR APPROVED EQUAL.

8 IRRIGATION VALVE BOX LAYOUT

N.T.S. P-CO-11-MOSC-16

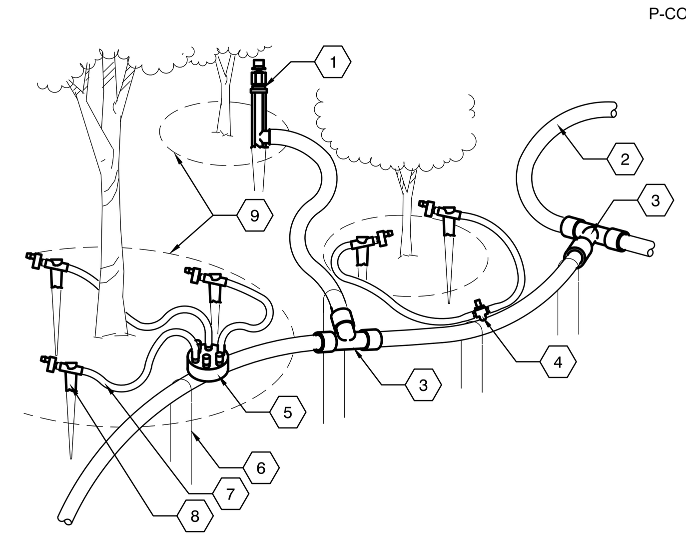


KEYED NOTES

1. DRIP EMITTER.
2. 1/4" TUBING STAKE.
3. 1/4" DISTRIBUTION TUBING, 48" MAXIMUM LENGTH.
4. INSERT FITTING BARB CONNECTION OR INSERT BARBED TEE.
5. 1/2" OR 3/4" POLY DRIP TUBING.
6. TOP OF MULCH.
7. ADDITIONAL EMITTER AND STAKE AT INSERT BARBED TEE IN DRIP TUBING.
8. TIE-DOWN STAKE AT INSERT.

7 DRIP EMITTER AT 1/4" TUBING

N.T.S. P-CO-11-MOSC-29



KEYED NOTES

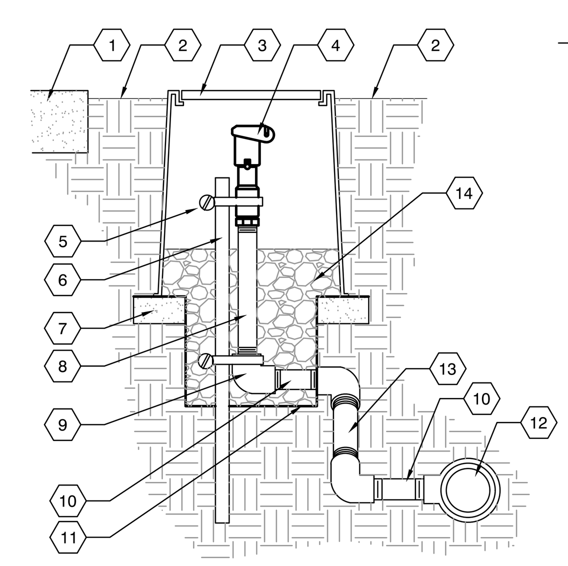
1. EMITTER OR BUBBLER ON 1/2" DRIP STAKE.
2. TYPICAL 1/2" DRIP TUBING.
3. TYPICAL COMPRESSION FITTING.
4. TRANSFER BARB TEE FOR DOUBLE EMITTER.
5. MULTI-OUTLET EMITTER OR TRANSFER.
6. TYPICAL 1/2" DRIP TUBING STAKE.
7. TYPICAL 1/4" DISTRIBUTION TUBING, 48" MAX. LENGTH.
8. TYPICAL 1/4" TUBE STAKE WITH EMITTER OR CAP.
9. PLANT DRIPLINE EDGES.

GENERAL NOTES

A. PLACE EMITTERS 3/4 DISTANCE BETWEEN THE TRUNK AND OUTTER DRIPLINE.
B. EVENLY SPACE EMITTERS AROUND PLANT.
C. STAKE THE DRIP TUBING AT EACH TEE, ELL, COUPLER, AT EACH EMITTER OR TRANSFER, AND AT 6'-0" O.C. MAX.

6 TYPICAL DRIP TUBING

N.T.S. P-CO-11-MOSC-28



KEYED NOTES

1. ADJACENT HARDSCAPE.
2. FINISH GRADE.
3. 10" ROUND VALVE BOX WITH BOLT DOWN DROP IN COVER AND EXTENSIONS AS REQUIRED. SET TOP OF VALVE BOX 1" ABOVE FINISH GRADE . HOT BRAND "QC" ON LID WITH 2" HIGH CHARACTERS.
4. QUICK COUPLING VALVE - SEE LEGEND.
5. STAINLESS STEEL PIPE CLAMP, TWO MINIMUM.
6. 1/2"x36" GALVANIZED STEEL PIPE.
7. SOLID CMU BLOCK, 2 TOTAL PER BOX.
8. GALVANIZED NIPPLE, LENGTH AS REQUIRED.
9. SCH. 80 PVC ELL, TYPICAL OF 3.
10. SCH. 80 PVC NIPPLE, 3" LENGTH.
11. FILTER FABRIC.
12. MAINLINE FITTING.
13. SCH. 80 PVC NIPPLE, 12" LENGTH.
14. 1" DIAMETER WASHED ROCK, 6" DEPTH.

GENERAL NOTES

A. VALVE BOX TO BE LOCATED WITHIN 12" OF ADJACENT HARDSCAPE WHERE POSSIBLE.
B. PROVIDE 4" MINIMUM CLEARANCE BETWEEN VALVE BOX LID AND QUICK COUPLER.
C. PROVIDE ONE VALVE KEY AND ONE LOCKING COVER KEY TO THE OWNER.

1 QUICK COUPLER ASSEMBLY

N.T.S. P-CO-11-MOSC-22

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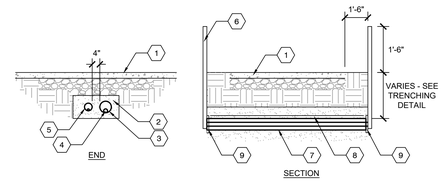
MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB N0.: 24-069
DATE: 10/30/2024
DRAWN BY: TECL
CHECKED BY: JW

PHASE: PERMIT SET

LANDSCAPE IRRIGATION DETAILS

SHEET NO.
LI5.00



KEYED NOTES

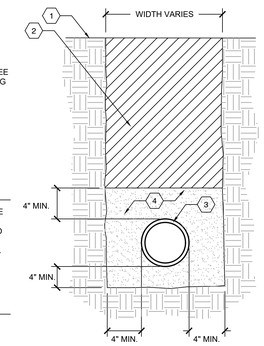
1. PAVING MATERIAL.
2. SURROUND PIPE WITH 4" MIN. BEDDING COURSE MATERIAL, COMPACT TO 95% DENSITY.
3. SLEEVE.
4. IRRIGATION PIPING.
5. PROVIDE SEPARATE SLEEVE FOR ELECTRICAL WIRES.
6. PLACE 2x4 POST AT SLEEVE ENDS. LOCATE ALL SLEEVING LOCATIONS.
7. EXTEND SLEEVES MIN. DISTANCE BEYOND PAVING SURFACE.
8. NO. 12 WIRE LOCATED ON TOP OF SLEEVE. TAPE TO SLEEVE 5' O.C. ON ALL SLEEVES.
9. CAP SLEEVE ENDS.

GENERAL NOTES

A. ALL IRRIGATION SLEEVES TO BE PVC PIPE AS SPECIFIED.
B. ALL JOINTS TO BE SOLVENT WELDED AND WATER TIGHT
C. MECHANICALLY TAMP TO 95% MAX. DENSITY AS SPECIFIED.

4 SLEEVE EXTENSION & MARKINGS

N.T.S. P-CO-11-MOSC-19

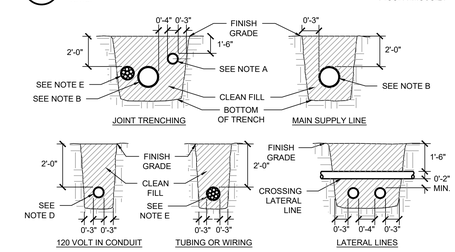


KEYED NOTES

1. FINISH GRADE.
2. NATIVE SOIL BACKFILL, COMPACTED TO 95%.
3. PVC SLEEVE, SIZE AS SHOWN ON PLAN OR 2X PIPE CONTAINED WITHIN.
4. BACKFILL WITH COURSE SAND, WATER JET & MECHANICALLY COMPACT TO 90% OPTIMUM DENSITY. ALLOW 48 HOURS TO SETTLE PRIOR TO INSTALLING NATIVE SOIL BACKFILL ABOVE.

3 SLEEVE AT ROAD

N.T.S. P-CO-11-MOSC-21

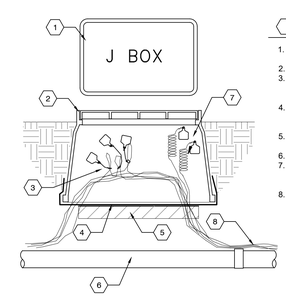


GENERAL NOTES

A. ALL PVC LATERAL LINES SHALL BE INSTALLED IN THE TRENCH IN A SERPENTINE MANNER AS PER MANUFACTURER'S SPECIFICATIONS.
B. ALL MAIN SUPPLY LINES TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS.
C. TAPE AND BUNDLE TUBING OR WIRING AT 10 FT. INTERVALS. WIRING SHALL BE LAYED OUT LOOSELY IN THE TRENCH.
D. ALL 120 VOLT WIRING IN CONDUIT TO BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.
E. CONDUIT, TUBING, WIRING AND/OR MAIN SUPPLY LINE SHALL BE I.D. WITH A MINIMUM 4" CAUTION TAPE 10-12" ABOVE CONDUIT OR LINE.
F. ALL MAIN SUPPLY LINES AND LATERAL LINES SHALL BE PLACED IN SLEEVES UNDER PAVED SURFACES.
G. ALL TRENCHING LINES SHALL BE BACKFILLED WITH MATERIAL FREE AND CLEAN OF DEBRIS OR ROCKS LARGER THAN 3/4" IN SIZE. COMPACT SOIL TO 75-80% R.C.
H. NO MORE THAN TWO (2) LINES PER TRENCH ON ALL 2" DIAMETER LINES OR GREATER.
I. PROVIDE LOCATOR WIRE CONTINUOUS ALONG TOP OF MAINLINE.

2 TRENCHING

N.T.S. P-CO-11-MOSC-17



KEYED NOTES

1. VALVE BOX LID, HOT BRAND "J BOX" ON LID WITH 2" HIGH LETTERS.
2. 10X15 STANDARD BOX.
3. LOOP, BUNDLE, AND LABEL SPARE WIRES THAT ARE TO CONTINUE, AS OCCURS.
4. 1/2" WIRE CLOTH GOPHER PROTECTION SCREEN, WRAP 6" UP SIDES.
5. TWO 6X2X16 CONCRETE BLOCK CPAS, ONE ON EACH SIDE OF BOX.
6. IRRIGATION MAINLINE.
7. SPARE WIRES THAT ARE TO TERMINATE AT THIS BOX: COIL 30" LENGTH AND I.D. TAG.
8. WIRES EXTEND TO CONTROLLER.

GENERAL NOTES

A. SET TOP OF VALVE BOX 1" ABOVE ADJACENT FINISH GRADE.

1 WIRE BUNDLE JUNCTION BOX

N.T.S. P-CO-11-MOSC-13

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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW COMMENTS

JOB NO.:	**24-069**
DATE:	**10/30/2024**
DRAWN BY:	**TECL**
CHECKED BY:	**JW**

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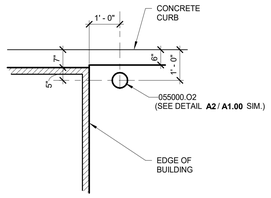
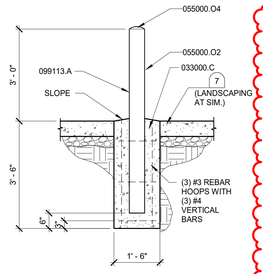
LANDSCAPE IRRIGATION DETAILS

SHEET NO.

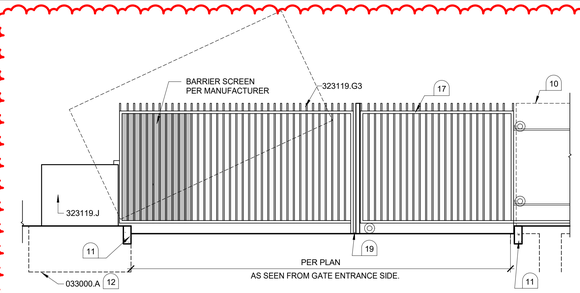
LI5.01



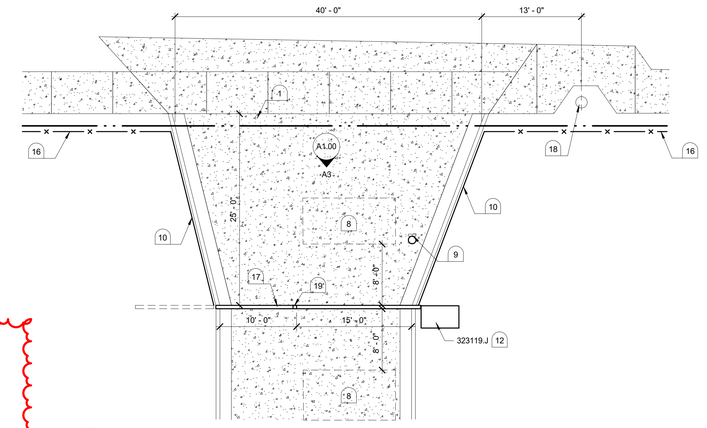
A1 BOLLARD AT BLDG.
1/2" = 1'-0"
BOLLARD AT BLDG.



A2 PIPE BOLLARD
1/2" = 1'-0"
PIPE BOLLARD



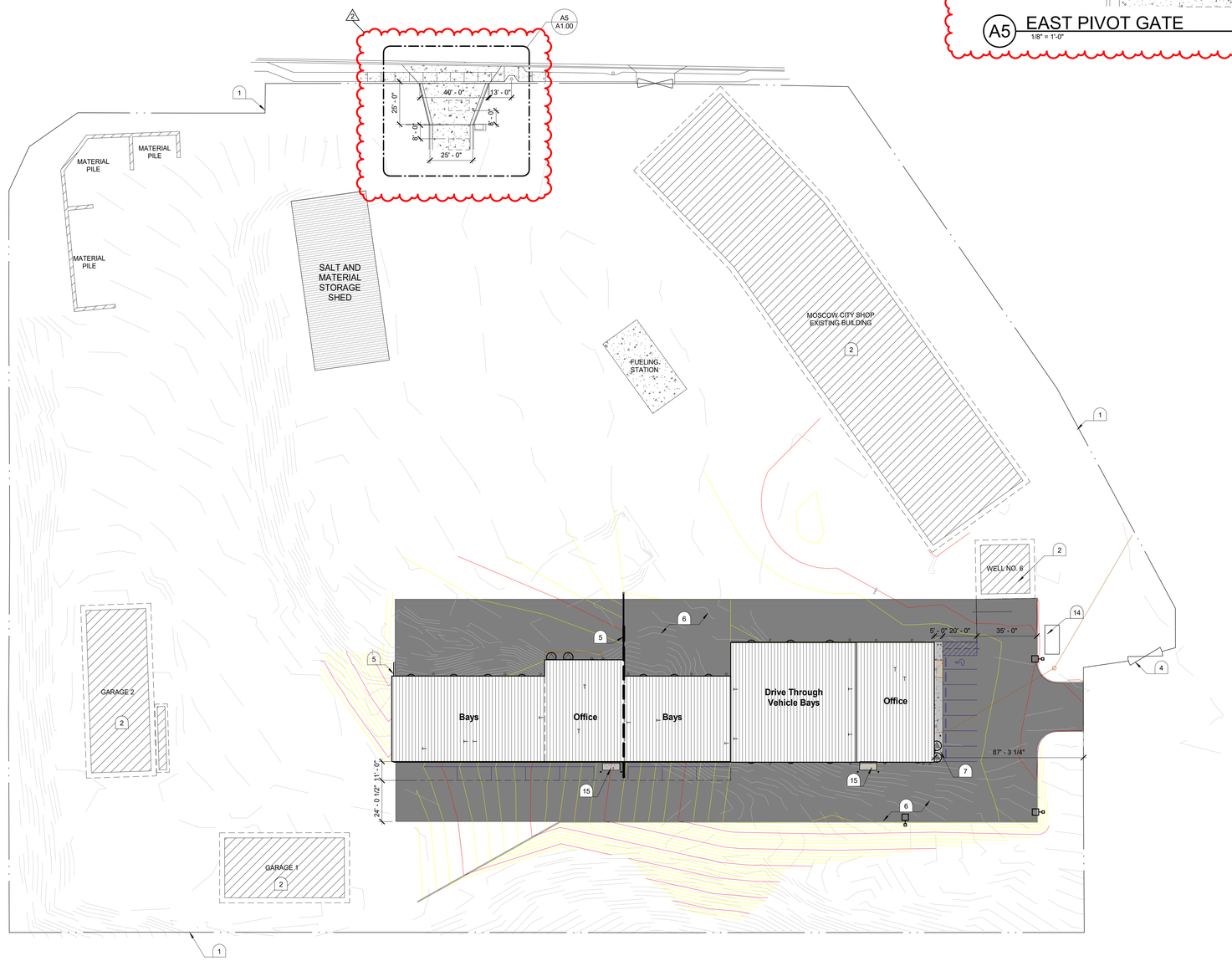
A3 PIVOT GATE
1/4" = 1'-0"



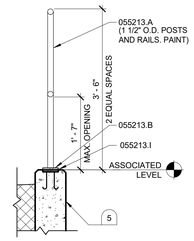
A5 EAST PIVOT GATE
1/8" = 1'-0"

CONDOC

033000.A	CONCRETE, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
055000.O2	6" DIAMETER METAL BOLLARD.
055000.O4	PREMANUFACTURED METAL BOLLARD CONCRETE CAP.
055213.A	METAL PIPE RAILING.
055213.B	METAL PLATE.
055213.I	WELDED CONNECTION.
099113.A	EXTERIOR PAINT.
323119.G3	VERTICAL PIVOT GATE.
323119.J	GATE OPERATOR.



E1 ARCHITECTURAL SITE PLAN
1" = 30'-0"



B6 GUARDRAIL
3/4" = 1'-0"

KEYNOTES

1. PROPERTY LINE.
2. EXISTING BUILDING TO REMAIN.
3. GATE.
4. EXISTING GATE.
5. RETAINING WALL, SEE CIVIL DRAWINGS SHEET **C2**.
6. ASPHALT PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
7. CONCRETE PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
8. AUTO LOOP.
9. ENTRY GATE CARD READER PEDESTAL, SEE ELECTRICAL.
10. NEW FENCE. MATCH EXISTING. SEE CIVIL DRAWINGS FOR LOCATION.
11. CONCRETE CURB, SEE CIVIL DRAWINGS SHEET **2/C3**.
12. CONCRETE FOUNDATION FOR GATE CONTROLLER AS REQUIRED BY MANUFACTURER.
13. PAD MOUNTED GATE YOKE BY GATE MANUFACTURER. BREAK ISLAND FOR GATES AS REQUIRED.
14. GENERATOR, SEE ELECTRICAL.
15. MECHANICAL PAD AND EQUIPMENT, SEE MECHANICAL.
16. EXISTING FENCE.
17. MANUAL ROLLING GATE. GATE TO MATCH PERIMETER METAL FENCE DESIGN.
18. EXISTING ELECTRICAL POLE TO REMAIN.
19. REMOVEABLE CENTER POST.

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201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
8727 W. ARDENE, SUITE 102
BOISE, IDAHO 83709
(208) 345-7127

LANDSCAPE ARCHITECT
PLACE LANDSCAPE
1325 W. 1ST AVE., SUITE 204
SPOKANE, WA 99201
(509) 293-6163

MRK	DATE	DESCRIPTION
1	05/27/24	PLAN REVIEW COMMENTS
2	10/30/24	ADDENDUM #2

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

ARCHITECTURAL SITE PLAN

SHEET NO.
A1.00

10/30/2024 10:13:49 AM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V22_bchurchHDWZ7.rvt

CONDOC

055000.O2 6.: DIAMETER METAL BOLLARD.

KEYNOTES

1. MECHANICAL EQUIPMENT. SEE MECHANICAL HVAC PLANS.
2. PLUMBING EQUIPMENT. SEE PLUMBING PLANS.
3. EDGE OF AREA OF MEZZANINE ABOVE.
4. JANITORS SINK AND MOP SHELF. SEE DETAIL **E5/A8.00**.
5. INSTALL WALL TO UNDERSIDE OF DECK AT MEZZANINE.

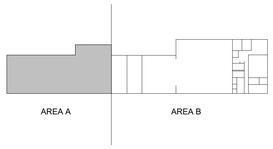
LEGEND

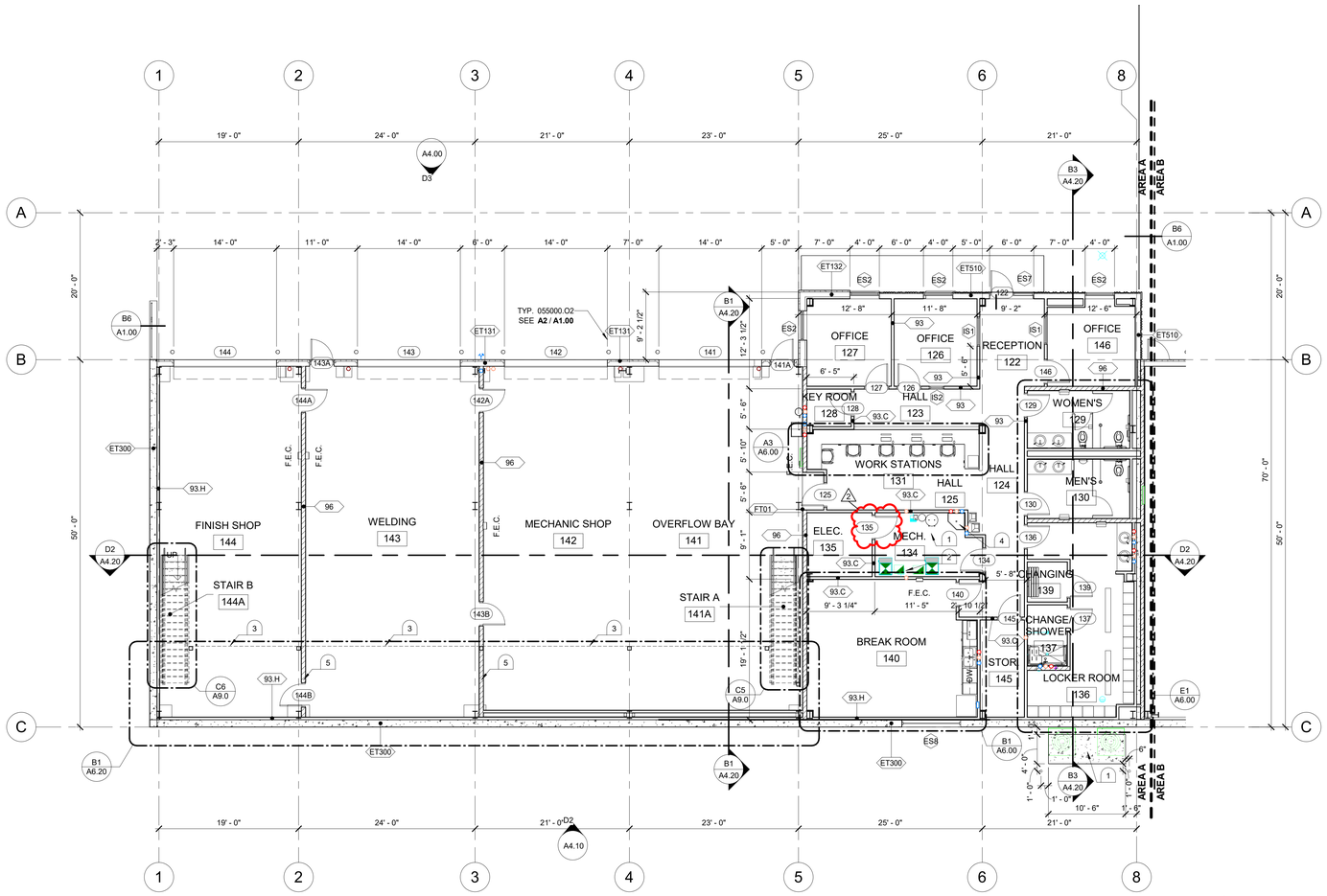
- NEW 6" **STEEL STUD** WALLS
- NEW 3 5/8" **STEEL STUD** WALLS
- ET300 - 12" CONCRETE WALL
- 1i — WALL ASSEMBLY TYPE - SEE ASSEMBLY TYPES SHEET **A3.20**
- 1t — WINDOW FRAME TYPE - SEE FRAME TYPE SHEET **A3.10**
- 101 — DOOR TAG - SEE DOOR SCHEDULE SHEET **A3.00**

GENERAL NOTES

1. EXTERIOR DIMENSIONS ARE TO ROUGH OPENING, CENTERLINE OF COLUMN OR FACE OF FOUNDATION UNLESS OTHERWISE NOTED. SEE WALL SECTION FOR RELATIONSHIP OF FRAMING/FINISHED TO FACE OF FOUNDATION.
2. INTERIOR DIMENSIONS ARE TO CENTERLINE OF COLUMN OR GRIDLINE, OR FACE OF STUD AT FRAMED WALLS UNLESS OTHERWISE NOTED.
3. ALL INTERIOR WALLS SHALL EXTEND FROM FINSIH FLOOR TO BOTTOM OF STRUCTURE UNLESS OTHERWISE NOTED.
4. SEE FINISH PLANS FOR ROOM FINISH SCHEDULES AND FLOOR FINISH INFORMATION.
5. SEE CIVIL DRAWINGS SHEET **C2** FOR RELATIONSHIP OF SITE WORK TO BUILDING.
6. SEE WALL SECTIONS SHEET **A5.00 & A5.10** FOR EXTERIOR WALL REQUIREMENTS.
7. SEE EQUIPMENT PLANS SHEET **A2.50** FOR LOCATION OF SPECIALITY EQUIPMENT.

KEY PLAN





E2 FLOOR PLAN - AREA A
1/8" = 1'-0"

FLOOR PLAN - AREA A

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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LICENSED ARCHITECT AR-985148
07-29-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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PLACE LANDSCAPE
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SPOKANE, WA 99201
(509) 293-6163

MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **RB/BC/SB**
CHECKED BY: **MG**

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FIRST FLOOR - AREA A

SHEET NO.
A2.11

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CONDOC

055000.O2	6□ DIAMETER METAL BOLLARD.
104400.A	RAPID ENTRY KEY LOCK BOX.

KEYNOTES

1. MECHANICAL EQUIPMENT. SEE MECHANICAL HVAC PLANS.
2. PLUMBING EQUIPMENT. SEE PLUMBING PLANS.
3. EDGE OF AREA OF MEZZANINE ABOVE.
4. JANITORS SINK AND MOP SHELF. SEE PLUMBING **E5/A8.00**.

LEGEND

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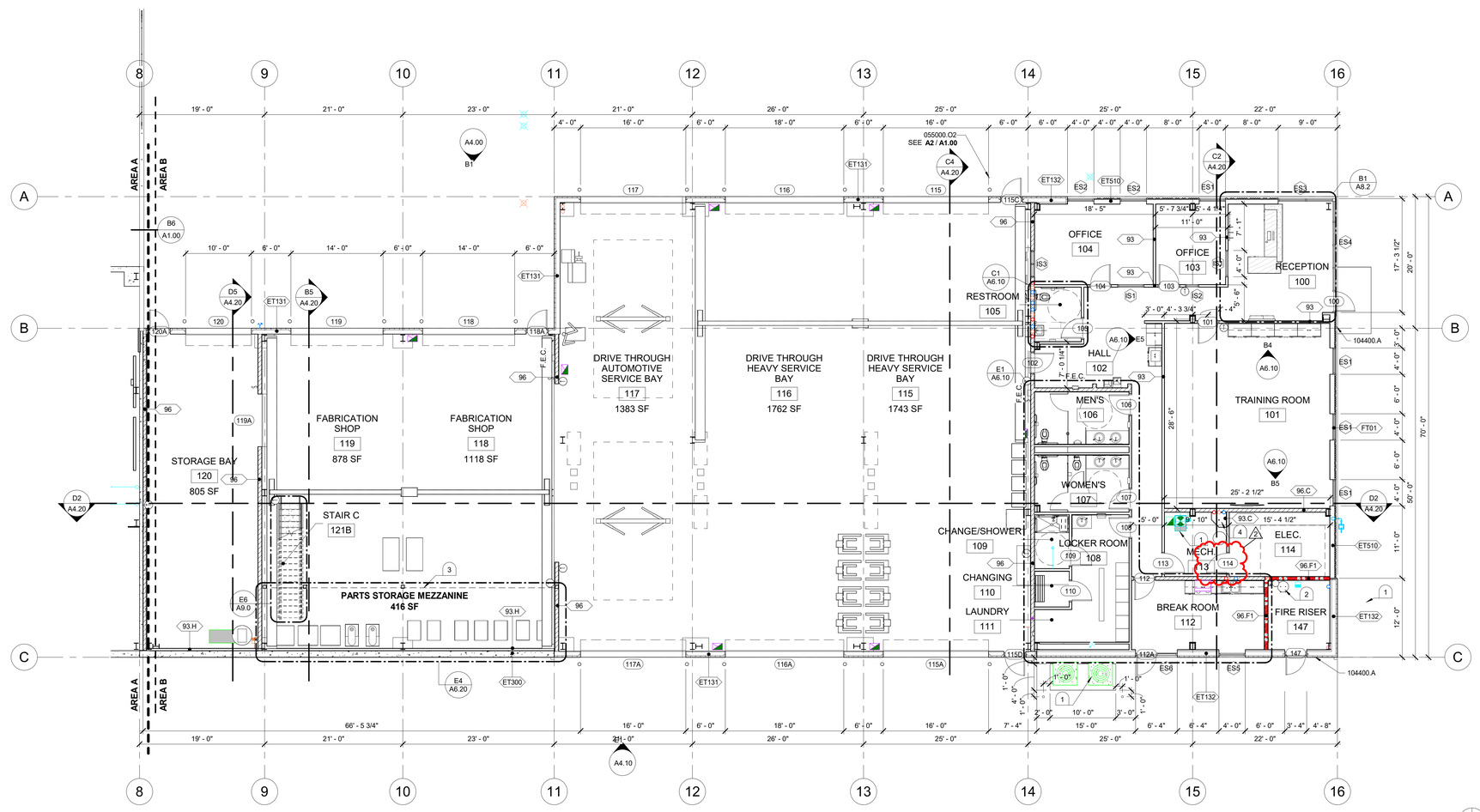

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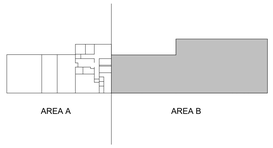
KEY PLAN



E1 FLOOR PLAN - AREA B
1/8" = 1'-0"

FLOOR PLAN - AREA B

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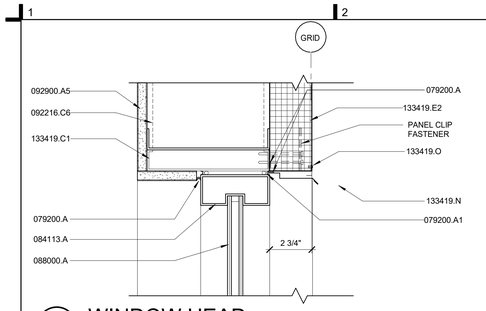
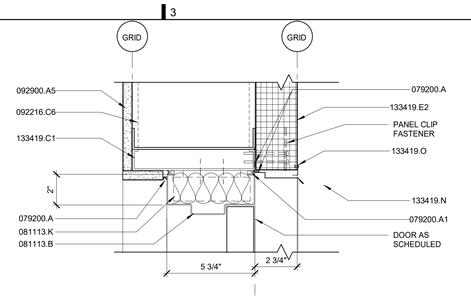
FIRST FLOOR - AREA B

SHEET NO.
A2.12

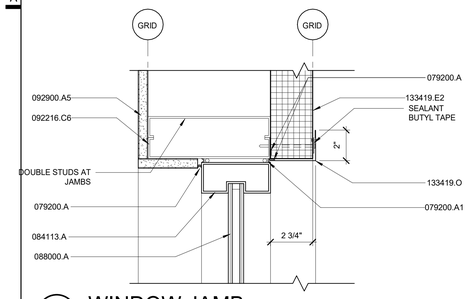
10/30/2024 10:13:53 AM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V23_bchurchHDWE7.rvt



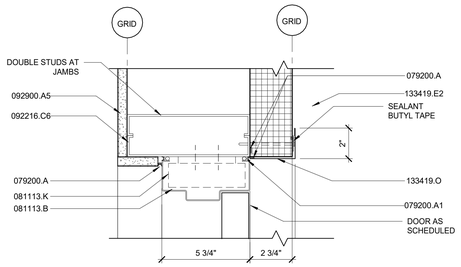
A1 WINDOW HEAD
3" = 1'-0"
EXT04



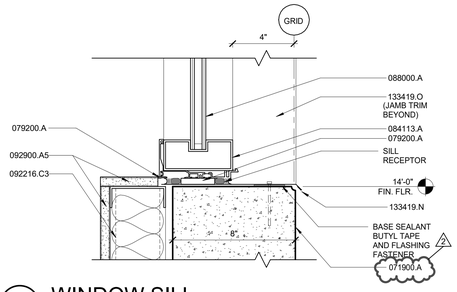
A2 DOOR HEAD
3" = 1'-0"
EXT21



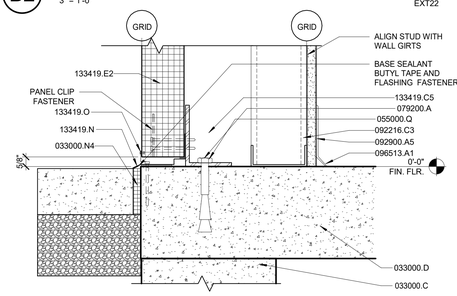
B1 WINDOW JAMB
3" = 1'-0"
EXT05



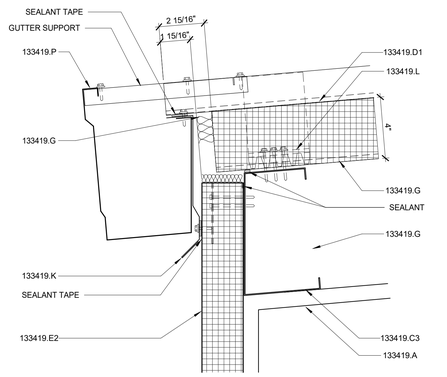
B2 DOOR JAMB
3" = 1'-0"
EXT22



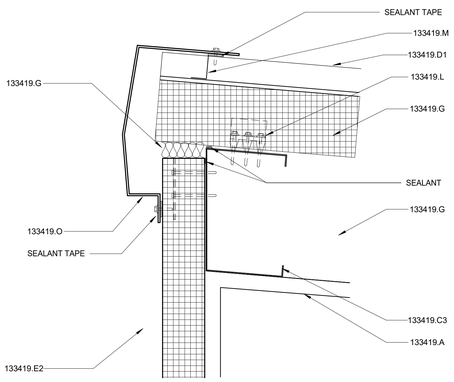
C1 WINDOW SILL
3" = 1'-0"
EXT03



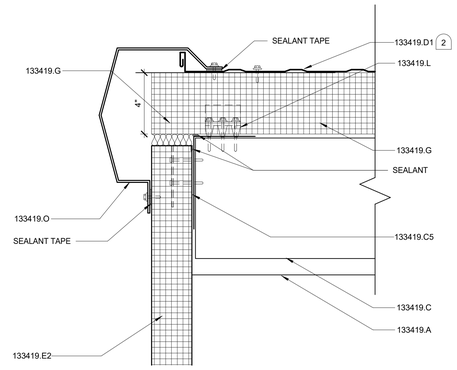
C2 WALL PANEL SILL
3" = 1'-0"
EXT06



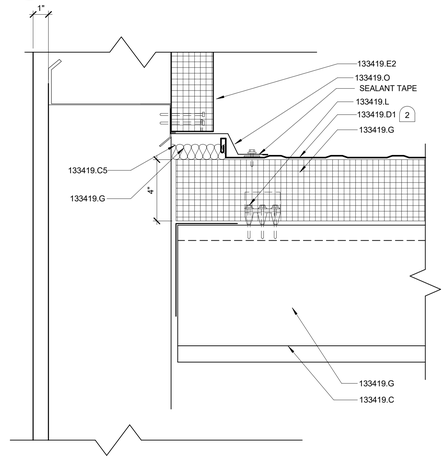
B4 EAVE GUTTER
3" = 1'-0"
EXT09



B5 HIGH EAVE CLOSURE
3" = 1'-0"
EXT17



C4 RAKE TRIM
3" = 1'-0"
EXT19



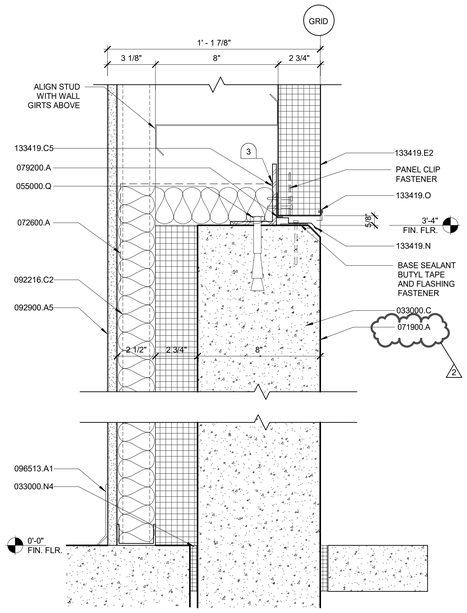
C5 RAKE WALL TRIM
3" = 1'-0"
EXT20

CONDOC

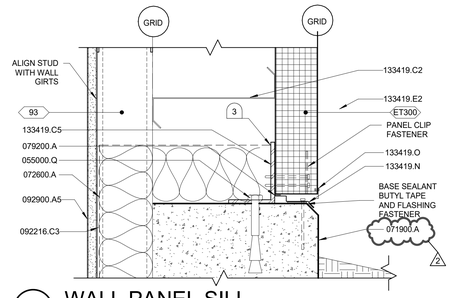
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
033000.D	CONCRETE SLAB-ON-GRADE, SEE STRUCTURAL.
033000.H	CONCRETE WALL, SEE STRUCTURAL.
033000.M1	VAPOR RETARDER.
033000.N4	JOINT FILLER.
055000.Q	ANCHOR BOLT.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
071416.A	COLD FLUID-APPLIED WATERPROOFING.
071900.A	WATER REPELLENT.
072100.A1	EXTRUDED POLYSTYRENE BOARD INSULATION.
072600.A	POLYETHYLENE VAPOR RETARDER.
076200.A	SHEET METAL FLASHING.
079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
081113.B	HOLLOW-METAL FRAME.
081113.K	FRAME ANCHOR.
084113.A	ALUMINUM STOREFRONT FRAMING.
088000.A	GLASS, SEE LEGEND FOR TYPE.
092216.C2	2-1/2" X 33-MIL STEEL STUDS AT 24" O.C.
092216.C3	3-5/8" X 33-MIL STEEL STUDS AT 24" O.C.
092216.C6	6" X 33-MIL STUDS AT 24" O.C.
092900.A5	5/8" TYPE X GYPSUM BOARD.
096513.A1	4" RESILIENT BASE.
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C	PURLIN.
133419.C1	SUB PURLINS / JOIST.
133419.C2	WALL GIRTS.
133419.C3	EAVE STRUT.
133419.C5	WALL / BASE ANGLE.
133419.D1	METAL ROOF PANEL - STANDING SEAM
133419.E2	INSULATED METAL WALL PANEL.
133419.G	METAL BUILDING INSULATION.
133419.K	EAVE CLOSURE.
133419.L	METAL ROOF CLIPS.
133419.M	CLOSURE STRIP.
133419.N	METAL FLASHING.
133419.O	METAL TRIM.
133419.P	GUTTER.

KEYNOTES

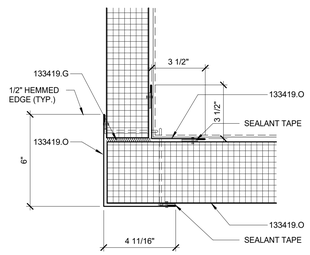
1. EXTEND UNDER SLAB VAPOR BARRIER OVER RIGID INSULATION AND UP TO THE TOP OF THE SLAB. SEAL VAPOR BARRIER AT FLOOR SLAB OR ANGLE.
2. SEE DETAIL **B2/A7.1** FOR STANDING SEAM PANEL JOINT.
3. SEAL VAPOR BARRIER AT INSIDE FACE OF METAL PANEL.



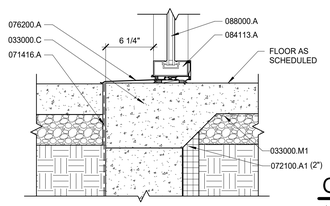
E1 WALL PANEL SILL AT CONC. FACE
3" = 1'-0"
EXT02



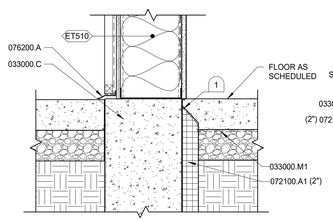
D3 WALL PANEL SILL
3" = 1'-0"
EXT11



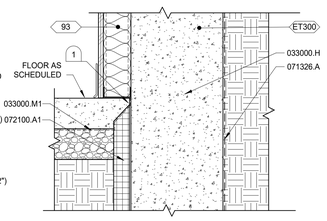
D5 OUTSIDE CORNER TRIM
3" = 1'-0"



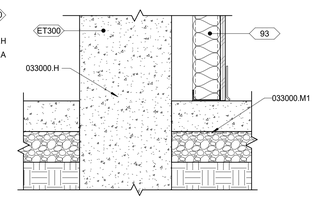
D6 WALL BASE
1 1/2" = 1'-0"
FD04



E3 WALL BASE
1 1/2" = 1'-0"
FD05



E4 WALL BASE
1 1/2" = 1'-0"
FD03



E5 WALL BASE
1 1/2" = 1'-0"
FD02

GENERAL NOTES

1. SEE SHEET **A3.20** FOR ASSEMBLY TYPES.
2. ALL SURFACES OF EXPOSED STRUCTURAL STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINSIHED OR PAINTED U.O.N.
3. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN STOREFRONT FRAMING SHALL BE PREFINISHED TO MATCH STOREFRONT FRAMING. **(84113)**
4. PERIMETER OF ALL ALUMINUM FRAMES SHALL BE LOCATED IN ROUGH OPENINGS AS REQUIRED TO INSTALL MINIMUM 1/4" BACKER ROD AND SEALANT.
5. SEE SHEET **A3.10** FOR EXTERIOR FRAME TYPE ELEVATIONS.
6. ALL EXTERIOR WALL MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURERS RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.
7. SEE STRUCTURAL DRAWINGS SHEETS **S1.01A & S1.01B** FOR FOOTINGS, FOOTING DIMENSIONS, FOUNDATION DETAILS.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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INTERIOR DESIGN
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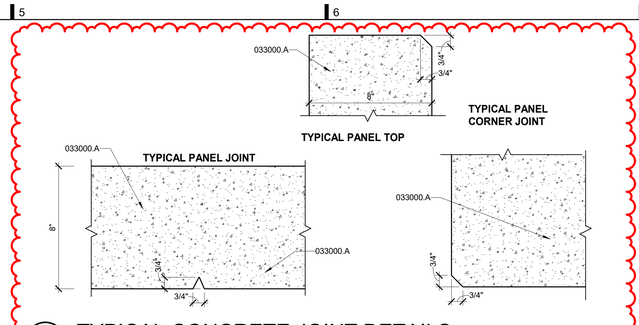
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

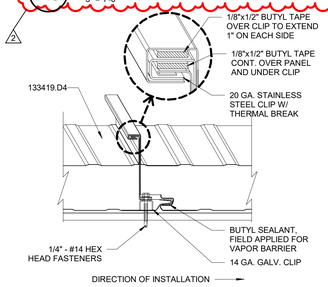
EXTERIOR DETAILS

SHEET NO.
A7.0

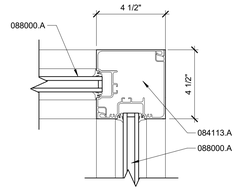
10/30/2024 4:26:30 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop_Central_V23_bchurchHDWZ7.rvt



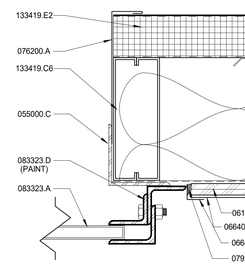
A5 TYPICAL CONCRETE JOINT DETAILS
3" = 1'-0"



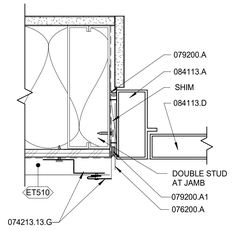
B5 PANEL JOINT
3" = 1'-0" RD5



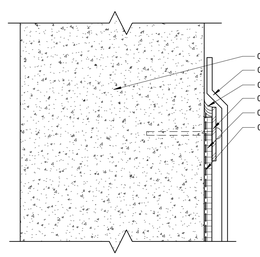
B6 JAMB DETAIL
3" = 1'-0" EDW1



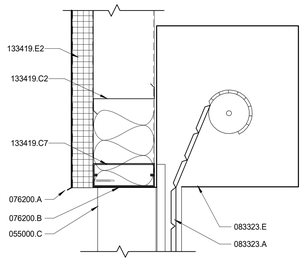
C5 JAMB DETAIL
3" = 1'-0" EDW15



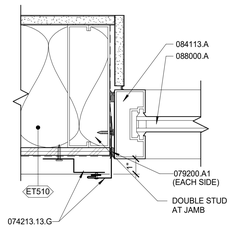
C6 JAMB DETAIL
3" = 1'-0" EDW312



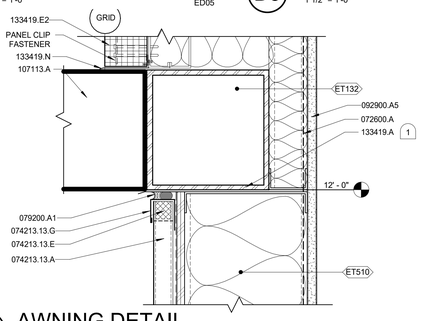
D4 TERMINATION DETAIL
3" = 1'-0" ED05



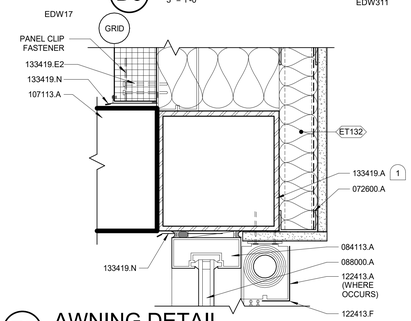
D5 HEAD DETAIL
1 1/2" = 1'-0" EDW17



D6 JAMB DETAIL
3" = 1'-0" EDW311



E4 AWNING DETAIL
3" = 1'-0" EXT24



E5 AWNING DETAIL
3" = 1'-0" EXT23

CONDOC

033000.A	CONCRETE, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
055000.C	METAL ANGLE.
061600.A1	PLYWOOD WALL SHEATHING.
066400.A	PLASTIC SHEET PANELING.
066400.B	TRIM.
071326.A	SELF-ADHERING SHEET WATERPROOFING.
071326.C	METAL TERMINATION BAR.
071326.D	PROTECTION COURSE.
072600.A	POLYETHYLENE VAPOR RETARDER.
074213.13.A	LAP-SEAM METAL WALL PANEL.
074213.13.E	CLOSURE STRIP.
074213.13.G	METAL TRIM.
076200.A	SHEET METAL FLASHING.
076200.B	SHEET METAL TRIM.
079200.A	JOINT SEALANT.
079200.A1	SEALANT OVER BACKER ROD.
083323.A	OVERHEAD COILING DOOR.
083323.D	CURTAIN JAMB GUIDES.
083323.E	HOOD.
084113.A	ALUMINUM STOREFRONT FRAMING.
084113.D	ENTRANCE DOOR.
088000.A	GLASS, SEE LEGEND FOR TYPE.
092900.A5	5/8" TYPE X GYPSUM BOARD.
107113.A	EXTERIOR SUN CONTROL DEVICE
122413.A	WINDOW ROLLER SHADE.
122413.F	FRONT FASCIA.
133419.A	METAL BUILDING PRIMARY-FRAME.
133419.C2	WALL GIRTS.
133419.C6	JAMB / SILL FRAMING.
133419.C7	HEADER FRAMING.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.E2	INSULATED METAL WALL PANEL.
133419.N	METAL FLASHING.

KEYNOTES

1. HSS EXTERIOR SUN CONTROL DEVICE SUPPORT WELDED TO PRIMARY STRUCTRUAL STEEL COLUMNS.

GENERAL NOTES

1. SEE SHEET **A3.20** FOR ASSEMBLY TYPES.
2. ALL SURFACES OF EXPOSED STRUCTURAL STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINSIHED OR PAINTED U.O.N.
3. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN STOREFRONT FRAMING SHALL BE PREFINISHED TO MATCH STOREFRONT FRAMING. **(84113)**
4. PERIMETER OF ALL ALUMINUM FRAMES SHALL BE LOCATED IN ROUGH OPENINGS AS REQUIRED TO INSTALL MINIMUM 1/4" BACKER ROD AND SEALANT.
5. SEE SHEET **A3.10** FOR EXTERIOR FRAME TYPE ELEVATIONS.
6. ALL EXTERIOR WALL MOUNTED ITEMS SHALL BE TRIMMED AND SEALED PER MANUFACTURERS RECOMMENDATIONS AND WITH DETAILS APPROVED BY ARCHITECT.
7. SEE STRUCTURAL DRAWINGS SHEETS **S1.01A & S1.01B** FOR FOOTINGS, FOOTING DIMENSIONS, FOUNDATION DETAILS.
8. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.

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07-29-24
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STATE OF IDAHO

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CITY OF MOSCOW

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PLACE LANDSCAPE
1325 W. 1ST AVE., SUITE 204
SPOKANE, WA 99201
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MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

EXTERIOR DETAILS

SHEET NO.
A7.1

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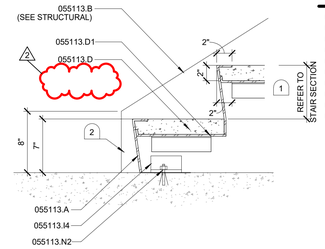
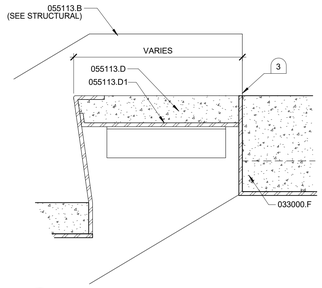


A6 STAIR DETAIL TYP.

1 1/2" = 1'-0"

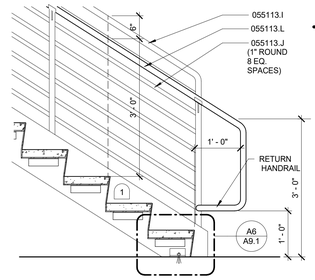
ST07



B6 STAIR DETAIL TYP.

3" = 1'-0"

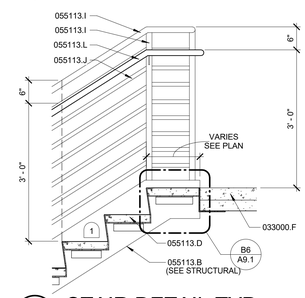
ST17



C6 STAIR DETAIL TYP.

3/4" = 1'-0"

ST10



D6 STAIR DETAIL TYP.

3/4" = 1'-0"

ST11

CONDOC

033000.F	CONCRETE SLAB ON METAL DECK, SEE STRUCTURAL.
055113.A	STEEL-FRAMED STAIR.
055113.B	STEEL STRINGER.
055113.D	CONCRETE FILLED TREAD.
055113.D1	METAL STAIR TREAD PAN.
055113.I	STEEL STAIR RAILING.
055113.I4	STEEL ANGLE.
055113.J	INTERMEDIATE RAILING.
055113.L	HANDRAIL.
055113.N2	POST-INSTALLED ANCHOR.

KEYNOTES

1. MAXIMUM RISER HEIGHT SHALL NOT EXCEED 7".
2. INSTALL CAP PLATE END AT STRINGER, TYPICAL.
3. PROVIDE JOINT AT TREAD/LANDING LOCATION. FILL JOINT WITH SEALANT.

GENERAL NOTES

1. ALL EXPOSED STEEL, GUARDRAILS, HANDRAILS, STRINGERS, RISERS TO BE PAINTED.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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CHECKED BY:	**MG**

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STAIR DETAILS

SHEET NO.

A9.1

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STRUCTURAL COVER SHEET
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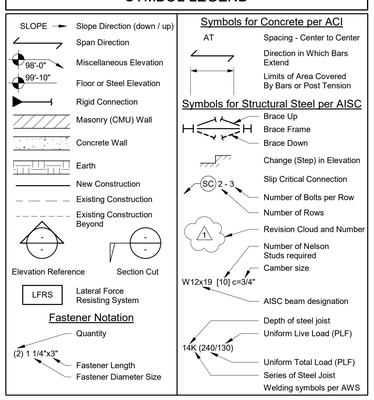
Las Vegas, NV 89118
Phone (702) 365-9312

ABBREVIATIONS

AB.	Anchor Bolt	LLH.	Long Leg Horizontal
ACI	American Concrete Institute	LLV.	Long Leg Vertical
ACT.	Acoustic Ceiling Tile	LOC.	Locations
ADD.	Addition	LONG.	Longitudinal
ADDTL.	Additional	LVL.	Laminated Veneer Lumber
AFF.	Above Finish Floor	LW.	Light Weight
AIA.	American Institute of Architects		
AISC	American Institute of Steel Construction	MFR.	Manufacturer
AISI	American Iron and Steel Institute	MATL.	Material
ALT.	Alternate	MAX.	Maximum
AL.	Aluminum	MB.	Machine Bolt
ANSI	American National Standards Institute	MECH.	Mechanical
AOR	Architect of Record	MEZZ.	Mezzanine
APA	American Plywood Association	MIN.	Minimum
APPROX.	Approximate	MISC.	Miscellaneous
ARCH.	Architect or Architectural	MK.	Mark
ASTM	American Society for Testing and Materials	ML	MicroLam
AWS	American Welding Society		
		NF.	Near Face
BOTT.	Bottom	NO. or #	Number
BD.	Board	NOM.	Nominal
BLKG.	Blocking	NTS.	Not to Scale
BOD. or BO DECK	Bottom of Deck	NS.	Near Side
BM	Bending Moment		
BPL.	Base Plate	OC.	On Center
BRG.	Bearing	OD.	Outside Diameter
		OPP.	Opposite
C	Channel	OSB	Oriented Strand Board
CF	Cubic Foot	OWSJ	Open Web Steel Joist
COORD.	Coordinate		
CFS	Cold-formed Steel	PAF.	Powder Actuated Fastener
CJ.	Control Joint	PARA.	Parallel
CJP.	Complete Joint Penetration	PCF.	Pounds Per Cubic Foot
CL.	Center Line	PEN.	Penetration
CLR.	Clear	PERM.	Permanent
COL.	Column	PERP.	Perpendicular
CONC.	Concrete	PL.	Plate
CONN.	Connection	PP	Partial Pen.
CONST.	Construction	PSF.	Pounds Per Square Foot
CONT.	Continuous	PSI.	Pounds Per Square Inch
CMU	Concrete Masonry Units	P-T	Post Tension, Post Tensioned
CY.	Cubic Yard	P.T.	Pressure Treated
DBA.	Deformed Bar Anchor	RAD. or R.	Radius
DIAG.	Diagonal	REF	Reference
DIA.	Diameter	REINF.	Reinforce, Reinforced,
DIM.	Dimensions		Reinforcement or Reinforcing
DF-L	Douglas Fir-Larch	REQD.	Required
DWG.	Drawing	REV.	Revise or Revision
		RO.	Rough Opening
EA.	Each		
EB.	Expansion Bolt	SCHED.	Schedule
EJ.	Expansion Joint	SF.	Strut Force
EL. or ELEV.	Elevation or Elevator	SHTG.	Sheathing
ELEC.	Electric	SIM.	Similar
EOD. or EO DECK	Edge of Deck	SK.	Sketch
EOR	Engineer of Record	SPECS.	Specifications
EN.	Edge Nail (Nailing)	SQ.	Square
EQ.	Equal	SS.	Stainless Steel
EQUIP.	Equipment	SSLT.	Short Slotted Holes Transverse
EXIST. / (E)	Existing		to Direction of Load
EXT.	Exterior	STD.	Standard
		STRUCT.	Structural
FAB.	Fabrication	SYM.	Symmetrical
FD.	Floor Drain		
FIN.	Finish	T&G	Tongue and Groove
FLR.	Floor	T.AND B	Top and Bottom
FND.	Foundation	THK.	Thick
FS.	Far Side	THRU.	Through
FT. or '	Feet or Foot	TJI	Trus Joist I-Joist
FTG.	Footing	TO.	Top Of
		TOC. or TO CONC.	Top of Concrete
GALV.	Galvanize	TOF. or TO FTG.	Top of Footing
GC.	General Contractor	TOM. or TO MASONRY	Top of Masonry
GEN.	General (Notes)	TOS. or TO STL.	Top of Steel
GLB	Glu Lam Beam	TOW. or TO WALL	Top of Wall
GR. or GRD.	Grade	TRANSV.	Transverse
GYP.	Gypsum	TYP.	Typical
HD.	Hold-down	UNO.	Unless Noted Otherwise
HORIZ.	Horizontal		
		VERT.	Vertical
ID.	Inside Diameter	VIF.	Verify in the Field
IF	Inside Face		
IN. or "	Inches	W	Wide Flange
		WP.	Work Point
K	Kip (1,000 lbs.)	WT.	Weight
LESK.	LOCHSA ENGINEERING SKETCH	XS	Extra Strong
LAM.	Laminate		
lb. / lbs. / #	Pound / Pounds	YD.	Yard
L	Angle		
LFRS	Lateral Force Resisting System	2L	Double Angle
LLBB.	Long Leg Back To Back		

SYMBOL LEGEND



DESIGN CODES 2018

1. All design and construction shall conform to the 2018 International Building Code and local jurisdictional amendments per state, county, city, etc.
2. References to ASTM and other standards shall refer to the latest edition designated by IBC Chapter 35. Refer to the specifications for information in addition to that covered by these structural notes and drawings. The following standards were used for design.

Building Code Requirements for Structural Concrete	ACI 318-14
Specifications For Structural Steel Buildings	AISC 360-16
Minimum Design Loads For Buildings And Other Structures	ASCE 7-16

All specifications and codes noted shall be the latest approved editions and revisions by the governmental agency having jurisdiction over this project.

STRUCTURAL LOADS

SNOW LOADS:	
Ground Snow Load	Pg = 64 psf
Importance Factor	Is = 1.0
Exposure Factor	Ce = 1.0
Flat Roof Snow Load	Pf = 45 psf
Thermal Factor	Ct = 1.0
Snow Drifts	As indicated on drawings.
WIND LOADS:	
Basic Wind Speed	Vult = 115 mph
	Vasd = 89 mph
Risk Category	II
Exposure	C
Internal Pressure Coefficient	GCpi ± 0.18
SEISMIC LOADS:	
Risk Category	II
Importance Factor	Ie = 1.00
Soil Site Class	D
Mapped Spectral Response Acceleration	
SS = 0.293 g	S1 = 0.106 g
SOIL FACTOR COEFFICIENTS:	
Fa = 1.565	Fv = 2.388
SPECTRAL RESPONSE COEFFICIENT:	
SDS = 0.306 g	SD1 = 0.169 g
SEISMIC DESIGN CRITERIA:	
Seismic Response Coefficient:	CS = 0.1019
Seismic Design Category	C
Analysis Procedure	Equivalent Lateral Force (ELF) Method
Structural System	Steel Not Specifically Designed for Seismic
Response Modification Factor	3.00
Tabulated Overstrength Factor	2.50
ADDITIONAL ITEMS:	
Building Location	46.740607, -116.995694
Mean Building Height	20 feet
REDUNDANCY FACTORS:	
North/South Direction	rho = 1.0
East/West Direction	rho = 1.0
ROOF DEAD LOADS:	
Structural Self Wt.	Per Prefabricated Metal Building MFR
Collateral	5 psf
Solar	5 psf
ROOF LIVE LOADS:	
Roof Live Load	40 psf
STORAGE LIVE LOADS:	
Light Storage	125 psf (non-reducible)
MISCELLANEOUS LIVE LOADS:	
Guardrails/Balcony Rails	50 plf or 200lbs.
Mechanical Equipment	Weights Furnished by Manufacturer

GENERAL

1. The Contractor shall verify all dimensions prior to starting construction. The Architect shall be notified of any discrepancies or inconsistencies.
2. Summary of Work: Project consists of new construction as shown on these Contract Documents used in coordination with the Architectural and other discipline's documents. See also note 7.
3. Warranty: The EOR has used the degree of care and skill ordinarily exercised under similar circumstances by members of the profession in this locale and no other warranty, either expressed or implied, is made in connection with rendering professional services.
4. Structure noted in the drawings as existing or by others, shall be field verified by the contractor and any discrepancies noted shall be reported to the Architect/Structural Engineer.
5. Construction documents include but are not limited to: drawings, plan notes, typical details, general notes, custom details, specifications, etc. In addition to those prepared by other disciplines.
6. Do not scale the drawings for dimensions not shown.
7. Notes and details on the drawings shall take precedence over general notes, typical details, and the project specifications. Where discrepancies between specifications and drawings occur, use the more stringent requirement.
8. Typical details and schedules indicated may not be specifically referenced on the drawings. The contractor is responsible to determine where each typical detail or schedule applies. If locations are found where no typical detail, typical schedule, or specific detail applies, notify the Architect/Structural Engineer. - Drawings indicate general and typical details of construction. Typical details and general notes shall apply even if not specifically denoted on plans, uno. Where conditions are not specifically indicated similar details of construction shall be used, subject to review and approval by the Architect and the Structural Engineer of Record.
9. The contract Structural drawings and specifications represent the finished structure. They do not indicate the method of construction. Contractor to provide construction means, methods, techniques, sequences and procedures as required. Contractor to provide adequate excavation procedures, shoring, bracing and erection procedures complying with national, state and local safety ordinances. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing and shoring for loads due to hydrostatic, earth, wind or seismic forces, construction equipment, temporary loading, etc.
10. Observation visits (site visits) by representatives of Architect/Structural Engineer do not include inspection of construction means and methods. Site visits during construction are not continuous nor detailed inspection services which are to be performed by others. Observations are performed solely for the purpose of determining if the Contractor understands design intent shown in the contract drawings. Observations do not guarantee Contractor's performance and are not to be construed as supervision or verification of construction.
11. Notify the Structural Engineer prior to constructing or fabricating, when drawings by others show openings, pockets, etc., not shown on the structural drawings, but which are located in the structural members.
12. Products that require a report on code compliance shall have an ICC-ES or IAPMO report evaluated for the above listed governing building code. Where required by the governing jurisdiction, a submittal as an alternate material and method is required for all reports evaluated to an earlier edition of the IBC. Reports evaluated to codes other than the above listed code are not permitted, unless allowed by the governing jurisdiction.
13. Contractor shall investigate the site during clearing and earth work operations for filled excavations or buried structures such as cesspools, cisterns, foundations, utilities, etc. If any such structures are found, the Structural Engineer shall be notified immediately.
14. Construction materials shall be spread out when placed on framed floors or roofs. The construction material load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained design strength.
15. See the architectural drawings for the following: Size and location of door and window openings, size and location of interior and exterior non-bearing partitions, size and location of concrete curbs, floor drains, slopes, depressed areas, changes in level, chamfers, grooves, inserts, size and location of floor and roof openings, floor and roof finishes, stair framing and details, dimensions not shown on the structural drawings, ceiling assemblies, exterior wall assemblies,etc.
16. See mechanical, plumbing, and electrical drawings for the following: Pipes, sleeves, hangers, trenches, wall, floor, and/or roof openings, duct penetration, electrical conduit runs, boxes, outlets in walls and slabs, concrete inserts for electrical, mechanical or plumbing fixtures, size and location of machine or equipment bases, anchor bolts for mounts, etc., except as shown or noted. See also note 13.
17. For mechanical and electrical equipment anchorage that is to be designed by others, see IBC section 1613 and ASCE 7 chapter 13. Use isolators, fasteners and bracing approved by ICC-ES or approved third party capable of transmitting code required lateral loads. Secure suspended equipment with lateral bracing.
18. For piping and ductwork bracing to be designed by others, see the latest edition of "Guidelines for Seismic Restraints of Mechanical Systems" by the Sheet Metal and Air Conditioning Contractors National Association.

DEFERRED / DELEGATED STRUCTURAL COMPONENTS

1. Components referred to as Deferred Structural Components shall comply with these notes. These elements have not been permitted under the base building application. The contractor will be required to submit the component system documents to the building official for approval. The documents shall be stamped and signed by a structural engineer licensed by the state where the project is located. The deferred structural components shall not be installed until the design and submittal documents have been approved by the building official.
2. Prior to building department submittal, the deferred structural components submittals shall receive cursory review by Structural Engineer of Record for loads imposed on primary structure and general conformance with design concept of the project and general compliance with the information given in the Structural Contract Documents. Review of submittals does not constitute approval or acceptance of unauthorized deviation from Contract Documents.
3. Submittals of contractor-designed components shall include the designing structural engineer's stamp and signature, as noted above. The submittal shall be approved by the component vendor prior to review by the Structural Engineer of Record.
4. The designing professional is responsible for code conformance and all necessary connections not specifically called out on architectural or structural contract documents.
5. Submittals shall include details of connections to primary structure that indicate magnitude and direction of all loads imposed at point of connection.
6. Design criteria shall be provided with submittal and calculations shall be made available upon request.
7. Refer to other discipline's contract documents for additional deferred components that may require structural design and details. Connections of these elements shall not induce torsion on structural members.
8. Deferred Structural Components shall be manufactured, delivered, handled, stored, and field erected in conformance with instructions prepared by the component vendor.
9. The following list includes the items that are defined as Deferred Structural Components. Additional items may be included in the project specifications.
10. Deferred structural components:
    A. Handrails, guards, grab bars, and wall mounted shower seats
    B. Marquees and canopies unless detailed on Contract Documents

SHOP DRAWINGS

1. Shop drawings and material submittals shall be submitted to the Architect and Structural Engineer of Record prior to any fabrication or construction. Electronic submittals shall be made where possible. Any submittals containing hard copies shall include one reproducible and one copy; reproducible will be marked and returned. Additional copies of reviewed shop drawings are the responsibility of the general contractor. No modifications or substitution of drawings and specifications will be accepted via shop drawing review. Contractor shall review and stamp shop drawings prior to submission to the Architect/Structural Engineer. Contractor shall review for completeness and compliance with contract documents including addendum's, clarifications, etc. See also note 7.
2. Submit shop drawings to the Architect/Structural Engineer as indicated or specified for review prior to fabrication. Review will be for general conformance with design intent conveyed in contract documents.
3. When an engineer is required to sign and stamp shop drawings and calculations, ensure seal indicates engineer as registered in state where project site occurs.
4. Shop drawings are not a part of contract documents, therefore, Architect's/Structural Engineer's review does not constitute an authorization to deviate from terms and conditions of the contract. See also note 7.
5. Review of submittals by the structural engineer will include checking for conformance with the design concept and general compliance with the information given in the construction documents. It will not include reviews of the accuracy or completeness of items such as quantities, dimensions, weights or thicknesses, fabrication processes, construction means or methods, coordination with the work of other trades, or construction safety precautions. Review of a specific item shall not indicate that the structural engineer has reviewed the entire assembly of which the item is a component. The structural engineer shall not be responsible for any deviations from the construction documents not brought to the structural engineer's attention in writing.
6. Submittals processed by the structural engineer are not change orders
7. Shop drawings will be rejected for incompleteness, lack of coordination with other portions of contract documents, lack of calculation (if required), or where modifications or substitutions are indicated without prior review per paragraph A above. Resubmittals shall be clouded and dated for all changes to the submittal. Only clouded portions of resubmittal will be reviewed and Structural Engineer of Record's review stamp applies to only these areas.
8. Submit shop drawings and calculations to governing code authority when specifically indicated or requested.
9. Maintain a copy of all shop drawings reviewed by the Architect/Structural Engineer at site during construction period.
10. Structural Engineer requires 10 working days after receipt of shop drawings and calculations for processing.
11. As a minimum shop drawing submittals shall include the following items plus, additional items listed in the project specifications for structural review, but not be limited to:
    A. Concrete mix designs
    B. Concrete construction joint plans
    C. Concrete reinforcing bar shop drawings and placing plans
    D. Concrete accessories material specification, size and location
    E. Non-shrink grout material specifications and manufacturer's installation recommendations
    F. Fabrication shop AISC Certification or statement of equivalent testing and inspection procedures
    G. Structural steel shop and erection drawings
    H. Welding Procedure Specifications and certifications
    I. Metal deck material submittal
    J. Metal deck and accessories layout

SHEET LIST

DWG #	DRAWING TITLE	ORIGINAL SUBMITTAL	REV. #	REV. DATE
S0.01	STRUCTURAL COVER SHEET	07/24/2024	2	10/30/24
S0.02	STRUCTURAL DESIGN NOTES	07/24/2024		
S0.03	SPECIAL INSPECTION TABLES	07/24/2024		
S1.01	FOUNDATION PLAN - OVERALL	07/24/2024		
S1.01A	FOUNDATION PLAN - AREA A	07/24/2024		
S1.01B	FOUNDATION PLAN - AREA B	07/24/2024	2	10/30/24
S2.01	ENLARGED MEZZANINE FRAMING PLANS	07/24/2024		
S4.01	SCHEDULES	07/24/2024		
S5.01	GENERAL CONCRETE DETAILS	07/24/2024		
S5.02	GENERAL SLAB DETAILS	07/24/2024		
S5.21	GENERAL STRUCTURAL STEEL DETAILS	07/24/2024		
S5.31	GENERAL CFS DETAILS	07/24/2024		
S5.32	GENERAL CFS DETAILS	07/24/2024		
S6.01	FOUNDATION DETAILS	07/24/2024		
S6.02	FOUNDATION DETAILS	07/24/2024		
S7.01	FLOOR FRAMING DETAILS	07/24/2024		

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW COMMENTS
2	10/30/24	ADDENDUM #2

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**JG/CE**
CHECKED BY:	**KF/CH**
PHASE:	**PERMIT SET**

STRUCTURAL COVER SHEET

SHEET NO.
S0.01

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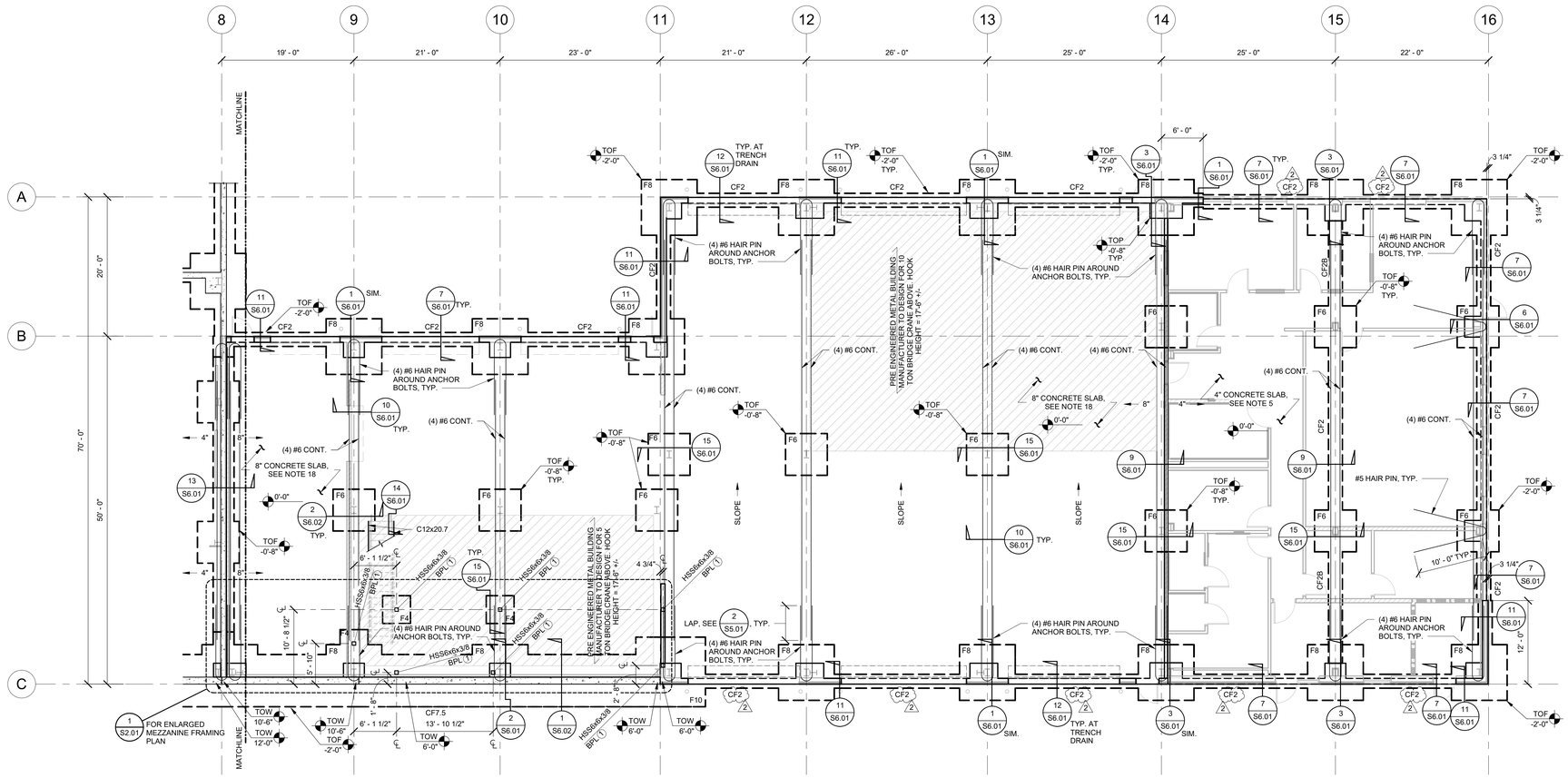
FOUNDATION PLAN NOTES

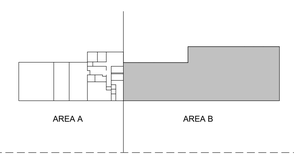
1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. Top of concrete floor reference elevation = 0'-0" typical uno thus X' - X"
5. Slab on grade shall be 4" thick concrete with 4x4 W2.9xW2.9 welded wire fabric, placed 2" clear from top of concrete. See architectural drawings for slab depressions, slopes, etc.
6. Top of exterior footing shall be elevation -2'-0" max. and top of interior footing shall be -0'-8" max., typ. uno. thus TOF X' - X"
7. Contractor to coordinate slab on grade control joints with 1 / S5.02 .
8. Contractor to coordinate additional structural backfill quantities and requirements per Geo-Tech report.
9. For general concrete/foundation details, see sheets S5.01 and S5.02.
10. F# and CF# — Denotes footing type, see 4 / S4.01 .
11. Contractor to coordinate placement of utilities thru or adjacent to the footings or stem walls with detail 7 / S5.01 or the footings may be stepped per 8 / S5.01 at contractors option, typ.
12. S — S — Indicates step(s) in footing, see 8 / S5.01 .
13. BPL # — Denotes base plate type, see 1 / S4.01 .
14. Denotes recess, sloped or elevated floor elevations, coordinate size and location with arch. Also see 7 / S5.02 where applicable.
15. For typical elevated concrete pad or curb construction, see 6 / S5.02. Coordinate size, location, and thickness with equipment supplier.
16. Exterior non-structural cold-formed steel framing shown for reference only.
17. Denotes change (step) in slab on grade elevation, see 13 / S6.01.
18. Slab on grade shall be 8" thick concrete with #4 rebar at 18" oc. each way, placed 3" clear from top of concrete. See Architectural drawings for slab depressions, slopes, etc.
19. Denotes extents of bridge crane to be supported by Pre-Engineered metal building, see plan for weights.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.



1 FOUNDATION PLAN - AREA B
1/8" = 1'-0"

KEY PLAN



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MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.: 24000.01
DATE: 07/24/2024
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CHECKED BY: KF/CH

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FOUNDATION PLAN - AREA B

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S1.01B

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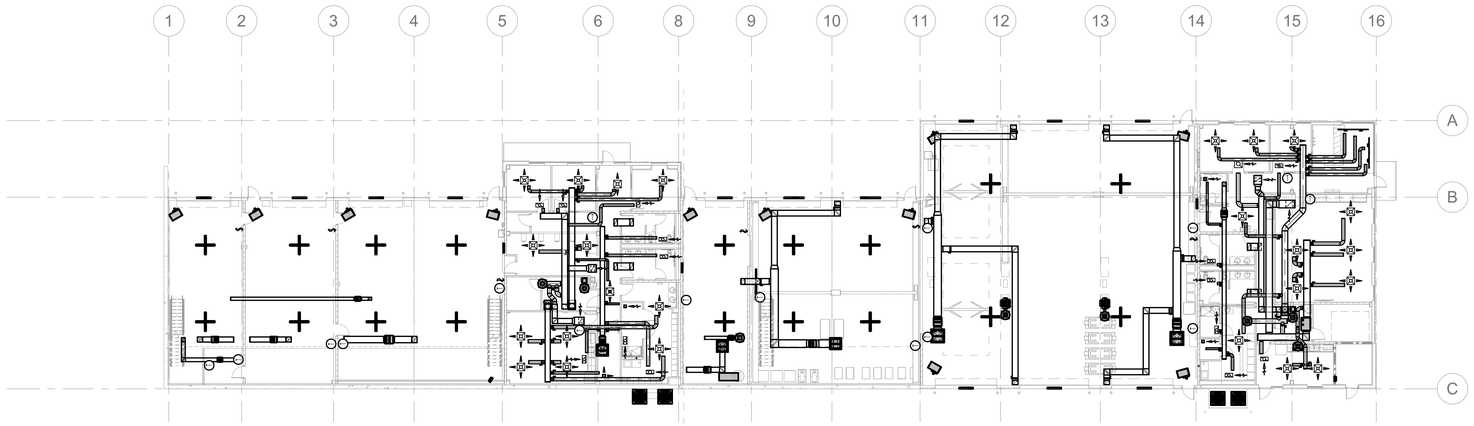
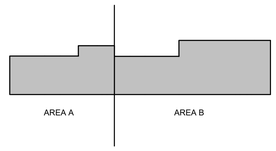


E1 HVAC OVERALL PLAN
1/16" = 1'-0"

N

KEY PLAN



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DATE:	**07/24/2024**
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HVAC OVERALL PLAN

SHEET NO.
M1.10

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GENERAL NOTES:

A. ALL EQUIPMENT LOCATIONS IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

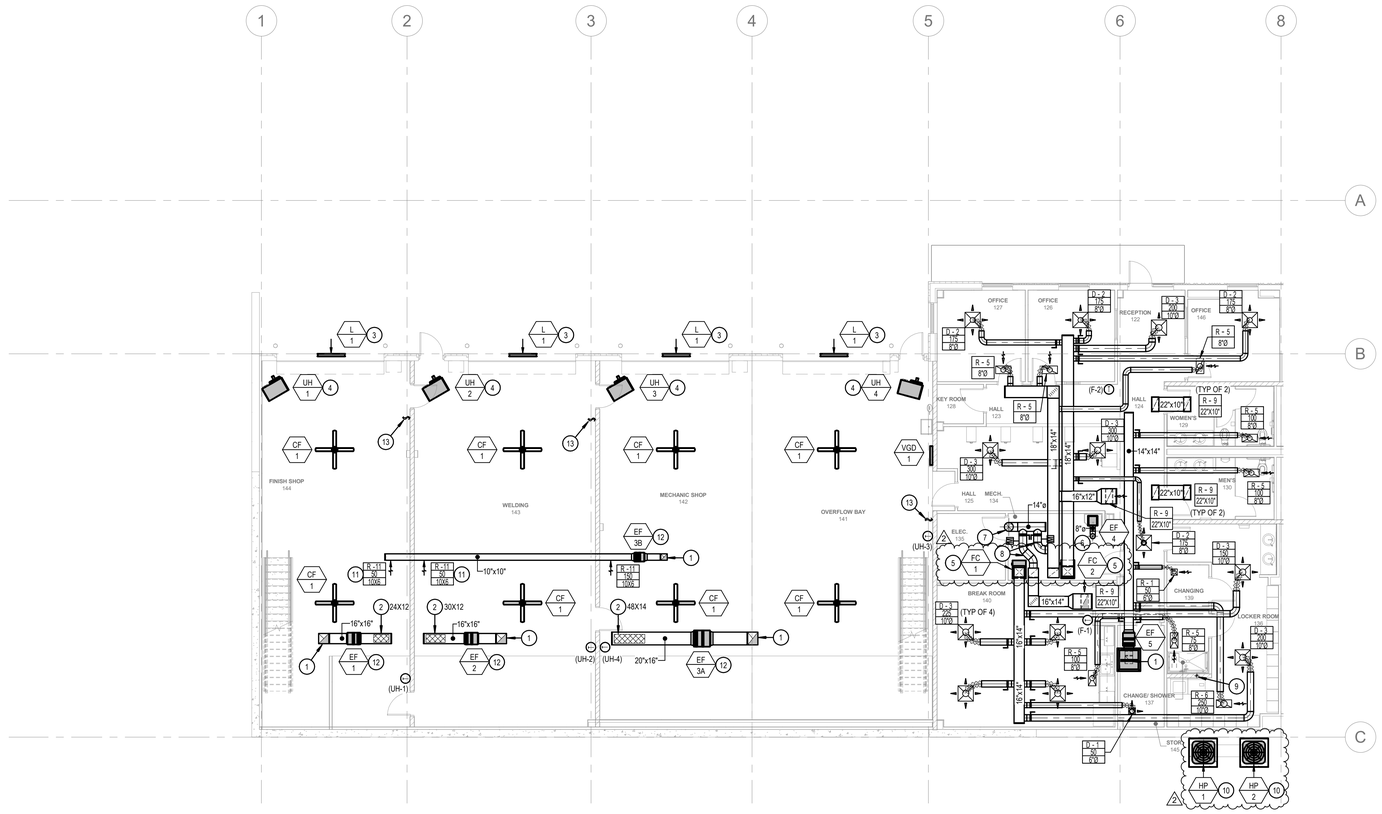
B. ALL EXHAUST DUCTWORK INSTALLED IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

C. EXHAUST DUCTWORK IN MAINTANCE BAYS SHALL BE INSTALLED ABOVE CRANE. COORDINATE FINAL CRANE HEIGHT IN FIELD.

KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. ROUTE DUCT UP THROUGH ROOF TO PENTHOUSE ON ROOF.
2. CUT OPENING ON BOTTOM OF DUCT. COVER OPENING WITH EXPANDED METAL MESH. OPENING SHALL BE SIZED AS INDICATED ON PLAN.
3. LOUVER TO BE INSTALLED ABOVE GARAGE DOOR.
4. BOTTOM OF UNIT HEATER TO BE INSTALLED NO LOWER THEN GARAGE DOOR HEIGHT. ROUTE COMBUSTION AIR AND FLUE UP THROUGH ROOF. SEE DETAIL FOR REQUIREMENTS.
5. <varies>
6. ROUTE EXHAUST DUCT UP THROUGH ROOF. TERMINATE WITH MANUFACTURER'S ROOF CAP.
7. ROUTE OSA SUPPLY DUCT UP TO PENTHOUSE. TRANSTION TO PENTHOUSE AS REQUIRED.
8. CONNECT 12"Ø OSA DUCT TO RETURN SIDE OF FURNACE. SEE FURNACE DETAIL FOR ADDITIONAL REQUIREMENTS.
9. ROUTE 4"Ø DRYER DUCT UP THROUGH ROOF. SEE DRYER DUCT DETAIL FOR TERMINATION REQUIREMENTS.
10. PROVIDE 6-INCH THICK CONCRETE HOUSEKEEPING PAD. CONCRETE PAD SHALL EXTEND AT LEAST 6-INCHES BEYOND THE EQUIPMENT ON ALL SIDES. REINFORCE CONCRETE PAD WITH WIRE MESH HELD MIDWAY.
11. MOUNT GRILLE TO BOTTOM OF DUCT.
12. EXHAUST FANS SHALL BE MOUNTED NO LOWER THEN HEIGHT OF GARAGE DOOR.
13. CEILING FAN CONTROLLER. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.



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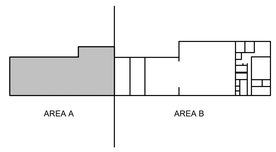

E2 HVAC PLAN - AREA A

1/8" = 1'-0"

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2	10/30/24	ADDENDUM #2

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HVAC PLAN - AREA A

SHEET NO.
M1.11

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GENERAL NOTES:

A. ALL EQUIPMENT LOCATIONS IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

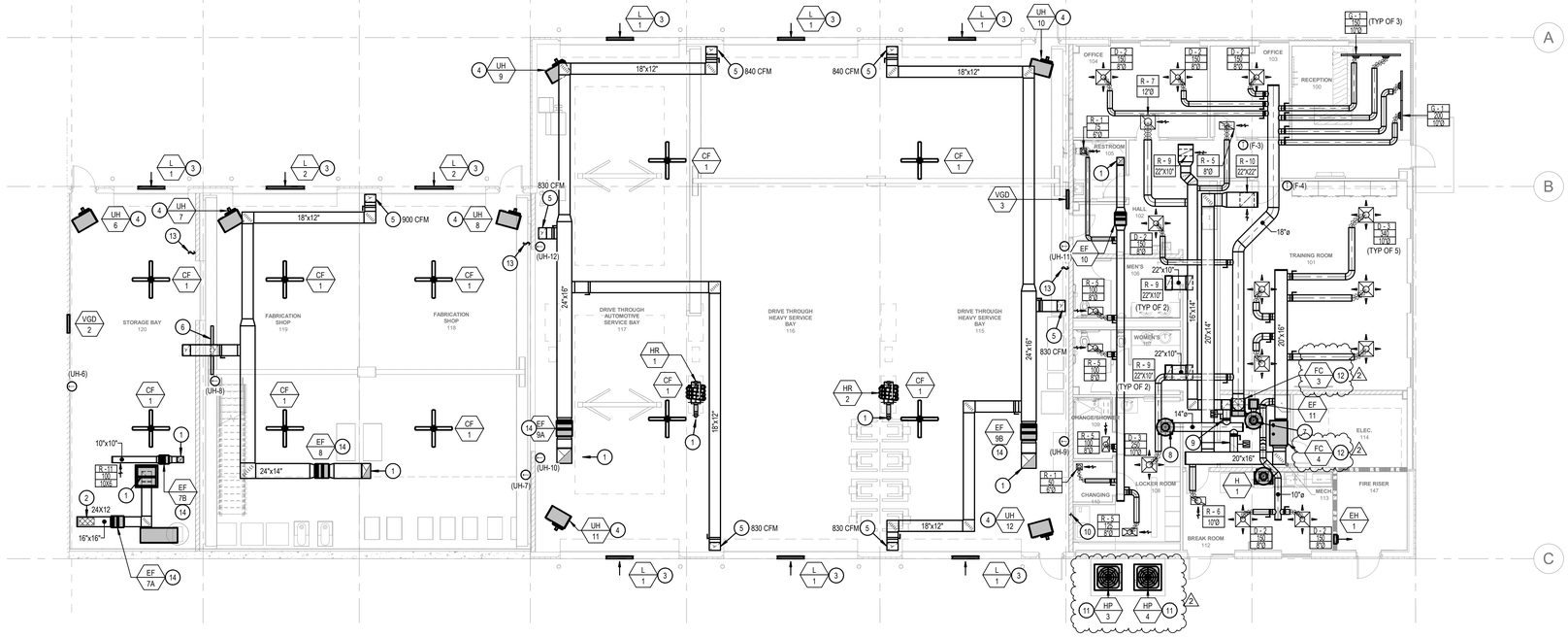
B. ALL EXHAUST DUCTWORK INSTALLED IN MAINTENANCE BAYS SHALL BE COORDINATED WITH FINAL LOCATIONS OF GARAGE DOORS, LIFTS, AND CRANES.

C. EXHAUST DUCTWORK IN MAINTANCE BAYS SHALL BE INSTALLED ABOVE CRANE. COORDINATE FINAL CRANE HEIGHT IN FIELD.

KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. ROUTE DUCT UP THROUGH ROOF TO PENTHOUSE ON ROOF.
2. CUT OPENING ON BOTTOM OF DUCT. COVER OPENING WITH EXPANDED METAL MESH. OPENING SHALL BE SIZED AS INDICATED ON PLAN.
3. LOUVER TO BE INSTALLED ABOVE GARAGE DOOR.
4. <varies>
5. ROUTE 18X12 EXHAUST DOWN AND TERMINATE 6" ABOVE FINISHED FLOOR. INSTALL EXPANDED METAL MESH ON BOTTOM OF DUCT. BALANCE DUCT TO CFM INDICATED.
6. SEE FABRICATION DUCT DETAIL FOR REQUIREMENTS.
7. ROUTE EXHAUST DUCT UP THROUGH ROOF. TERMINATE WITH MANUFACTURERS ROOF CAP.
8. ROUTE OSA SUPPLY DUCT UP TO PENTHOUSE. TRANSTION TO PENTHOUSE AS REQUIRED.
9. CONNECT 12"Ø OSA DUCT TO RETURN SIDE OF FURNACE. SEE FURNACE DETAIL FOR ADDITIONAL REQUIREMENTS.
10. ROUTE 4"Ø DRYER DUCT UP THROUGH ROOF. SEE DRYER DUCT DETAIL FOR TERMINATION REQUIREMENTS.
11. PROVIDE 6-INCH THICK CONCRETE HOUSEKEEPING PAD. CONCRETE PAD SHALL EXTEND AT LEAST 6-INCHES BEYOND THE EQUIPMENT ON ALL SIDES. REINFORCE CONCRETE PAD WITH WIRE MESH HELD MIDWAY.
12. <varies>
13. CEILING FAN CONTROLLER. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.
14. EXHAUST FANS SHALL BE MOUNTED NO LOWER THEN HEIGHT OF GARAGE DOOR.



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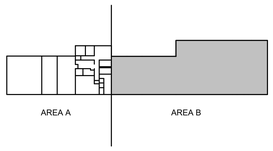

E1 HVAC PLAN - AREA B
1/8" = 1'-0"

N

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HVAC PLAN - AREA B

SHEET NO.
M1.12

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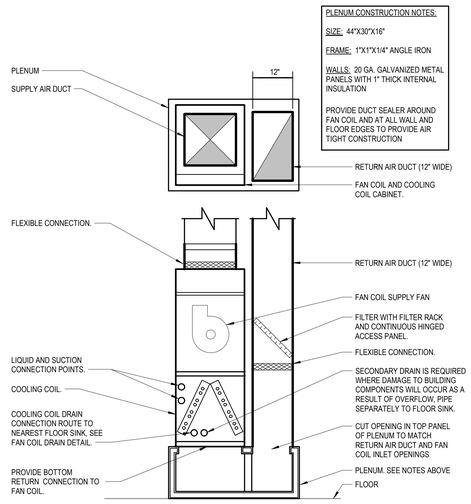


PLENUM CONSTRUCTION NOTES:

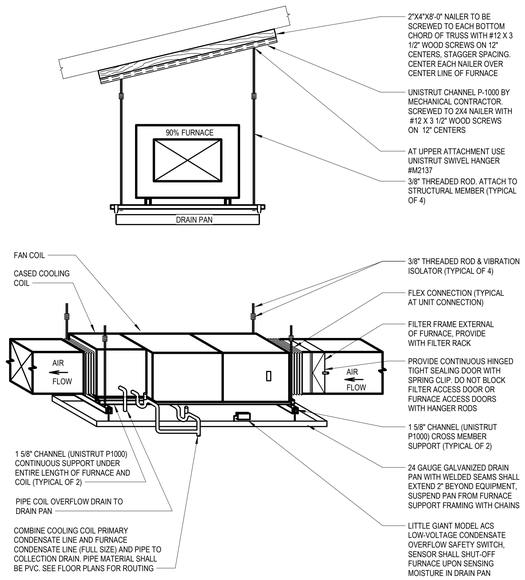
SIZE: 44"X30"X16"

FRAME: 1"X1"X1/4" ANGLE IRON

WALLS: 20 GA. GALVANIZED METAL PANELS WITH 1" THICK INTERNAL INSULATION

PROVIDE DUCT SEALER AROUND FAN COIL AND AT ALL WALL AND FLOOR EDGES TO PROVIDE AIR TIGHT CONSTRUCTION

C1 ELECTRICAL FAN COIL INSTALLATION DETAIL
NOT TO SCALE



C3 ELECTRICAL FAN COIL INSTALLATION DETAIL (HORIZONTAL)
NOT TO SCALE

2

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

472 W. Washington St. | Boise, ID 83702
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PROFESSIONAL ENGINEER – LICENSED – 13789 – 10/29/2024 – STATE OF IDAHO – TODD NELSON

MOSCOW CITY SHOP

CITY OF MOSCOW

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ELECTRICAL ENGINEER
CATOR RUMA
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MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **JD**
CHECKED BY: **TN**

PHASE: **PERMIT SET**

HVAC DETAILS

SHEET NO.
M2.02

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PENTHOUSE SCHEDULE

SYMBOL	AREA SERVED	TYPE	NUMBER OF TIERS	THROAT SIZE	MINIMUM FREE AREA (ft^2)	FINISH	MANUFACTURER AND MODEL	REMARKS
PH-1	FINISH SHOP 144	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-2	WELDING 143	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-3A	MECHANIC SHOP 142/141	TIERED	2	18X30	3.62	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-3B	PARK	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-4	MECH 134	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-5	RESTROOMS/BREAKROOM 129/130/140	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-6	AREA A MEZZANINE	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-7A	STORAGE BAY 120	TIERED	2	14X24	3.06	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-7B	FLEET	TIERED	1	12"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-8	FAB SHOP 119/118	TIERED	3	24X24	5.42	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-9A	SERVICE BAYS 117/116/115	TIERED	3	24X30	5.92	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-9B	SERVICE BAYS 117/116/115	TIERED	3	24X30	5.92	AAMA 2604	COOK MODEL TRE	1 , 2 , 3
PH-10	MECH 113	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-11	BREAKROOM 112	TIERED	1	8"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-12	F-1/2 OSA	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-13	F-3/4 OSA	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-14A	MAINTENANCE BAY	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3
PH-14B	MAINTENANCE BAY	TIERED	1	14"Ø	--	AAMA 2604	COOK MODEL PR	1 , 2 , 3

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: UNITED ENERTECH, GREENHECK, CARNES, AIROLITE, LOUVERS & DAMPERS, AIR-RITE MANUFACTURING, RUSKIN, NCA, AND CESCO.
2. COLOR TO BE SELECTED BY ARCHITECT.
3. EXHAUST AND O.S.A. - PROVIDE WITH BIRD SCREEN, BACKDRAFT DAMPER, AND ROOF CURB.

DIFFUSER SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
D-1 CFM SIZE	6X6	6"Ø	0 - 90	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-2 CFM SIZE	9X9	8"Ø	90 - 200	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-3 CFM 10"Ø	12X12	10"Ø	200 - 350	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-4 CFM 12"Ø	15X15	12"Ø	300 - 500	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-5 CFM 14"Ø	15X15	14"Ø	400 - 650	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-6 CFM 16"Ø	18X18	16"Ø	600 - 900	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8
D-7 CFM 21X21	21X21	21X21	900 - 1400	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8

REMARKS:

1. ALTERNATE MANUFACTURERS: ANEMOSTAT, J&J REGISTER, NAILOR, METAL-AIRE, TUTTLE & BAILEY, KRUEGER, PRICE, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL TDC SERIES.
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. ALL DIFFUSERS LOCATED IN LAY-IN CEILING AREAS SHALL BE BORDER TYPE 3 AND BE MOUNTED IN MANUFACTURER PROVIDED 24"x24" PANELS. ALL DIFFUSERS LOCATED IN HARD CEILING AREAS SHALL BE BORDER TYPE 6 (BEVELED) SURFACE MOUNTED. SEE ARCHITECTURAL PLANS FOR LOCATIONS OF VARIOUS CEILING TYPES.
5. SEE HVAC FLOOR PLANS FOR DIRECTIONAL THROW REQUIREMENTS FOR EACH DIFFUSER.
6. ALL OF THE DIFFUSERS SHOWN IN THIS SCHEDULE MAY NOT BE USED. REFERENCE THE HVAC PLAN FOR DIFFUSER CALL-OUTS AND THE QUANTITY OF EACH SIZE REQUIRED.
7. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.
8. COLOR TO BE SELECTED BY ARCHITECT.

SUPPLY GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
S-1 CFM SIZE	48" 3/4" SLOT	8"Ø 10" OVAL	0-250	1 , 2 , 3 , 4

REMARKS:

1. APPROVED MANUFACTURERS: ANEMOSTAT, J&J REGISTER, TUTTLE & BAILEY, NAILOR, METAL-AIRE, KRUEGER, PRICE, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL ML-38 WITH MPI PLENUM AND BORDER TYPE LT. LINEAR DIFFUSER TO HAVE 2 SLOTS WITH A SLOT THICKNESS OF 3/4"
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.

RETURN & EXHAUST GRILLE SCHEDULE

SYMBOL	NOMINAL SIZE	NECK / RUNOUT SIZE	CFM RANGE	REMARKS
R-1 6"Ø	8X8	6"Ø	0-80	1 , 2 , 3 , 4 , 5 , 6 , 7
R-2 8"Ø	10X10	8"Ø	80-180	1 , 2 , 3 , 4 , 5 , 6 , 7
R-3 10"Ø	12X12	10"Ø	180-300	1 , 2 , 3 , 4 , 5 , 6 , 7
R-4 6"Ø	22X10	6"Ø	0-80	1 , 2 , 3 , 4 , 5 , 6 , 7
R-5 8"Ø	22X10	8"Ø	80-180	1 , 2 , 3 , 4 , 5 , 6 , 7
R-6 10"Ø	22X10	10"Ø	180-300	1 , 2 , 3 , 4 , 5 , 6 , 7
R-7 12"Ø	22X22	12"Ø	300-500	1 , 2 , 3 , 4 , 5 , 6 , 7
R-8 14"Ø	22X22	14"Ø	500-750	1 , 2 , 3 , 4 , 5 , 6 , 7
R-9 22X10	22X10	22X10	500-1100	1 , 2 , 3 , 4 , 5 , 6 , 7
R-10 22X22	22X22	22X22	1100-2000	1 , 2 , 3 , 4 , 5 , 6 , 7
R-11 10X6	10X6	10X6	0-225	1 , 3 , 5 , 6 , 7 , 8

REMARKS:

1. ALTERNATE MANUFACTURERS: ANEMOSTAT, CARNES, PRICE, NAILOR, METAL-AIRE, TUTTLE & BAILEY, KRUEGER, J&J REGISTER, AND UNITED ENERTECH.
2. SIZES BASED ON TITUS MODEL 50F, ALUMINUM EGGCRATE RETURN GRILLE, 1/2" x 1/2" x 1" SPACING (SINGLE CORE). PROVIDE SQUARE TO ROUND TRANSITION (WHERE ROUND RUN-OUT INDICATED).
3. SIZES BASED ON A MAXIMUM NC LEVEL OF 25.
4. ALL GRILLES LOCATED IN LAY-IN CEILING AREAS SHALL HAVE BORDER #3, UNLESS OTHERWISE INDICATED. ALL GRILLES LOCATED IN HARD CEILING AREAS SHALL HAVE BORDER #1, UNLESS OTHERWISE INDICATED. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF VARIOUS CEILING TYPES. SHEET METAL DUCTWORK VISIBLE BEHIND GRILLE SHALL BE PAINTED FLAT BLACK.
5. ALL OF THE GRILLES SHOWN IN THIS SCHEDULE MAY NOT BE USED. REFERENCE THE HVAC PLAN FOR GRILLE CALL-OUTS AND THE QUANTITY OF EACH SIZE REQUIRED.
6. WHENEVER THERE IS A DISCREPANCY BETWEEN THE RUNOUT DUCT SIZE SHOWN ON THE PLANS AND THAT SHOWN IN THE SCHEDULE, ALWAYS USE THE LARGER OF THE TWO DUCT SIZES.
7. COLOR TO BE SELECTED BY ARCHITECT.
8. HIGH WALL GRILLE SIZES BASED ON TITUS MODEL 355 RL, STEEL BAR GRILLE, FIXED BLADES, 1/2" SPACING, 35° DEFLECTION, ADJUSTABLE OPPOSED BLADE DAMPER.

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE (ELECTRIC)

SYMBOL	UNIT TYPE	NOMINAL TONS	ELECTRICAL FOR FAN COIL UNIT							COOLING CAPACITY AT 95° OSA, 80° EDB, 62° EWB		ELECTRICAL FOR HEAT PUMP UNIT			OSA CFM	MIN. SEER	FAN COIL OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
			SUPPLY FAN			HEATER STRIP		ELECTRICAL											
			CFM	ESP	HP	KW	V/Ø	MCA	MOCP	TOTAL MBH	SENSIBLE MBH	MCA	MOCP	V/Ø					
FC-1 , HP-1	MULTIPOISE	3	1300	0.5	1/3	15	208/1	68	70	31.3	30.7	12	20	208/3	340	14.0	165	LENNOX CBK45UHPT-036 FAN COIL LENNOX ML14XPP1-036 HEAT PUMP	1 , 2 , 3 , 4 , 5
FC-2 , HP-2	MULTIPOISE	5	1600	0.6	1.0	20	208/3	62	70	52.1	51.1	18	30	208/3	400	14.0	199	LENNOX CBA27UHE-060 FAN COIL LENNOX ML17XP1-060 HEAT PUMP	1 , 2 , 3 , 4 , 5
FC-3 , HP-3	MULTIPOISE	5	1600	0.6	1.0	20	208/3	62	70	52.1	51.1	18	30	208/3	200	14.0	199	LENNOX CBA27UHE-060 FAN COIL LENNOX ML17XP1-060 HEAT PUMP	1 , 2 , 3 , 4 , 5
FC-4 , HP-4	MULTIPOISE	5	2000	0.6	1.0	25	208/3	75	80	54.9	53.9	18	30	208/3	570	14.0	199	LENNOX CBA27UHE-060 FAN COIL LENNOX ML17XP1-060 HEAT PUMP	1 , 2 , 3 , 4 , 5

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: BRYANT, TRANE, LENNOX, YORK, AND CARRIER.
2. PROVIDE UNIT WITH MATCHING COOLING COIL. FIELD INSTALLED HARD START FOR SINGLE PHASE UNITS, SHORT CYCLING DEVICE, CRANKCASE HEATER, EXPANSION VALVE, HIGH/LOW PRESSURE SWITCH & LOW AMBIENT CONTROLS (TO 0°F) AND MANUFACTURER'S LONG LINE SET, SIZED BY MANUFACTURER, AND TAMPER PROOF PORT CAPS.
3. PROVIDE SINGLE POINT CONNECTION TO INDOOR UNIT. ELECTRICAL TO PROVIDE DISCONNECT.
4. ELECTRICAL SHALL PROVIDE SEPARATE CIRCUIT FOR HEAT PUMP UNIT.
5. UNIT SHALL BE PROGRAMMED TO SHUT OFF HEAT PUMP MODE AT AN OUTDOOR TEMPERATURE OF 40°F.

2

EXHAUST FAN SCHEDULE

SYMBOL	AREA SERVED	UNIT TYPE	BLOWER				ELECTRICAL		MAXIMUM SONES	OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
			CFM	ESP	MAXIMUM RPM	DRIVE	HP/W	V/Ø				
EF-1	FINISH SHOP 144	INLINE	750	0.375	1725	DIRECT ECM	1/6 HP	115/1	8.6	65	COOK MODEL 100-SQND	1 , 3 , 7
EF-2	WELDING 143	INLINE	1150	0.375	1725	DIRECT ECM	1/4 HP	115/1	9.9	75	COOK MODEL 120-SQND	1 , 3 , 7
EF-3A	MECHANIC SHOP 142/141	INLINE	1620	0.375	1725	DIRECT ECM	1/4 HP	115/1	9.3	110	COOK MODEL 150-SQND	1 , 3 , 7
EF-3B	PARK	INLINE	250	0.375	1725	DIRECT ECM	1/6	115/1	6.4	60	COOK MODEL 90-SQND	1 , 3 , 6
EF-4	MECH 134	CEILING CABINET	100	0.375	1075	DIRECT	46.5 W	115/1	2.5	15	COOK MODEL GC-148	1 , 2 , 4
EF-5	RESTROOMS/BREAKROOM 129/130/140	INLINE	675	0.5	2800	DIRECT ECM	1/3 HP	115/1	9.3	70	COOK MODEL 100-SQND	1 , 3 , 5
EF-6	MEZZANINE AREA A	INLINE	300	0.375	1725	DIRECT ECM	1/6 HP	115/1	7.5	60	COOK MODEL 90-SQND	1 , 3 , 4
EF-7A	STORAGE BAY 120	INLINE	675	0.375	1725	DIRECT ECM	1/6 HP	115/1	7.6	65	COOK MODEL 100-SQND	1 , 3 , 7
EF-7B	FLEET	INLINE	200	0.375	1725	DIRECT ECM	1/6	115/1	6.4	60	COOK MODEL 90-SQND	1 , 3 , 6
EF-8	FAB SHOP 119/118	INLINE	2150	0.5	1725	DIRECT ECM	1/2 HP	115/1	13.0	110	COOK MODEL 150-SQND	1 , 3 , 8
EF-9A	SERVICE BAYS 117/116/115	INLINE	2500	0.5	1725	DIRECT ECM	1 1/4 HP	208/3	9.9	210	COOK MODEL 185-SQND	1 , 3 , 8
EF-9B	SERVICE BAYS 117/116/115	INLINE	2500	0.5	1725	DIRECT ECM	1 1/4 HP	208/3	9.9	210	COOK MODEL 185-SQND	1 , 3 , 8
EF-10	RESTROOMS/BREAKROOM 107/108/112	INLINE	550	0.375	1725	DIRECT ECM	1/4 HP	115/1	7.9	60	COOK MODEL 100-SQND	1 , 3 , 5
EF-11	MECH 113	CEILING CABINET	100	0.375	1075	DIRECT	46.5 W	115/1	2.5	15	COOK MODEL GC-148	1 , 2 , 4

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: ACME, GREENHECK, PENNBARRY, TWIN CITY FAN COMPANY, SOLER & PALAU.
2. PROVIDE UNIT WITH MANUFACTURER'S STEEL ROOF JACK (SLOPED ROOF) EQUAL TO COOK MODEL RJ (W/ INTEGRAL BIRD SCREEN, FLASHING FLANGE AND BLACK EPOXY FINISH), BACKDRAFT DAMPER, OUTLET FLEX DUCT CONNECTION, STANDARD PLUG DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, THERMAL OVERLOAD PROTECTION, HANGING VIBRATION ISOLATORS, AND WHITE ALUMINUM GRILLE.
3. PROVIDE UNIT WITH MANUFACTURER'S BACKDRAFT DAMPER, INLET AND OUTLET FLEX DUCT CONNECTIONS, PRE-WIRED ELECTRICAL DISCONNECT SWITCH, OSHA BELT GUARD MOTOR COVER, THERMAL OVERLOAD PROTECTION (120 VOLT ONLY), POWDER COAT STANDARD GRAY FINISH, AND HANGING VIBRATION ISOLATORS.
4. CONTROL FAN WITH SEPARATE PILOT LIGHT WALL SWITCH.
5. CONTROL FAN WITH 7-DAY PROGRAMMABLE TIMER SWITCH.
6. FAN TO RUN CONTINOUSLY.
7. FAN TO BE CONTROLLED BY VEHICLE GAS DETECTION SYSTEM. PROVIDE WITH OVERRIDE SWITCH. SEE CONTROL DRAWING FOR ADDITIONAL INFORMATION.
8. CONTROL FAN WITH SEPARATE WALL SWITCH. PROVIDE PLAQUE ABOVE SWITCH STATING "FAN TO RUN DURING OCCUPIED HOUR AND IF A VEHICLE IS PARKED INSIDE. INTERLOCK FAN WITH VEHICLE GAS DETECTION SYSTEM. SEE CONTROL DRAWING FOR ADDITIONAL INFORMATION.

VEHICLE EXHAUST HOSE REEL SCHEDULE

SYMBOL	LOCATION	VEHICLE TYPE SERVED	DESIGN AIRFLOW (CFM)	HOSE REEL			TUBING				DRUM ELECTRICAL		FAN ELECTRCIAL		OPERATING WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
				DRUM DIAMETER	LENGTH	HEIGHT	TYPE	DIAMETER	LENGTH	MODEL	HP	V/□	FLA	V/□			
HR-1	AUTOMOTIVE SERVICE BAY	DIESEL	600	18"□	3'-4"	2'-10"	LOW TEMPERATURE	6"□	24'-0"	SERIES 4000	1/2	120/1	4.0	208/3	500	MONOXIVENT MODEL 9000-W-TMTR	1 , 2 , 3 , 4 , 5
HR-2	HEAVY SERVICE BAY	DIESEL	600	18"□	3'-4"	2'-10"	LOW TEMPERATURE	6"□	24'-0"	SERIES 4000	1/2	120/1	4.0	208/3	500	MONOXIVENT MODEL 9000-W-TMTR	1 , 2 , 3 , 4 , 5

REMARKS:

1. APPROVED ALTERNATE MANUFACTURERS: MONOXIVENT, NEDERMAN
2. PROVIDE MANUFACTURER'S 4-BUTTON PENDULUM SWITCH FOR UP / DOWN CONTROL OF THE HOSE REEL AND ON / OFF CONTROL OF FAN, POLYESTER POWDER COATING, MANUAL OVERRIDE.
3. TUBING SHALL BE RATED FOR A TEMPERATURE RANGE OF -80°F UP TO 600°F AND FOR AN INTERMITTENT TEMPERATURE OF 1250°F.
4. ADAPTER SHALL BE CUSTOM MANUFACTURED TO PROVIDE A NO-SCRATCH, HEAT RESISTANT, EPDM 12"□ INLET FUNNEL THAT CAN BE EASILY MANUFACTURED ONTO THE DIESEL EXHAUST TAILPIPE USING A TELESCOPIC POLE EQUAL TO MONOXIVENT MODEL LP-10-ADJ W/ PULL DOWN HOOK. CUSTOM FUNNEL TO HAVE LIFTING SLEEVE SIMILAR TO MANUFACTURERS.
5. PROVIDE WITH MANUFACTURERS FAN MOUNTED TO DRUM AND CONTROL BOX STARTER. COORDINATE CONTROL BOX STARTER LOCATION WITH ELECTRICIAN.

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MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

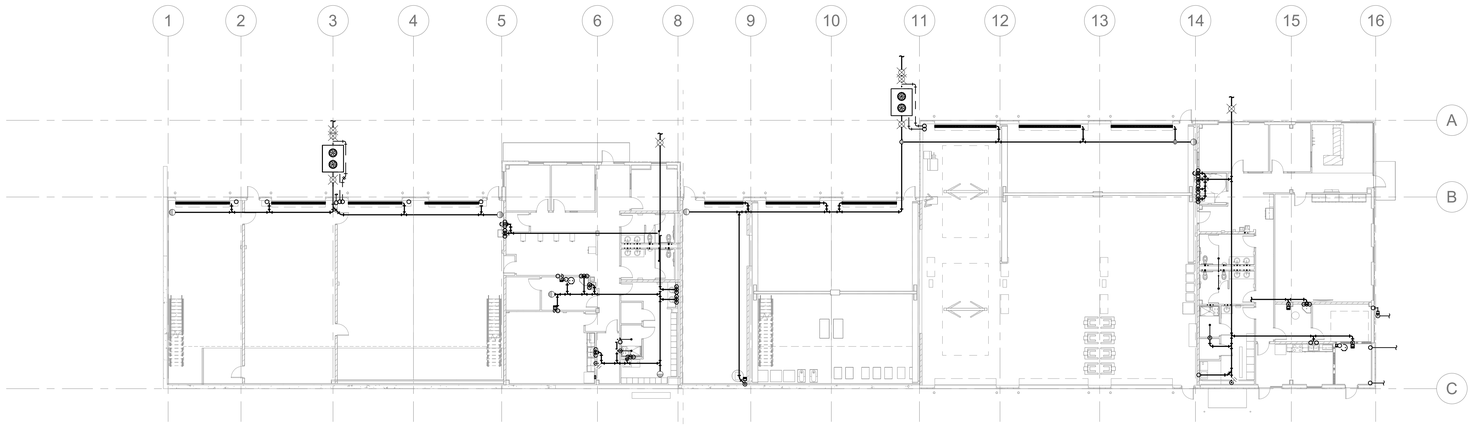
JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **JD**
CHECKED BY: **TN**

PHASE: **PERMIT SET**

HVAC SCHEDULES

SHEET NO.
M3.00

10/29/2024 3:27:22 PM C:\Users\jaked\Documents\24052_Moscow City Shop_Mech Central Model_R23_JakeDSTBDJ.rvt



E1 FOUNDATION OVERALL PLAN
1/16" = 1'-0"

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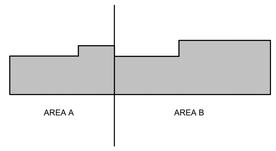
KEY PLAN



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CHECKED BY:	**TN**

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FOUNDATION OVERALL PLAN

SHEET NO.
P1.10

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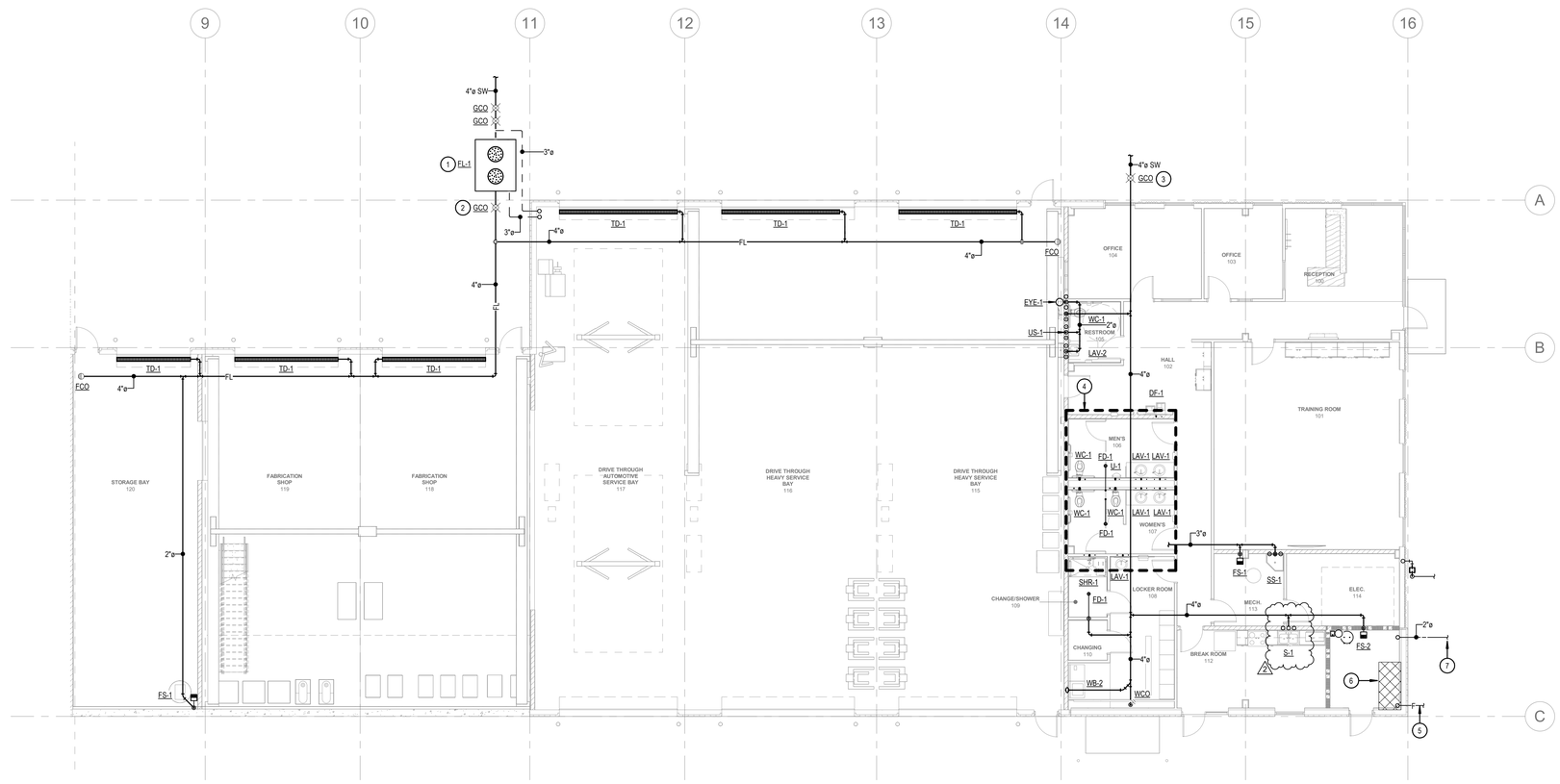
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE FLAMMABLE LIQUIDS INTERCEPTOR DETAIL FOR REQUIREMENTS.
2. INVERT ELEVATION AT GCO IS 54" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
3. INVERT ELEVATION AT GCO IS 36" BELOW FINISHED FLOOR. THIS INVERT IS BASED OFF OF A LINES SLOPE OF 1/4" PER FOOT.
4. SEE RISER DIAGRAM FOR CONTINUATION.
5. FIRE SPRINKLER LINE TO BE SIZED AND INSTALLED BY FIRE SPRINKLER CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL FIRE SPRINKLER SYSTEM REQUIREMENTS.
6. AREA RESERVED FOR FIRE SPRINKLER RISER SYSTEM. FIRE SPRINKLER RISER SYSTEM SHALL INCLUDE A TAMPER SWITCH, FLOW SWITCH, ALARM BELL, FIRE DEPARTMENT CONNECTION, AND POST INDICATOR VALVE (PIV).
7. ROUTE 2" WATER LINE OUT TO 1 1/2" METER. SEE CIVIL FOR CONTINUATION.



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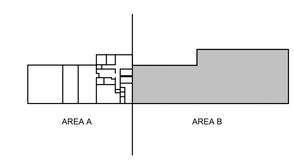

E1 FOUNDATION PLAN - AREA B

1/8" = 1'-0"

N

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ARCHITECTURE | PLANNING
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CITY OF MOSCOW

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2	10/30/24	ADDENDUM #2

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FOUNDATION PLAN - AREA B

SHEET NO.

P1.12

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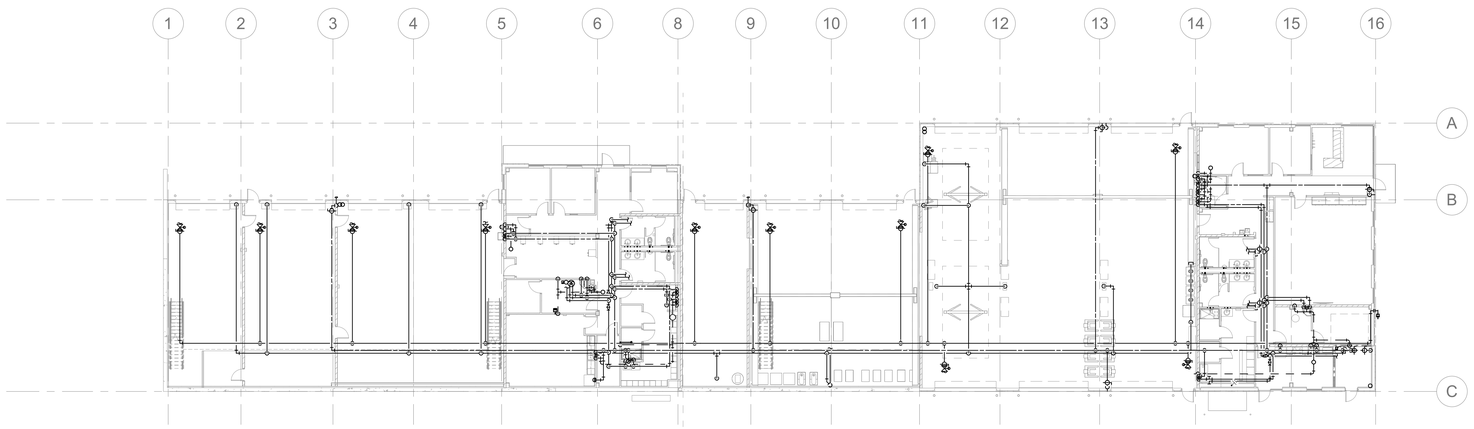
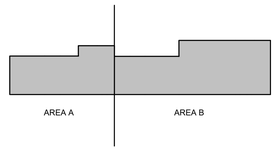


E1 PLUMBING OVERALL PLAN
1/16" = 1'-0"

N

KEY PLAN



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PLUMBING OVERALL PLAN

SHEET NO.
P2.10

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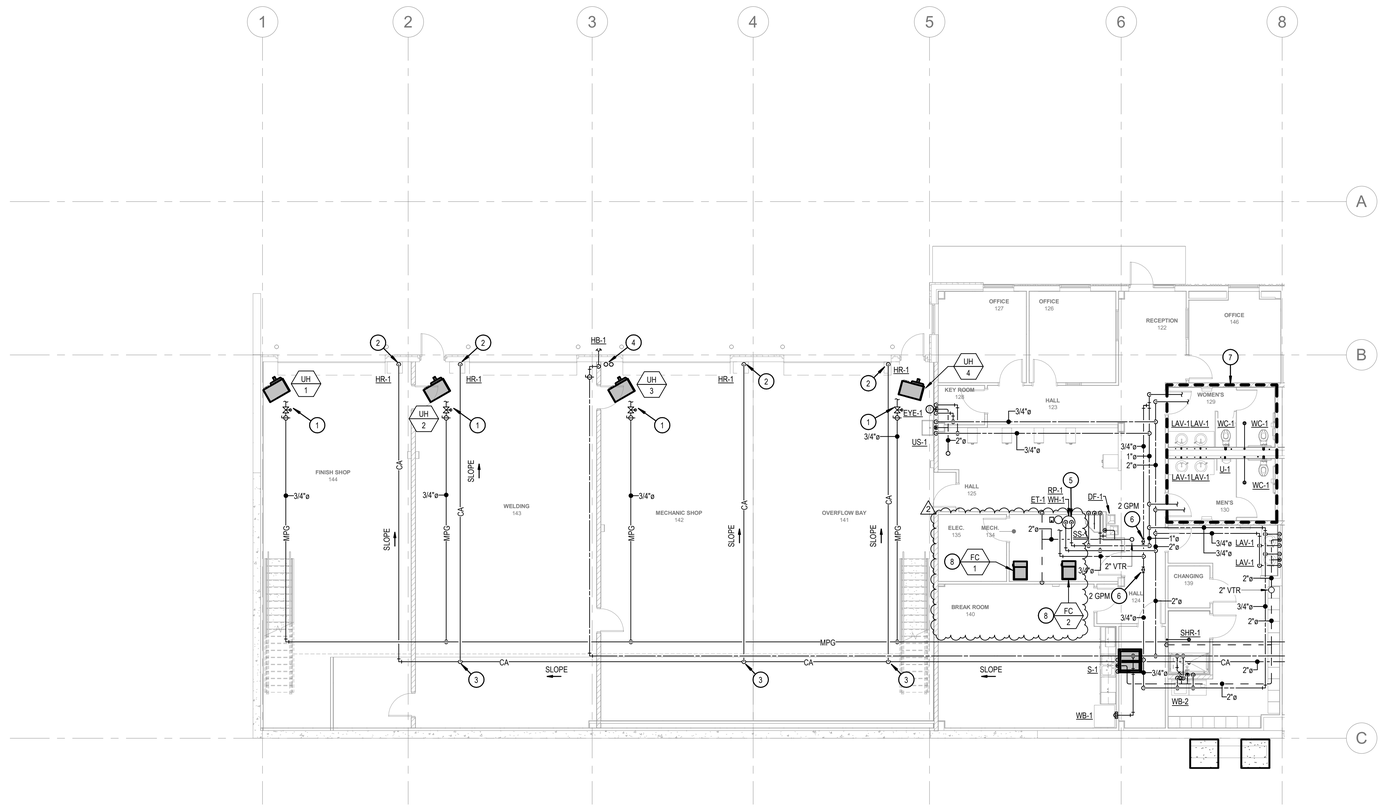
KEYED NOTES:

(#) SYMBOL USED FOR CALLOUT

1. SEE GAS REGULATOR DETAIL AND GAS EQUIPMENT CONNECTION DETAIL FOR REQUIREMENTS.
2. SEE COMPRESSED AIR HOSE REEL DETAIL FOR REQUIREMENTS.
3. BRANCH LINE TO BE TAPPED OFF OF THE TOP OF THE MAIN. SEE COMPRESSED AIR DETAIL FOR REQUIREMENTS.
4. ROUTE (2) 3" VENT LINES UP THROUGH ROOF.
5. SEE WATER HEATER DETAIL FOR REQUIREMENTS.
6. SET BALANCE VALVE TO GPM NOTED.
7. SEE RISER DIAGRAM FOR CONTINUATION.
8. <varies>



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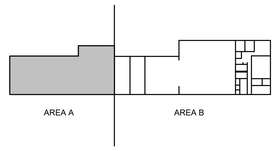

E2 PLUMBING PLAN - AREA A
1/8" = 1'-0"

N

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PLUMBING PLAN - AREA A

SHEET NO.
P2.11

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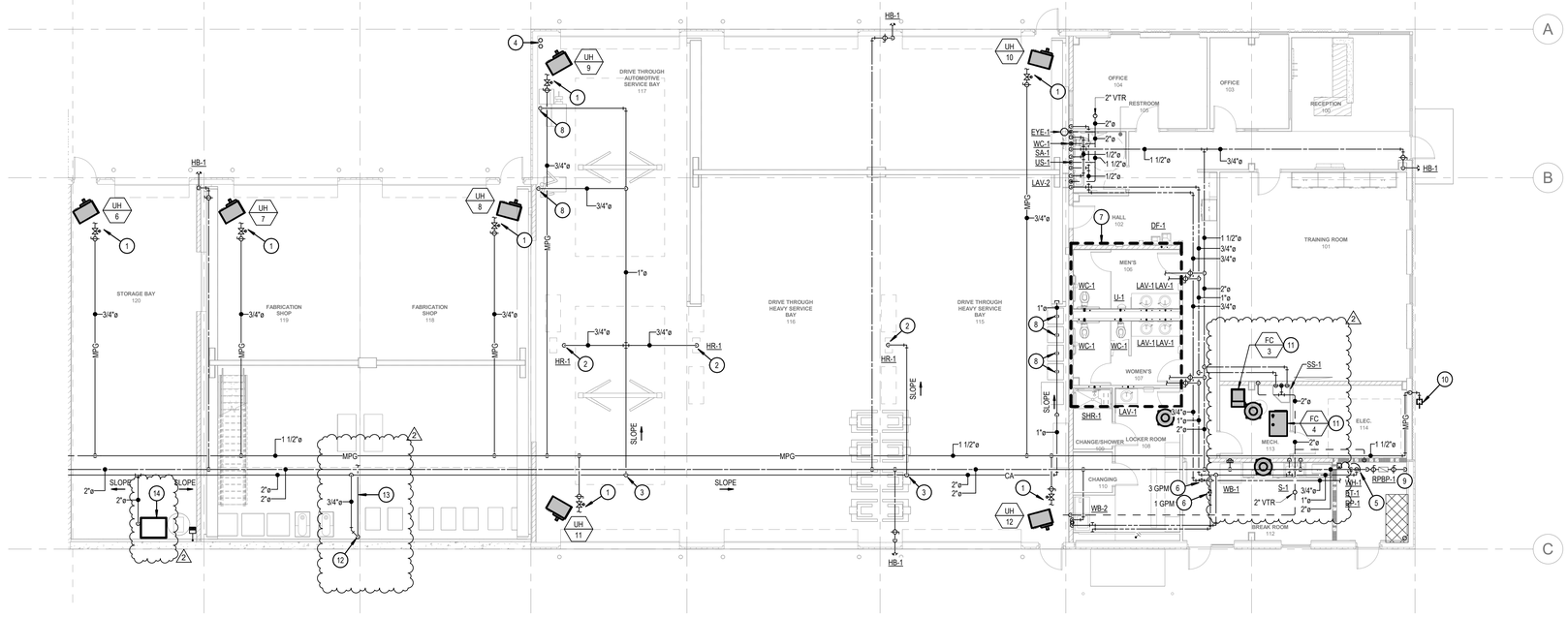
KEYED NOTES:

8 SYMBOL USED FOR CALLOUT

1. SEE GAS REGULATOR DETAIL AND GAS EQUIPMENT CONNECTION DETAIL FOR REQUIREMENTS.
2. SEE COMPRESSED AIR HOSE REEL DETAIL FOR REQUIREMENTS.
3. BRANCH LINE TO BE TAPPED OFF OF THE TOP OF THE MAIN. SEE COMPRESSED AIR DETAIL FOR REQUIREMENTS.
4. ROUTE (2) 3" VENT LINES UP THROUGH ROOF.
5. SEE WATER HEATER DETAIL FOR REQUIREMENTS.
6. SET BALANCE VALVE TO GPM NOTED.
7. SEE RISER DIAGRAM FOR CONTINUATION.
8. ROUTE COMPRESSED AIR LINE DOWN WALL AND TERMINATE WITH CAP AND BALL VALVE. COORDINATE TERMINATION HEIGHT WITH OWNER.
9. SEE BUILDING WATER SERVICE DETIAL FOR REQUIREMENTS.
10. GAS METER FURNISED AND INSTALLED BY LOCAL GAS COMPANY. REFER TO GAS SIZING CHART FOR ADDITIONAL INFORMATION.
11. <varies>
12. ROUTE 3/4" COMPRESSED AIR DOWN BACK WALL.
13. COMPRESSED AIR LINE TO BE ROUTED TO BEAD BLASTERS. LINE TO BE ROUTED HIGH AND TIGHT TO MEZZANINE STRUCTURE. COORDINATE WTIH OWNER ON EXACT TERMINATION LOCATION.
14. AIR COMPRESSOR AND DRYER PROVIDED BY OWNER INSTALLED BY CONTRACTOR.

2



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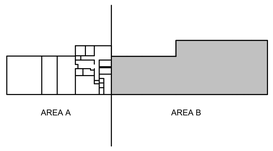

E1 PLUMBING PLAN - AREA B
1/8" = 1'-0"

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PLUMBING PLAN - AREA B

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P2.12

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GAS SIZING CHART

SYMBOL	INPUT (MBH)	RUNOUT SIZE (5-PSI) (INCHES)	EQUIPMENT CONNECTION SIZES (7" WC) (INCHES)
UH-1	110	3/4	3/4
UH-2	130	3/4	3/4
UH-3	110	3/4	3/4
UH-4	110	3/4	3/4
UH-5	NOT USED	NOT USED	NOT USED
UH-6	110	3/4	3/4
UH-7	130	3/4	3/4
UH-8	130	3/4	3/4
UH-9	175	3/4	3/4
UH-10	175	3/4	3/4
UH-11	175	3/4	3/4
UH-12	175	3/4	3/4
TOTAL	1530	EQUIVALENT LENGTH = 565 FT PRESSURE = 5 PSI MAIN SIZE = 1 1/2"Ø	

NOTE: GAS SIZES TO EQUIPMENT ARE AS NOTED IN SCHEDULE ABOVE. ROUTE NOTED (5-PSI) GAS LINE TO GAS EQUIPMENT. PROVIDE GAS COCK AND PRESSURE REGULATOR (5-PSI TO 7" WC) SIZED FOR GAS LOAD AT EACH PIECE OF EQUIPMENT. VENT TO ATMOSPHERE PER MANUFACTURERS RECOMMENDATIONS. ROUTE NOTED (7" WC) GAS LINE TO GAS FIRED EQUIPMENT WITH GAS COCK AND FLEX CONNECTOR AT UNIT. SEE GAS CONNECTION DETAILS.

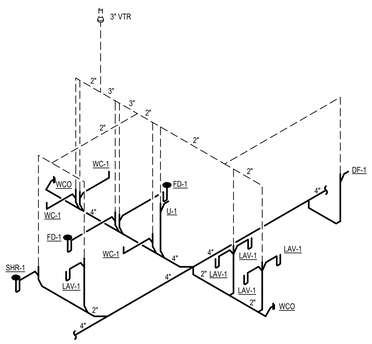
2

PLUMBING FIXTURE SCHEDULE

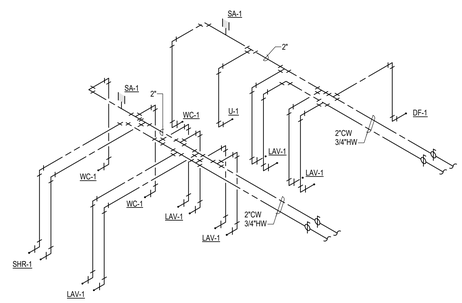
SYMBOL	FIXTURE DESCRIPTION	CONNECTION SIZE					MANUFACTURER / MODEL NUMBER / DESCRIPTION / ADDITIONAL COMMENTS
		WASTE	VENT	TRAP	CW	HW	
DF-1	DRINKING FOUNTAIN WITH BOTTLE FILLING STATION (INTERIOR DUAL BUBBLERS) (ELECTRIC WATER COOLER) (ADA COMPLIANT) (HIGH/LOW)	1 1/2	1 1/2	1 1/2	1/2	--	ELKAY MODEL EZSTL8WSVRSK, BI-LEVEL ADA COOLER WITH BOTTLE FILLING STATION FURNISHED WITH FLEXI-GUARD SAFETY BUBBLER. BUBBLER ACTIVATED BY PUSHBAR. BOTTLE FILLER ACTIVATED BY ELECTRONIC SENSOR WITH AUTOMATIC 30-SECOND SHUT-OFF TIMER. 115 VOLT, 5.0 AMPS, 60 HERTZ. PROVIDE WITH JAY R. SMITH 0834 FLOOR MOUNTED SUPPORT CARRIER. CANE APRON TO BE INSTALLED ON HIGH COOLER.
ET-1	EXPANSION TANK	--	--	--	3/4	--	AMTROL THERM-X-TROL ST-12, OR APPROVED EQUAL, NON-ASME SERIES THERMAL EXPANSION ABSORBER, ANTI-MICROBIAL LINER, AND 5 YEAR WARRANTY.
EYE-1	EMERGENCY EYE WASH (WALL MOUNTED w/ BOWL) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	ACORN SAFETY MODEL 50440-CS1, BARRIER-FREE, WALL MOUNTED EYE/FACE WASH, STAINLESS STEEL BOWL WITH A "CLAM-SHELL" STAINLESS STEEL COVER, AND ACORN MODEL ET71-1-BVS-OTG LEAD-FREE EMERGENCY THERMOSTATIC MIXING VALVE WITH 1/2" NPT INLETS & OUTLET, 4 GPM @ 5 PSID. PROVIDE WITH LOCKABLE INLET BALL VALVES, STANDARD OUTLET TEMPERATURE GAUGE, AND SELECTABLE TEMPERATURE RANGE FROM 60°F TO 95°F.
FCO	FLOOR CLEANOUT	SEE PLANS	--	--	--	--	JAY R. SMITH 4020 SERIES WITH ADJUSTABLE, ROUND NICKEL BRONZE TOP AND ABS PLUG.
FD-1	FLOOR DRAIN (PVC BODY) (CONCRETE FLOOR)	2	2	2	--	--	SIOUX CHIEF SERIES NUMBER 832-2PNR, POST- CONSTRUCTION LEVELING FLOOR DRAIN, NO-HUB OUTLET, 6-1/2" ROUND, ADJUSTABLE NICKEL BRONZE STRAINER AND TRAP PRIMER PORT. INSTALL TOP OF DRAIN 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
FL-1	FLAMMABLE LIQUIDS INTERCEPTOR (1500 GALLONS)	4	3	--	--	--	PRE-CAST CONCRETE, 1500 GALLON CAPACITY, FLAMMABLE LIQUIDS INTERCEPTOR. SEE DRAWING FOR DETAILS. NO SPLIT DESIGN VAULTS WITH GASKETS BELOW FLUID LEVEL ALLOWED.
FS-1	FLOOR SINK (6" DEEP) (HALF GRATE, FOOT TRAFFIC RATED)	2	2	2	--	--	JAY R. SMITH FIGURE NUMBER 3160X-12, CAST IRON RECEPTOR, ALUMINUM DOME STRAINER, NICKEL BRONZE GRATE, AND TRAP PRIMER. INSTALL TOP OF SINK 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
FS-2	FLOOR SINK (10" DEEP) (HALF GRATE, FOOT TRAFFIC RATED)	4	2	4	--	--	JAY R. SMITH FIGURE NUMBER 3160Y-12, CAST IRON RECEPTOR, ALUMINUM DOME STRAINER, NICKEL BRONZE GRATE, AND TRAP PRIMER. INSTALL TOP OF SINK 1/8" BELOW FINISH FLOOR AND CAULK EDGE.
GCO	GRADE CLEANOUT (NON-PAVED AREAS)	SEE PLANS	--	--	--	--	JAY R. SMITH 4220 SERIES, ROUND EXTRA HEAVY DUTY CAST IRON TOP. FURNISH WITH WITH ABS PLUG. COVER TO BE INSCRIBED "SAN".
GCO	GRADE CLEANOUT (PAVED AREAS) (VEHICULAR TRAFFIC)	SEE PLANS	--	--	--	--	JAY R. SMITH 4250 SERIES, ROUND FLANGED HOUSING WITH HEAVY DUTY CAST IRON COVER. FURNISH WITH ABS PLUG. COVER TO BE INSCRIBED "SAN".
HB-1	HOSE BIBB (EXTERIOR) (NON-FREEZE)	--	--	--	3/4	--	WOODFORD MODEL 67 - EXPOSED STYLE WITH MODEL 50HA BACKFLOW PREVENTER, 3/4" INLET , AND CHROME PLATED. PROVIDE WITH TEE KEY AND INSTALL AT 18" ABOVE FINISH GRADE.
HR-1	COMPRESSED AIR HOSE REEL	--	--	--	--	--	REELCRAFT MODEL 5650 OLP, 50 FOOT PREMIUM DUTY RETRACTABLE AIR REEL. MAX WORKING PRESSURE OF 300 PSI. COORDINATE HOSE OUTLET SIZE WITH OWNER.
LAV-1	LAVATORY (COUNTERTOP / CABINET MOUNTED) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	LAV INTEGRAL TO COUNTERTOP. PROVIDE LAV BASIN WITH GRID STRAINER. KOHLER CORALAIS MODEL K-15198-4RA, 4-1/2" LONG, SINGLE LEVER FAUCET WITH 0.5 GPM AERATOR. PROVIDE WITH WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRASS BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F. PROVIDE WITH PIPING INSULATION, TRUEBRO LAV GUARD, PLUMBEREX HANDI-SHIELD, OR EQUAL.
LAV-2	LAVATORY (WALL MOUNTED) (ADA COMPLIANT)	1 1/2	1 1/2	1 1/4	1/2	1/2	KOHLER KINGSTON MODEL K-2005. VITREOUS CHINA, WALL MOUNTED, HOLES ON 4" CENTERS, AND GRID STRAINER. KOHLER CORALAIS MODEL K-15198 - 4-1/2" LONG, SINGLE LEVER FAUCET WITH 0.5 GPM AERATOR. PROVIDE WITH JAY R. SMITH FIGURE NUMBER 0700-Z SUPPORT WITH CONCEALED ARMS AND WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F. PROVIDE WITH LS-1 LAV SHIELD.
LS-1	LAVATORY SHIELD (WALL MOUNTED SHIELD FOR CONCEALING PIPING, VALVES, AND INSTANTANEOUS WATER HEATERS)	--	--	--	--	--	TRUEBRO "LAV SHIELD", ADA COMPLIANT, TOTAL ENCLOSURE. SINGLE-PIECE CONSTRUCTION AND PRE-CUT TO MATCH LAVATORY FURNISHED BY CONTRACTOR.
RP-1	RECIRCULATION PUMP (HOT WATER RETURN SYSTEM) (SMALL SYSTEM)	--	--	--	--	3/4	BELL AND GOSSETT BRONZE MODEL NBF-105LW, 115 VOLT, 0.46 AMPS, 55 WATTS, AND SHALL PROVIDE 4 GPM AT 7 FEET HEAD. INCLUDE 7-DAY PROGRAMMABLE ELECTRONIC TIME CLOCK WITH BATTERY BACKUP, INTERMATIC MODEL GM40AVE-RD89. APPROVED ALTERNATE: ARMSTRONG, TACO, GRUNDFOS.
RPBP-1	REDUCED PRESSURE BACKFLOW PREVENTER	INDIRECT			--	--	WATTS SERIES LF009 LEAD-FREE REDUCED PRESSURE ZONE ASSEMBLY WITH QUARTER-TURN BALL VALVES, STRAINER, AND AIR GAP. CAST COPPER BODY CONSTRUCTION - 1/2" THRU 2". PROVIDE SERIES 957 FOR SIZES 2 1/2" THRU 10".
S-1	SINK - DOUBLE COMPARTMENT (14" X 14" X 6 1/2" - EACH) (ADA COMPLIANT)	2	1 1/2	1 1/2	1/2	1/2	ELKAY LUSTERTONE MODEL LRAD331965: 6-1/2" DEEP, STAINLESS STEEL SINK. PROVIDE AND INSTALL ELKAY MODEL LK3001CR SINGLE LEVER CHROME FAUCET WITH SWING SPOUT AND HOSE SPRAY, ELKAY MODEL LK35 STAINLESS STEEL STRAINER BASKET AND TAILPIECE, AND WATTS SERIES LFUSG-B LEAD-FREE, THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F.
SA-1	SHOCK ABSORBER (WATER HAMMER ARRESTOR)	--	--	--	--	--	JAY R. SMITH FIGURE NUMBER 5005 TO 5050, SIZED PER FIXTURES SERVED. PROVIDE AN ACCESS PANEL AND A BALL TYPE SHUT-OFF VALVE UPSTREAM OF SHOCK ABSORBER.
SHR-1	SHOWER PACKAGE (60" X 36" X 77") (INSERT STYLE - ROLL-IN) (ADA / ANSI 117.1 COMPLIANT)	2	1 1/2	2	1/2	1/2	AQUATIC MODEL 16036TRCOL WITH A 1/2" BEVELED THRESHOLD, ADA / FHA APPROVED, ONE PIECE MODULE WITH ACRYLX APPLIED ACRYLIC SURFACE, INTEGRAL REINFORCEMENT BACKING, AND CUSTOMIZED INSTALLATION OF ACCESSORIES. ADA MINIMUM INSIDE DIMENSIONS OF 60" X 30" FOR ROLL IN SHOWERS, 1/2" BEVELED THRESHOLD ELIMINATES THE NEED TO RECESS FOR ADA COMPLIANCE IF A 1/2" MINIMUM FLOORING IS USED. INCLUDE: SAFETY GRAB BARS, (1) 32"X16" PHENOLIC SLAB OFF WHITE PHENOLIC SWING DOWN ADA COMPLIANT SEAT WITH LEGS, (1) SIOUX CHIEF CAULKLESS BRASS DRAIN #827-2B WITH CHROME SCREEN. MOEN 8346 HANDHELD SHOWER SYSTEM WITH 2.5 GPM FLOW RESTRICTOR, POSI-TEMP WITHOUT VOLUME CONTROL, ADJUSTABLE TEMPERATURE LIMIT STOP, 1/4" TURN STOPS, 4 PORT CYCLING VALVE, HANDHELD SHOWER, 69" DOUBLE SWIVEL HOSE ASSEMBLY, 30" SLIDE BAR, VACUUM BREAKER, DROP ELL, 5 FT. WATER STOPPER, TAPE-WEIGHTED SHOWER CURTAIN, AND STAINLESS STEEL CURTAIN ROD. SEE NOTES 6 AND 7. (60"X36"X77" INTERIOR DIMENSIONS, 66"X38-1/8"X79" EXTERIOR DIMENSIONS).
SS-1	SERVICE SINK (28" RADIUS CORNER X 12") (FLOOR MOUNTED)	3	2	3	1/2	1/2	ACORN TERRAZZO-WARE MODEL TCR-28: PROVIDE AND INSTALL WITH MODEL KFC CHROME UTILITY FAUCET, STAINLESS STEEL BUMPER GUARD, DRAIN GASKET, 36" HOSE AND WALL HANGER, MOP HANGER, AND (2) STAINLESS STEEL WALL GUARDS. MOUNT FAUCET 36" AFF.
TD-1	TRENCH DRAIN (6" WIDE) (HEAVY TRAFFIC RATED)	2	2	2	--	--	JAY R. SMITH FIGURE NUMBER 9895, 6" WIDE TRENCH DRAIN SYSTEM WITH INTEGRAL METAL RAIL. PROVIDE WITH END CAPS, OUTLETS, 25" DEEP CATCH BASIN, AND 3/8" SLOTTED, HEAVY DUTY GRATE. RAPID TRENCH C1000 COMMERCIAL SERIES, TRENCH DRAIN INSTALLATION SYSTEM, COMPOSED OF 3-METER TONGUE AND GROOVE STEEL ALIGNMENT FRAME AND SUPPORT BRACKET WITH HORIZONTAL ADJUSTMENT. REFER TO ARCHITECTURAL PLAN FOR EXACT LENGTH REQUIREMENTS.
TP-1	TRAP PRIMER (PRESSURE ACTIVATED) (1 TO 4 TRAPS)	--	--	--	1/2"	--	PRECISION PLUMBING PRODUCTS MODEL CPO-500 WITH DU DISTRIBUTION UNIT IF REQUIRED FOR SERVING MORE THAN ONE TRAP.
TP-1	TRAP PRIMER (FLUSH VALVE PRIMER) (1 TRAP)	--	--	--	1/2"	--	PRECISION PLUMBING PRODUCTS MODEL FVP-1VB WITH VACUUM BREAKER. TRAP PRIMER TUBING SHALL BE INSTALLED OFF BACK OF FLUSH VALVE.
TP-1	TRAP PRIMER (LAVATORY TAILPIECE PRIMER) (1 TRAP)	--	--	--	1/2"	--	DEARBORN BRASS 1-1/2" TRAP PRIMER TAILPIECE WITH COMPRESSION CONNECTION.
U-1	URINAL (FLUSH VALVE) (SEE ARCH. FOR MOUNTING HEIGHT)	2	1 1/2	INT.	3/4	--	KOHLER BARDON MODEL K-4991-ET WALL MOUNTED URINAL WITH 3/4" TOP SPUD. SLOAN REGAL MODEL 186-0.5 FLUSHOMETER, 0.5 GPF. INCLUDE BEEHIVE STRAINER AND JAY R. SMITH FIGURE NUMBER 0637 ADJUSTABLE FIXTURE SUPPORT.
US-1	UTILITY SINK (23" X 21" X 13") (FLOOR MOUNTED)	2	1 1/2	1 1/2	1/2	1/2	FIAT MOLDED STONE MODEL FL-1 FLOOR MOUNTED SINK WITH EASY LEVELING LEGS, DRAIN ASSEMBLY AND STOPPER WITH FIAT A1 CHROME FAUCET, DECK MOUNTED, 4" O.C. WITH 4" WRISTBLADES, 6-3/4" SWING SPOUT, AND WATTS SERIES LFUSG-B LF. THERMOSTATIC MIXING VALVE, ASSE STANDARD 1070 LISTED, BRONZE BODY, INTEGRAL CHECK VALVES, AND SELECTABLE TEMPERATURE RANGE FROM 80°F TO 120°F.
WB-1	WALL BOX (WATER SUPPLY TO ICE MAKER)	--	--	--	1/2	--	OATEY FIREMASTER MODEL 39121 WITH FACEPLATE AND ADJUSTABLE METAL SUPPORT BRACKETS. FIRE-RATED, LOW LEAD, OR APPROVED EQUAL.
WB-2	WALL BOX (SUPPLY/DRAIN FOR WASHING MACHINE)	2	1 1/2	2	1/2	1/2	OATEY FIREMASTER MODEL 38478 WITH FACEPLATE, ADJUSTABLE METAL SUPPORT BRACKETS, AND WATER HAMMER ARRESTORS. FIRE RATED, OR APPROVED EQUAL.
WC-1	WATER CLOSET (17-1/2" SEAT HEIGHT) (FLUSH VALVE) (FLOOR MOUNTED) (COMFORT HEIGHT / ADA COMPLIANT)	4	2	INT.	1	--	KOHLER HIGHCLIFF ULTRA MODEL K-96057 FLOOR MOUNTED WITH ELONGATED BOWL. KOHLER LUSTRA MODEL K-4666-C ELONGATED OPEN FRONT SEAT WITH HINGE. SLOAN REGAL MODEL 111-1.6 FLUSHOMETER, 1.6 GPF.
WCO	WALL CLEANOUT	SEE PLANS	--	--	--	--	JAY R. SMITH 4472T SERIES WITH CAST BRONZE TAPER THREAD PLUG, STAINLESS STEEL ROUND COVER, AND A STAINLESS STEEL VANDAL PROOF SCREW.
WH-1	WATER HEATER (50 GALLON UPRIGHT MODEL) (208V-1Ø ELECTRIC)	--	--	--	SEE PLANS	SEE PLANS	BRADFORD WHITE MODEL LE350S3-3, NON-SIMULTANEOUS DUAL ELEMENTS, (2) 4.5 KW, 208V/1Ø, 24" DIAMETER, 47" TALL, WITH TOP CONNECTIONS. PROVIDE WITH WALL BRACKET SUPPORT AND SEISMIC STRAP. PROVIDE WATER HEATER WITH HEAT TRAP.

NOTES:

1. ALL ADA COMPLIANT FIXTURES MUST COMPLY WITH ICC/ANSI A117.1. SEE ARCHITECTURAL PLANS FOR HANDICAPPED FIXTURE DESIGNATIONS, LOCATIONS, CLEARANCES, AND MOUNTING HEIGHTS.
2. ALL EXPOSED HW PIPING, CW PIPING, AND DRAIN LINES BENEATH ALL LAVATORIES AND ALL ADA COMPLIANT SINKS MUST BE INSULATED TO PREVENT INJURY. REFER TO ARCHITECTURAL PLANS. INSULATE WITH MOLDED CLOSED CELL VINYL INSULATION - TRUEBRO, PLUMBEREX, OR EQUAL.
3. PROVIDE P-TRAP PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS (NOT ALL TRAP PRIMERS ARE INDICATED ON PLANS - REFERENCE DETAILS FOR ADDITIONAL INFORMATION). PROVIDE A BALL TYPE SHUT-OFF VALVE UPSTREAM OF PRIMER VALVE. SEE SPECIFICATIONS.
4. SEE SPECIFICATIONS FOR ALTERNATE APPROVED MANUFACTURERS.
5. LOCATE CONTROLS PER ADA STANDARDS; REFERENCE ARCHITECTURAL DRAWINGS FOR TUB/SHOWER ELEVATIONS.
6. BACKFLOW PREVENTION: THIS BUILDING IS PROVIDED WITH A REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) ON THE MAIN WATER SERVICE.



D1 WASTE AND VENT RISER RR 106-107
NOT TO SCALE



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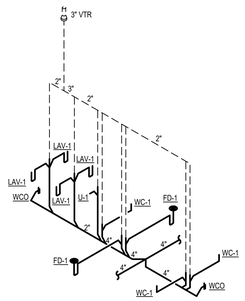

E1 WASTE AND VENT RISER RR 129-130
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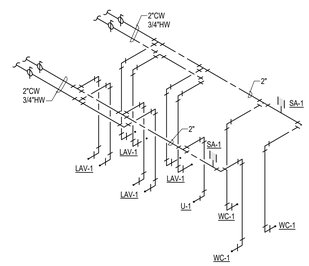

E3 WATER RISER RR 129-130
NOT TO SCALE

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MRK	DATE	DESCRIPTION
2	10/30/24	ADDENDUM #2

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	JD
CHECKED BY:	TN

PHASE: **PERMIT SET**

PLUMBING SCHEDULES

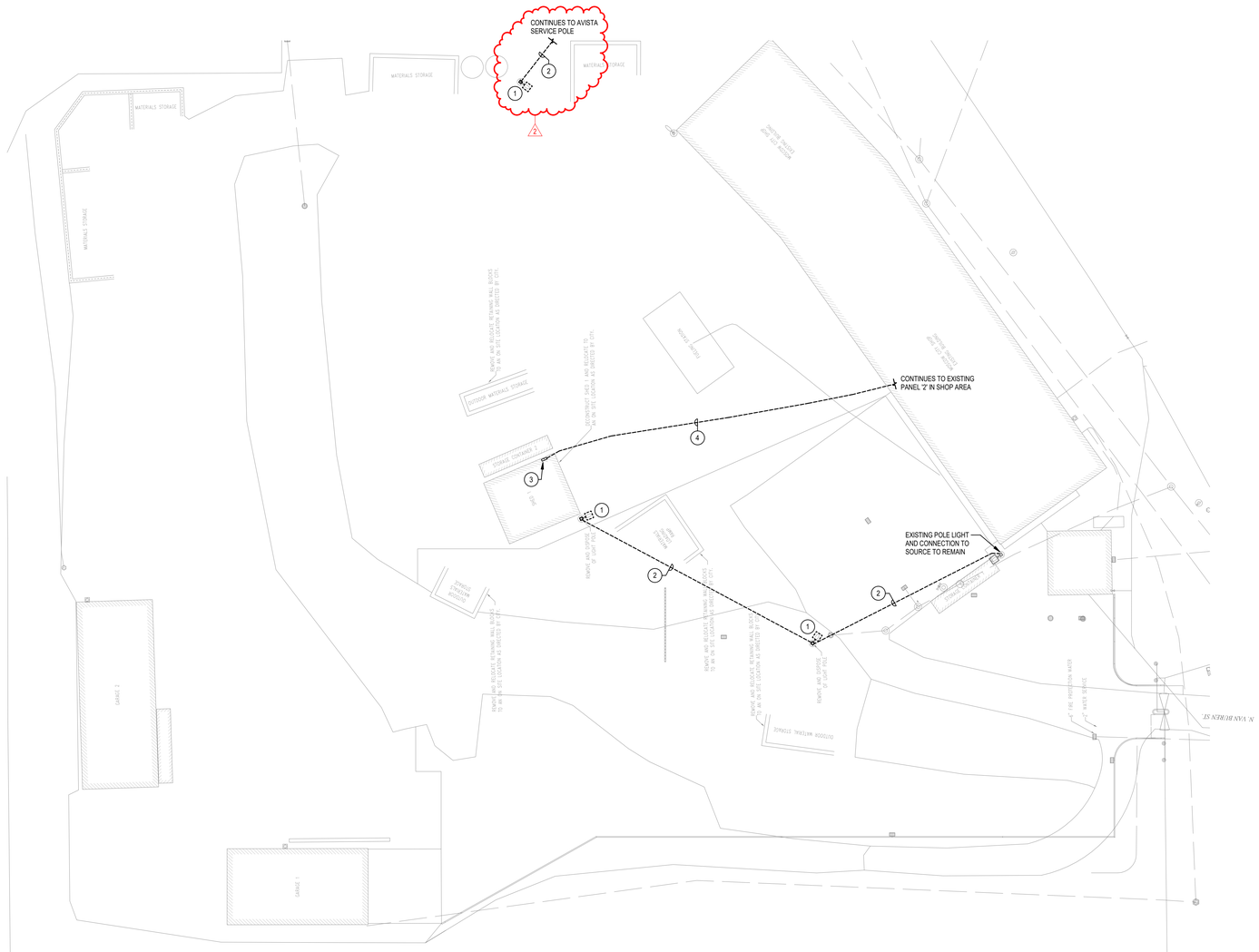
SHEET NO.

P4.00

10/29/2024 3:27:52 PM C:\Users\jakod\Documents\24052_Moscow City Shop_Mech Central Model_R23_JakeDSTBDJ.rvt

SHEET KEYNOTES

1. REMOVE AND LEGALLY DISPOSE OF EXISTING POLE AND YARD LIGHT.
2. REMOVE AND LEGALLY DISPOSE OF EXISTING TRI-PLEX OVERHEAD CABLE.
3. DISCONNECT, REMOVE, AND LEGALLY DISPOSE OF EXISTING LOAD CENTER AND ALL ASSOCIATED BRANCH CIRCUIT(S) AND DEVICES.
4. REMOVE AND LEGALLY DISPOSE OF UNDERGROUND FEEDER CONDUCTORS BACK TO SOURCE. ABANDON RACEWAY IN PLACE. CAP EXISTING RACEWAY UNDERGROUND.



THIS PLAN REPRESENTS EXISTING DEVICE AND EQUIPMENT LOCATIONS AS CLOSELY AS REASONABLY DISCERNIBLE AND IS PROVIDED FOR CONTRACTOR INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN VERIFICATION OF EXISTING CONDITIONS PRIOR TO BID.

GENERAL NOTES

1. REFER TO CIVIL PLANS FOR COORDINATION WITH OTHER EXISTING UTILITIES ON SITE AND FOR INSTRUCTIONS REGARDING LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON CIVIL PLANS IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS REGARDING UNDERGROUND FACILITIES DAMAGE PREVENTION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED AS A RESULT OF SITE WORK. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES OR LOCATING SERVICES FOR EXACT UTILITY LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO DIGGING.
3. PRESERVE AND PROTECT ALL FACILITIES, STRUCTURES, AND LANDSCAPING OUTSIDE OF THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED.
4. COORDINATE WITH LANDSCAPING PLANS FOR SCHEDULE OF LANDSCAPING AND TREES.
5. EXISTING EQUIPMENT, DEVICES, AND CONNECTIONS WHERE SHOWN TO REMAIN ARE TO BE PROTECTED DURING ENTIRE CONSTRUCTION PROCESS. PROTECT ALL CONNECTIONS TO KEEP EXISTING EQUIPMENT ACTIVE. WHERE CONNECTIONS ARE DISRUPTED DUE TO CONSTRUCTION ACTIVITIES, REPAIR AND REPLACE DAMAGED CONNECTIONS.
6. CONTRACTOR TO PROVIDE THE OWNER WITH 24 HOUR NOTICE PRIOR TO DISCONNECTING POWER OR OTHER UTILITIES.

E2 SITE ELECTRICAL DEMOLITION PLAN
1" = 30'-0"

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MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW
2	09/09/24	ADDENDUM #2

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**MKC/CRH**
CHECKED BY:	**GLJ**

PHASE: **PERMIT SET**

SITE ELECTRICAL DEMOLITION PLAN

SHEET NO.
E1.00

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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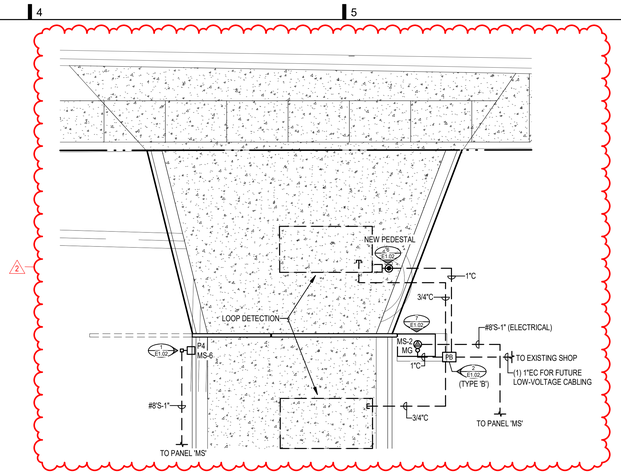
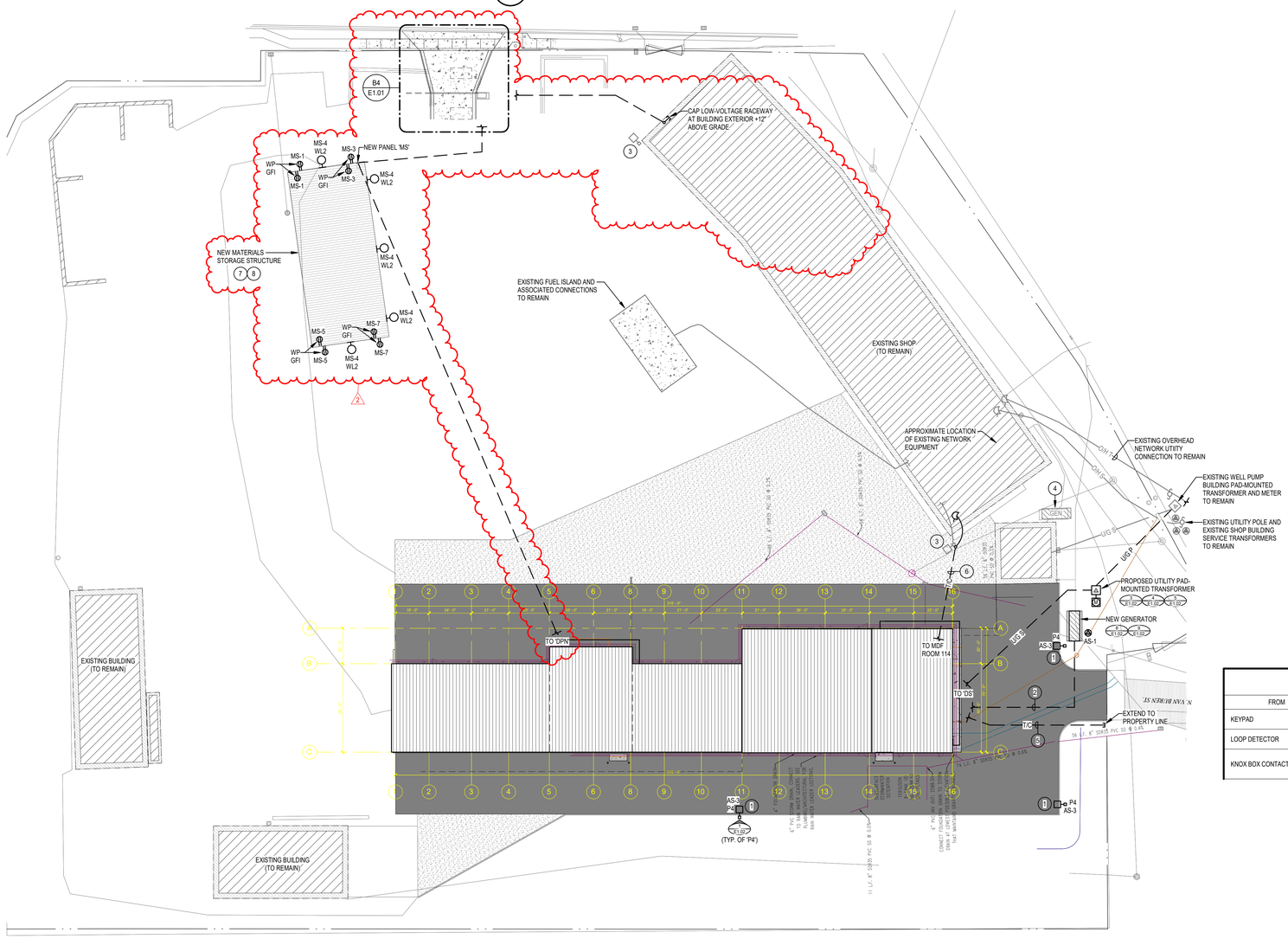


B4 MOTORIZED ENTRY GATE ENLARGED ELECTRICAL PLAN
1/8" = 1'-0"



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E2 SITE ELECTRICAL PLAN
1" = 30'-0"

SHEET KEYNOTES

1. #8'S-1" UNDERGROUND FOR ENTIRE CIRCUIT.
2. UNDERGROUND CONNECTIONS TO GENERATOR. CONTINUE INTO BUILDING PER PLANS AND DETAILS.
3. PRESERVE AND PROTECT EXISTING POLE, YARD LIGHT, AND OVERHEAD CONNECTION TO SHOP BUILDING.
4. PRESERVE AND PROTECT EXISTING GENERATOR AND ASSOCIATED CONNECTIONS.
5. (2) 2"C'S FOR NEW NETWORK UTILITY SERVICE. EXTEND TO 'MDF' IN ROOM 114.
6. NEW FIBER-OPTIC BACKBONE CABLE TO EXISTING SHOP NETWORK EQUIPMENT. ROUTE UNDERGROUND TO EXISTING POLE THEN UP WITH SLACK LOOP TO EXISTING ROOF. CONTINUE THROUGH EXISTING BUILDING TO NETWORK EQUIPMENT.
7. ALL RECEPTACLES AT +46" ABOVE FINISHED GRADE; #10'S FOR CIRCUIT CONDUCTORS.
8. ALL 'WL2' LUMINAIRES AT +17'-0" ABOVE FINISHED GRADE; #10'S FOR CIRCUIT CONDUCTORS.

GENERAL NOTES

1. REFER TO CIVIL PLANS FOR COORDINATION WITH OTHER EXISTING UTILITIES ON SITE AND FOR INSTRUCTIONS REGARDING LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON CIVIL PLANS IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS REGARDING UNDERGROUND FACILITIES DAMAGE PREVENTION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED AS A RESULT OF SITE WORK. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES OR LOCATING SERVICES FOR EXACT UTILITY LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO DIGGING.
3. PRESERVE AND PROTECT ALL FACILITIES, STRUCTURES, AND LANDSCAPING OUTSIDE OF THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED.
4. COORDINATE WITH LANDSCAPING PLANS FOR SCHEDULE OF LANDSCAPING AND TREES.
5. EXISTING EQUIPMENT, DEVICES, AND CONNECTIONS WHERE SHOWN TO REMAIN ARE TO BE PROTECTED DURING ENTIRE CONSTRUCTION PROCESS. PROTECT ALL CONNECTIONS TO KEEP EXISTING EQUIPMENT ACTIVE. WHERE CONNECTIONS ARE DISRUPTED DUE TO CONSTRUCTION ACTIVITIES, REPAIR AND REPLACE DAMAGED CONNECTIONS.
6. CONTRACTOR TO PROVIDE THE OWNER WITH 24 HOUR NOTICE PRIOR TO DISCONNECTING POWER OR OTHER UTILITIES.
7. ALL UNDERGROUND CONDUIT ELBOWS SWEEPING TO ABOVE GRADE SHALL BE PVC WRAPPED RIGID. WHERE SWEEPING ABOVE GRADE, CONDUITS SHALL PROTRUDE A MINIMUM OF 3 INCHES ABOVE GRADE.
8. REFER TO SPECIFICATION SECTION 260100 FOR COORDINATION REQUIREMENTS WITH ELECTRICAL UTILITY COMPANY.
9. ALL CONDUCTORS/CABLES INSTALLED UNDERGROUND SHALL BE SUITABLE FOR WET LOCATIONS.

ENTRY / EXIT GATE SEQUENCE OF OPERATION

OPERATION OF ENTRY/EXIT GATES SHALL BE BY ANY OF THE FUNCTIONS DESCRIBED BELOW:

- KEYPAD SYSTEM. PROPER VERIFICATION OF KEYPAD SHALL ALLOW THE ENTRY GATE TO OPERATE. LOOP DETECTOR CABLE OR TIME-OUT FUNCTION SHALL CLOSE ENTRY GATE UPON VERIFICATION.
- EXIT GATE SHALL OPERATE UPON ACTIVATION OF LOOP DETECTION CABLE IN ROADWAY OF EXIT.
- KNOX BOX ACTIVATION. KNOX BOX INSTALLED AT THE ENTRY GATE PEDESTAL SHALL BE PROVIDED WITH CONTACTS THAT WILL INITIATE OPERATION OF BOTH THE ENTRY AND EXIT GATES WHEN KNOX BOX IS OPENED BY THE FIRE DEPARTMENT. GATES SHALL BE PROGRAMMED TO REMAIN OPEN UNTIL KNOX BOX IS CLOSED AND LOCKED BY FIRE DEPARTMENT. UPON CLOSURE OF THE KNOX BOX, ENTRY AND EXIT GATES SHALL CLOSE. NO OTHER OPERATIONS SHALL BE ACKNOWLEDGED WHILE GATES ARE IN THE OPEN POSITION FROM ACTIVATION FROM THE KNOX BOX.

REFER TO GATE CONTROLLER SPECIFICATIONS AND COORDINATE INSTALLATION WITH GATE CONTROLLER MANUFACTURER AND CONTRACTOR. PROGRAM SYSTEM TO OPERATE WITH SEQUENCES ABOVE AND/OR DIRECTION FROM USER AGENCY FOR OPERATION OF SYSTEM.

ENTRY / EXIT GATE CABLING LEGEND

FROM	TO	CONDUCTOR TYPE
KEYPAD	GATE CONTROLLER	AS RECOMMENDED BY GATE MANUFACTURER
LOOP DETECTOR	GATE CONTROLLER	AS RECOMMENDED BY GATE MANUFACTURER
KNOX BOX CONTACTS	ENTRY GATE CONTROLLER	CONDUCTORS TO OPEN GATE UPON OPENING OF KNOX BOX BY FIRE DEPARTMENT

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MRK	DATE	DESCRIPTION
1	08/07/24	PLAN REVIEW
2	09/09/24	ADDENDUM #2

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

SITE ELECTRICAL PLAN

SHEET NO.
E1.01

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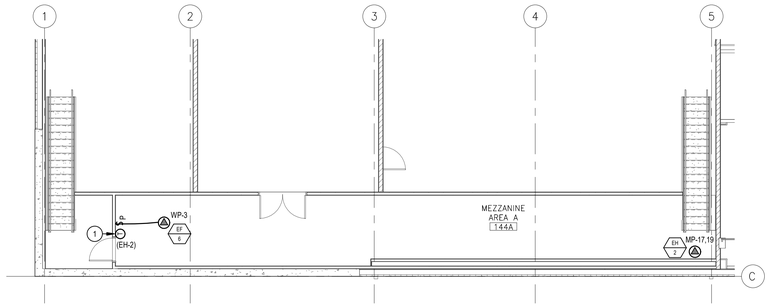
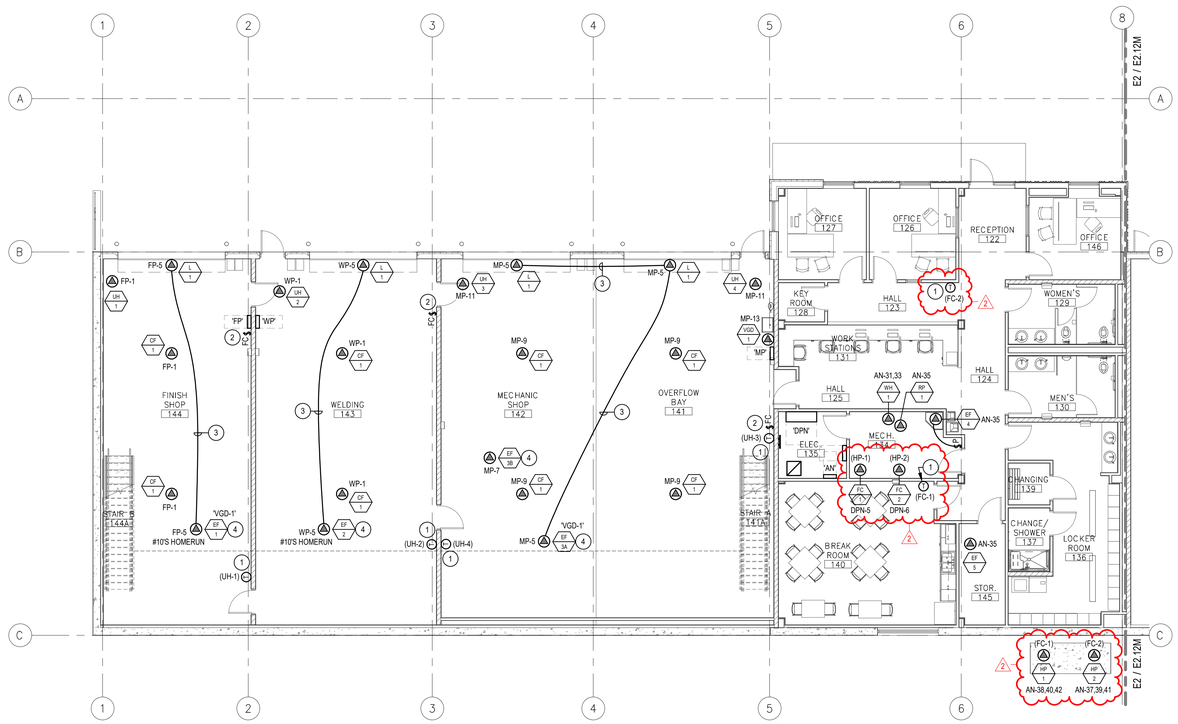


B2 MEZZANINE MECHANICAL POWER PLAN - AREA A
1/8" = 1'-0"



E2 MECHANICAL POWER PLAN - AREA A
1/8" = 1'-0"

MECHANICAL EQUIPMENT CONNECTION SCHEDULE						
EQUIPMENT	VOLTAGE	FLA	DISCONNECT	CONDUCTORS	CONDUIT	NOTES
CF-1	120/1	0.815	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-1	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-2	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-3A	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-3B	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-4	120/1	0.38	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-5	120/1	7.2	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-6	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EH-2	208/1	16.7	HANDI DISCONNECT	2-12 & 1-12(G)	3/4"	
FC-1	208/1	68.0	100A/2P, NON-FUSED, NEMA '1'	SEE ONE LINE DIAGRAM	–	1
FC-2	208/3	62.0	100A/3P, NON-FUSED, NEMA '1'	SEE ONE LINE DIAGRAM	–	1
HP-1	208/3	12.0	30A/3P, NON-FUSED, NEMA '3R'	4-10 & 1-10(G)	3/4"	1
HP-2	208/3	18.0	30A/3P, NON-FUSED, NEMA '3R'	4-10 & 1-10(G)	3/4"	1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RP-1	120/1	0.46	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-1	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-2	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-3	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-4	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
VGD-1	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
WH-1	208/1	21.6	30A/2P, NON-FUSED, NEMA '1'	2-10 & 1-10(G)	3/4"	

NOTES:
1. ROUTE 3/4"C WITH CONTROLS BETWEEN RESPECTIVE INDOOR AND OUTDOOR UNIT.

SHEET KEYNOTES

1. 3/4" CONDUIT AND CONTROL CONDUCTORS TO RESPECTIVE EQUIPMENT.
2. 3/4" CONDUIT AND CONTROL CONDUCTORS TO ALL CEILING FANS IN BAY FOR CONTROL.
3. INTERLOCK FOR LOUVER OPEN / CLOSE ON EXHAUST START / STOP.
4. ROUTE CONTROL CONNECTIONS THROUGH RESPECTIVE 'VGD' CONTROL PANEL; COORDINATE CONNECTIONS WITH VEHICLE GAS DETECTION SYSTEM MANUFACTURER; SEE MECHANICAL FOR SYSTEM CONNECTION REQUIREMENTS.

GENERAL NOTES

1. REFER TO MECHANICAL PLANS FOR DUCTWORK CONFIGURATIONS AND DUCT CONNECTIONS TO MECHANICAL EQUIPMENT. ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE PROPERLY COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO MAINTAIN ACCESS TO AND WORKING CLEARANCE AROUND ALL MECHANICAL EQUIPMENT PRIOR TO COMMENCING INSTALLATION.
2. REFER TO CEILING MOUNTED MECHANICAL EQUIPMENT DETAIL(S) FOR CONNECTIONS TO ELECTRICAL COMPONENTS ASSOCIATED WITH MECHANICAL EQUIPMENT, DISCONNECTING MEANS MOUNTING LOCATIONS, AND WORKING CLEARANCE REQUIREMENTS. DETAIL(S) ARE SHOWN ON SHEET E4.00.
3. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
4. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
5. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
6. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
7. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:
- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

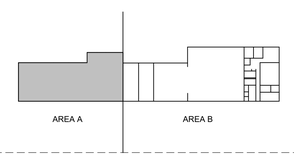
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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CITY OF MOSCOW

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(208) 345-7127

MRK	DATE	DESCRIPTION
1	08/07/24	PLAN REVIEW
2	09/06/24	ADDENDUM #2

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **MKC/CRH**
CHECKED BY: **GLJ**

PHASE: **PERMIT SET**

MECHANICAL POWER PLAN - AREA A

SHEET NO.
E2.11M

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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COMBINATION DISCONNECT/STARTER SCHEDULE

EQUIPMENT	STARTER SIZE	DISCONNECT SIZE	HOA	CONTROL VOLTAGE	ENCLOSURE	MOTOR LOAD	NOTES
EF-9A	1	30A	●	24V	NEMA '1'	1 1/4 HP	1
EF-9B	1	30A	●	24V	NEMA '1'	1 1/4 HP	1

NOTES:
1. CONNECT STARTER COIL TO RELAY SIGNAL FROM 'VGD-3' FOR OPERATION.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT	VOLTAGE	FLA	DISCONNECT	CONDUCTORS	CONDUIT	NOTES
CF-1	120/1	0.815	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-7A	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-7B	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-8	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-9A	208/3	20.0	SEE STARTER SCHEDULE	3-10 & 1-10(G)	3/4"	
EF-9B	208/3	20.0	SEE STARTER SCHEDULE	3-10 & 1-10(G)	3/4"	
EF-10	120/1	5.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
EF-11	120/1	2.39	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
FC-1	208/3	1.0	20A/2P, NON-FUSED, NEMA '1'	SEE ONE LINE DIAGRAM	–	1
FC-3	208/3	62.0	100A/3P, NON-FUSED, NEMA '1'	SEE ONE LINE DIAGRAM	–	1
FC-4	208/3	75.0	100A/3P, NON-FUSED, NEMA '1'	SEE ONE LINE DIAGRAM	–	1
HP-2	208/3	18.0	30A/3P, NON-FUSED, NEMA '3R'	4-10 & 1-10(G)	3/4"	1
HP-3	208/3	18.0	30A/3P, NON-FUSED, NEMA '3R'	4-10 & 1-10(G)	3/4"	1
HP-4	208/3	18.0	30A/3P, NON-FUSED, NEMA '3R'	4-10 & 1-10(G)	3/4"	1
HR-1	208/3	4.0	INTEGRAL TO CONTROL BOX	3-12 & 1-12(G)	3/4"	2
HR-2D	120/1	9.8	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	2
HR-2F	208/3	4.0	INTEGRAL TO CONTROL BOX	3-12 & 1-12(G)	3/4"	2
L-1	120/1	0.5	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
L-2	120/1	0.5	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
RP-1	120/1	0.46	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-6	120/1	4.4	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-7	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-8	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-12 & 1-12(G)	3/4"	
UH-9	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-10	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-11	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
UH-12	120/1	6.3	SINGLE POLE TOGGLE SWITCH	2-10 & 1-10(G)	3/4"	
VGD-2	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
VGD-3	120/1	4.2	HARD WIRE TO PANEL	2-12 & 1-12(G)	3/4"	
WH-1	208/1	21.6	30A/2P, NON-FUSED, NEMA '1'	2-10 & 1-10(G)	3/4"	

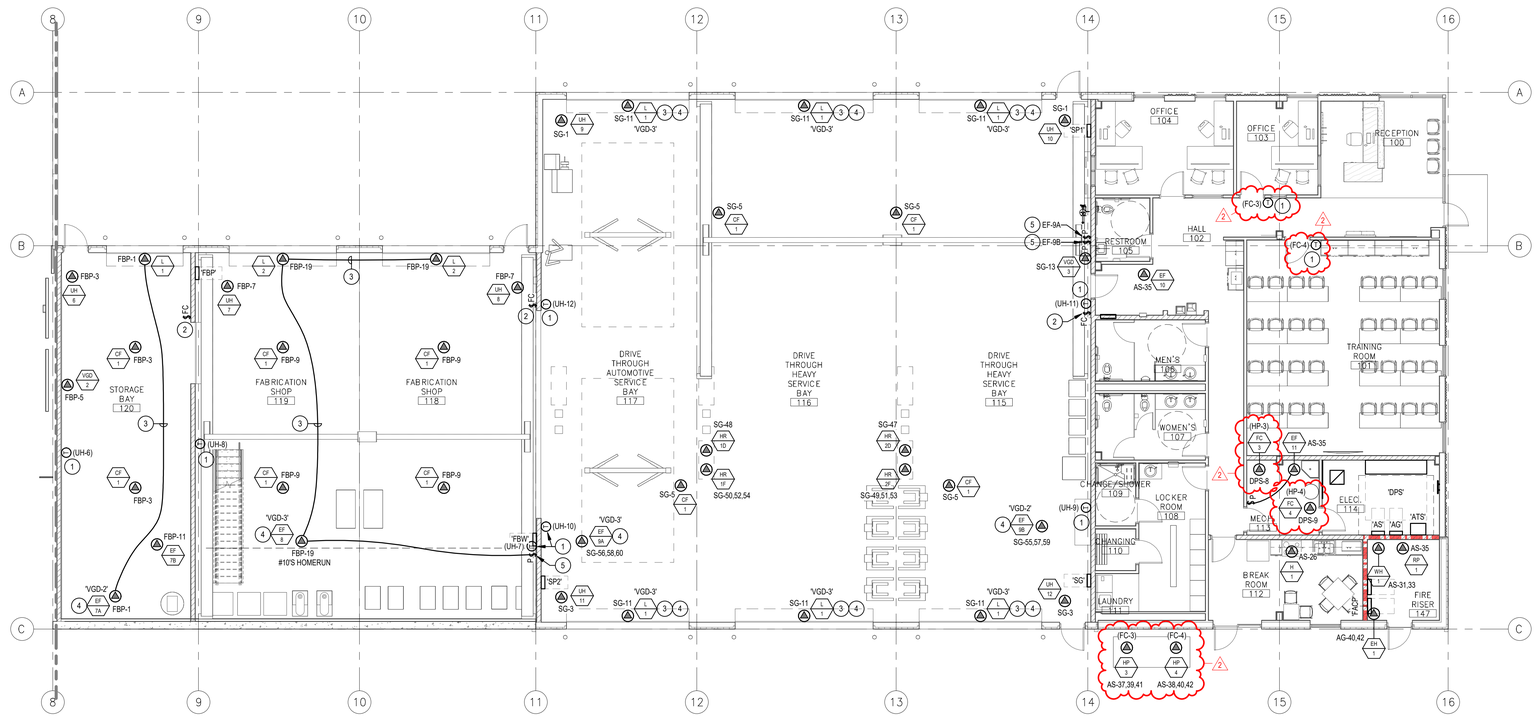
NOTES:
1. ROUTE 3/4"C WITH CONTROLS BETWEEN RESPECTIVE INDOOR AND OUTDOOR UNIT.
2. ROUTE THROUGH FACTORY-PROVIDED CONTROL DEVICES; VERIFY LOCATION WITH MANUFACTURER'S RECOMMENDATIONS.
3. INSTALL CONNECTIONS TO WALL-MOUNTED CONTROL DEVICES PER MANUFACTURER.

SHEET KEYNOTES

1. 3/4" CONDUIT AND CONTROL CONDUCTORS TO RESPECTIVE EQUIPMENT.
2. 3/4" CONDUIT AND CONTROL CONDUCTORS TO ALL CEILING FANS IN BAY FOR CONTROL.
3. INTERLOCK FOR LOUVER OPEN / CLOSE ON EXHAUST START / STOP.
4. ROUTE CONTROL CONNECTIONS THROUGH RESPECTIVE 'VGD' CONTROL PANEL; COORDINATE CONNECTIONS WITH VEHICLE GAS DETECTION SYSTEM MANUFACTURER; SEE MECHANICAL FOR SYSTEM CONNECTION REQUIREMENTS.
5. SEE MECHANICAL EQUIPMENT SCHEDULES FOR SEQUENCING AND LABELING REQUIREMENTS, AND MECHANICAL SYSTEM CONNECTION REQUIREMENTS.

GENERAL NOTES

1. REFER TO MECHANICAL PLANS FOR DUCTWORK CONFIGURATIONS AND DUCT CONNECTIONS TO MECHANICAL EQUIPMENT. ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE PROPERLY COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO MAINTAIN ACCESS TO AND WORKING CLEARANCE AROUND ALL MECHANICAL EQUIPMENT PRIOR TO COMMENCING INSTALLATION.
2. REFER TO CEILING MOUNTED MECHANICAL EQUIPMENT DETAIL(S) FOR CONNECTIONS TO ELECTRICAL COMPONENTS ASSOCIATED WITH MECHANICAL EQUIPMENT. DISCONNECTING MEANS MOUNTING LOCATIONS, AND WORKING CLEARANCE REQUIREMENTS. DETAIL(S) ARE SHOWN ON SHEET E4.00.
3. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
4. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
5. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
6. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
7. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.



E2 MECHANICAL POWER PLAN - AREA B
1/8" = 1'-0"

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SHOP EQUIPMENT AND CONNECTIONS

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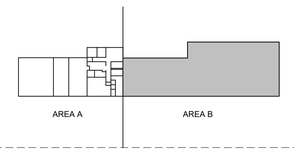

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JOB NO.: 24000.01
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PHASE: PERMIT SET

MECHANICAL POWER PLAN - AREA B

SHEET NO.
E2.12M

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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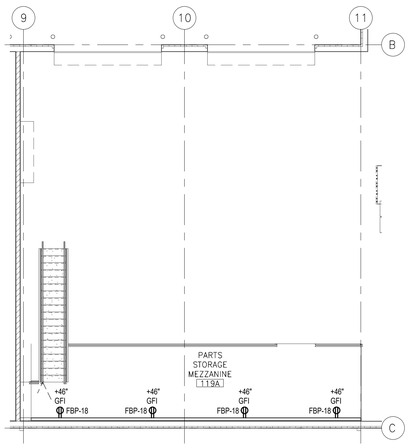


B2 MEZZANINE POWER PLAN - AREA B

1/8" = 1'-0"

SHOP EQUIPMENT AND CONNECTIONS - AREA B

ITEM NUMBER	DESCRIPTION	LOAD: HORSEPOWER	LOAD: KILOWATTS	VOLTAGE: 120V - 1 PHASE	VOLTAGE: 208V - 1 PHASE	VOLTAGE: 208V - 3 PHASE	VOLTAGE: 480V - 3 PHASE	DISC. MEANS: DISC. SWITCH	DISC. MEANS: SWITCH SIZE	DISC. MEANS: RECEPTACLE	DISC. MEANS: RECEPTACLE NEMA CONFIGURATION	DISC. MEANS: PANEL BREAKER	CONNECTIONS: TYPE OF CONNECTION	CONNECTIONS: OUTLET MOUNTING HEIGHT	CONNECTIONS: PLUG AND CORD PROVIDED	FEEDER: NUMBER OF CONDUCTORS	FEEDER: WIRE SIZE	FEEDER: GROUND SIZE	FEEDER: CONDUIT SIZE	NOTES
B3	EXISTING 2-POST LIFT		5.4			●						●	HW			3	12	12	3/4"	1, 3, 5
B4	GENERAL USE EQUIPMENT		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	
B4A	EXISTING WELD #1		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4B	EXISTING WELD #2 (MT200)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4C	EXISTING WELD #3 (HOBART TT2300)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	5
B4D	EXISTING WELD #4 (MILLER 212)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B4E	EXISTING WELD #5 (MILLER 250)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B5A	EXISTING PLASMA #1 (HYPER 600)		8.3		●						●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B5B	EXISTING PLASMA #2 (HYPER 85)		14.4			●					●	10-50R	CORD & PLUG		●	3	8	10	3/4"	5
B6B	EXISTING BALANCER (COATS 1055)		5.8			●					●	L15-20R	CORD & PLUG	+46"	●	3	12	12	3/4"	1, 5
B7	OVERHEAD HOIST (5 TON)		9.5			●		●	60A/3P				HW	SEE NOTES		4	4	10	1 1/4"	1, 3, 4
B8	EXISTING DRILL PRESS		1.2	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	5
B9	NEW AIR COMPRESSOR	15				●		●	60A/3P				HW	+46"		3	6	10	3/4"	3
B9A	AIR COMPRESSOR DRYER		0.5	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	
B10	NEW 2-POST LIFT		5.4			●						●	HW			3	12	12	3/4"	1, 3, 6
B11	EXISTING GRINDER		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	3	12	12	3/4"	5
B12	EXISTING SHOP PRESS (EDWARDS)		8.3		●						●	10-50R	CORD & PLUG	+46"	●	3	8	10	3/4"	1, 5
B14	OVERHEAD HOIST (10 TON)		18.4			●		●	100A/3P				HW	SEE NOTES		4	1	8	1 1/2"	1, 3, 4
B17	CEILING RETRACTABLE CORD REEL		0.18	●							●	L15-20R	CORD & PLUG	C.LG. STRUCT.	●	2	12	12	3/4"	
B18	BAND SAW		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	5
B19	EXISTING BEAD BLASTER		1.6	●							●	5-20R GFCI	CORD & PLUG	+46"	●	2	12	12	3/4"	2, 5
B20A	EXISTING MOBILE COLUMN LIFT		2.9			●					●	L15-30R	CORD & PLUG	+46"	●	3	10	10	3/4"	5, 7

EQUIPMENT AND CONNECTION NOTES:

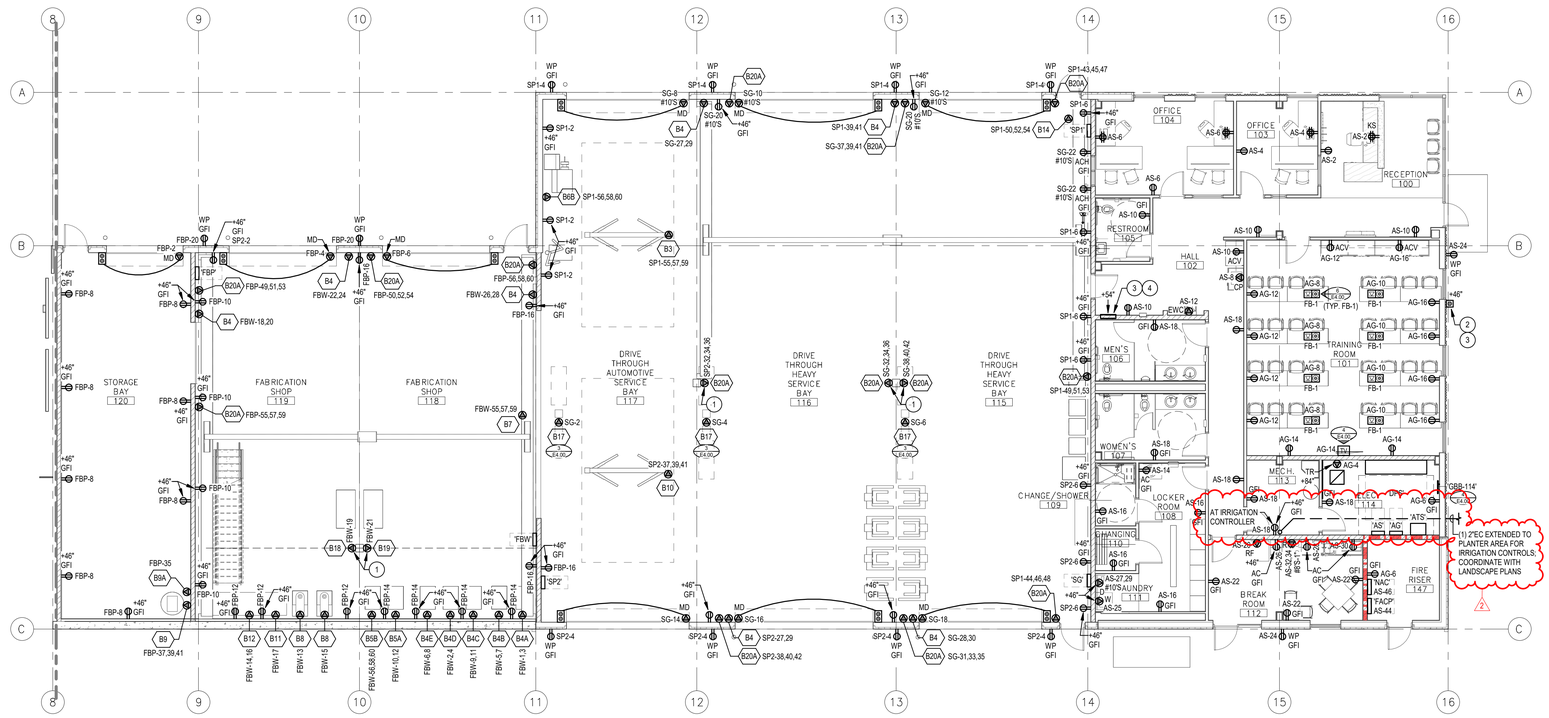
1. FIELD CONNECT CONTROLS, GROUNDING, AND INTERNAL COMPONENT CONNECTIONS PER MANUFACTURER'S SHOP DRAWINGS AND INSTRUCTIONS.
2. INTERLOCK WITH EXISTING DUST COLLECTION BIN CONTROLS.
3. FURNISH AND INSTALL FLEXIBLE CONNECTIONS TO EQUIPMENT.
4. FEED FROM CEILING WITH FLEXIBLE CONNECTION TO UNIT TERMINALS; LOCATE DISCONNECT AT CEILING STRUCTURE.
5. MATCH EXISTING CONNECTIONS.
6. CIRCUIT ROUGH-IN FOR FUTURE EQUIPMENT.
7. LOCATE RECEPTACLE ON WALL. FURNISH AND INSTALL SO CORD WITH MATCHING PLUG OF SUFFICIENT LENGTH FOR EQUIPMENT CONNECTION.

SHEET KEYNOTES

1. INSTALL EXPOSED ON STRUCTURAL COLUMN WITH OVERHEAD CONNECTION.
2. GENERATOR 'EPO' SWITCH IN WEATHERPROOF ENCLOSURE.
3. SEE 6/E1.02 FOR CONNECTION REQUIREMENTS.
4. GENERATOR REMOTE ANNUNCIATOR PANEL FLUSH IN WALL.

GENERAL NOTES

1. REFER TO SYMBOLS LIST ON E0.00 FOR REFERENCED SYMBOLS AND DESCRIPTIONS.
2. RECEPTACLE LOCATIONS SHALL BE COORDINATED WITH MILLWORK, WALL FINISHES, WINDOW HEIGHTS, AND OTHER WALL MOUNTED EQUIPMENT PRIOR TO ROUGH-IN. NOTIFY ARCHITECT OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
3. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE UTILIZED FOR LINE TO NEUTRAL LOADS. DEDICATED NEUTRAL CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS.
4. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36 INCHES ABOVE CEILING LEVEL.
5. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
6. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
7. RECEPTACLE AND WIRING DEVICE MOUNTING HEIGHTS SHALL BE REFERENCED FROM FINISHED FLOOR HEIGHT.
8. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.
9. FURNISH AND INSTALL ALL ELECTRICAL CONNECTIONS TO MOTORIZED DOOR OPERATORS AND ELECTRIFIED DOOR HARDWARE AS DIRECTED BY DOOR HARDWARE INSTALLER. COORDINATE LOCATION OF CONTROLLER, POWER SUPPLY, SAFETY SENSORS, AND ALL INTERCONNECTIONS WITH DOOR HARDWARE SUPPLIER PRIOR TO COMMENCING WORK.
10. ALL EXTERIOR PENETRATIONS SHALL BE SEALED. PENETRATIONS OF EXTERIOR WALLS SHALL BE POSITIONED AT LEAST 8" AWAY FROM WALL JOINTS.



E2 POWER PLAN - AREA B

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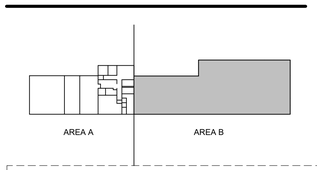

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DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

POWER PLAN - AREA B

SHEET NO.

E2.12P

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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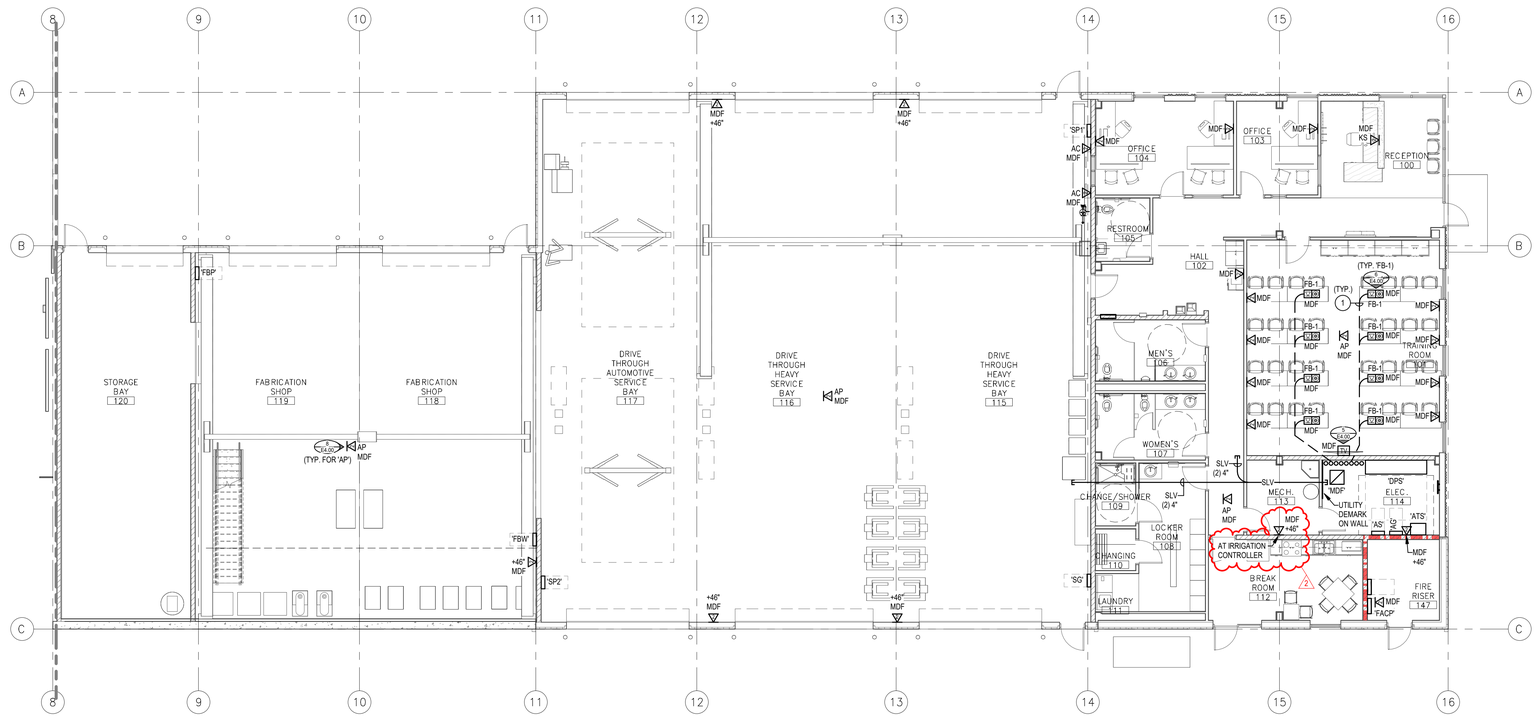
SHEET KEYNOTES

1. 1"C WITH FLOORBOX NETWORK CABLES UNDERSLAB TO HEAD END EQUIPMENT.

GENERAL NOTES

1. ALL JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL.
2. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
3. PENETRATIONS OF FIRE-RATED ASSEMBLIES SHALL BE PERFORMED IN ACCORDANCE WITH UL REQUIREMENTS AND DIVISION 7 SPECIFICATIONS.
4. REVIEW AND COORDINATE ALL EQUIPMENT CONNECTIONS WITH SUBMITTALS, SHOP DRAWINGS, AND MANUFACTURER'S INSTRUCTIONS FOR ALL ELECTRICALLY OPERATED EQUIPMENT SUPPLIED BY OTHER DIVISIONS OF WORK PRIOR TO COMMENCING WORK. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES IN ELECTRICAL CONNECTIONS BASED UPON REVIEW.
5. LOCATE TELECOMMUNICATIONS OUTLETS WITHIN 6" OF NEAREST RECEPTACLE. COORDINATE LOCATION WITH POWER PLANS PRIOR TO ROUGH-IN.
6. MINIMUM CONDUIT SIZE FOR TELECOMMUNICATIONS CIRCUITS: 1 INCH.
7. ALL TELECOMMUNICATIONS CONDUITS TERMINATED IN OPEN AIR/ABOVE CEILINGS SHALL BE FURNISHED WITH INSULATED THROAT BUSHINGS.
8. SPECIAL SYSTEM CONDUCTORS ABOVE ACCESSIBLE CEILING SHALL BE ROUTED TO RESPECTIVE HEAD END EQUIPMENT VIA CABLE TRAY OR RACEWAY SLEEVE(S). SUPPORT BY J-HOOKS AT 10' ON CENTER SUPPORTED FROM STRUCTURE ENROUTE TO CABLE TRAY. ROUTE CONDUCTORS THROUGH CONDUIT WHERE CEILING SPACES ARE EXPOSED OR UNACCESSIBLE.
9. OVERHEAD RACEWAY SLEEVES SHALL BE INSTALLED IN CONCEALED SPACES AS HIGH AS POSSIBLE TO STRUCTURE; COORDINATE ROUTING WITH STRUCTURAL SYSTEMS AND MECHANICAL SYSTEMS. TURN ENDS DOWN TO 36" ABOVE FINISHED CEILING OR 24" ABOVE CABLE TRAYS. SEAL ALL WALL PENETRATIONS.
10. FILL ONE OVERHEAD RACEWAY SLEEVE AT A TIME; DO NOT UTILIZE NEXT SLEEVE UNTIL FILL IS COMPLETE. DO NOT EXCEED CODE-REQUIRED FILL. MAINTAIN AS MANY SPARE SLEEVES AS POSSIBLE.
11. REFER TO TELECOMMUNICATIONS OUTLET INSTALLATION DETAIL, 7/E4.00, FOR TYPICAL INSTALLATION REQUIREMENTS.
12. REFER TO TELECOMMUNICATIONS SYSTEM ONE LINE DIAGRAM ON SHEET E4.00 FOR SYSTEM CONNECTION REQUIREMENTS, CONDUIT CONNECTIONS, AND EQUIPMENT RACK ELEVATIONS.



E2 SYSTEMS PLAN - AREA B
1/8" = 1'-0"

EXPOSED RACEWAY INSTALLATIONS

EXPOSED RACEWAYS SHALL BE PERMITTED IN ALL SHOP CEILING AREAS. EXPOSED RACEWAYS SHALL BE INSTALLED PLUMB WITH BUILDING LINES AND SHALL NOT BE ROUTED DIAGONAL OR ALONG WALLS. EXPOSED RACEWAYS ARE NOT PERMITTED IN THE FOLLOWING GENERAL AREAS AND THOSE SPECIFIC AREAS NOTED ON PLANS:

- EXTERIOR
- OFFICES
- RESTROOMS
- HALLWAYS / CORRIDORS
- COMMON AREAS

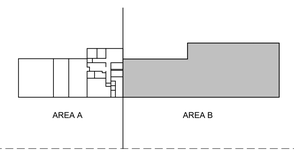
UNDERGROUND/UNDERSLAB RACEWAY INSTALLATION

CONDUITS ROUTED UNDERGROUND OR UNDERSLAB SHALL NOT BE ROUTED THROUGH FOOTINGS. CONDUITS MUST BE AT LEAST 12 INCHES BELOW FOOTINGS AND SLABS, WHICHEVER IS LOWER WHERE ENCOUNTERED.

SHOP EQUIPMENT AND CONNECTIONS

REFER TO SCHEDULE ON PLANS FOR INSTALLATION REQUIREMENTS FOR EQUIPMENT REFERENCED AND LABELED.

KEY PLAN



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ORIGINAL SEALED DOCUMENTS ON FILE WITH ENGINEER. DATE OF ORIGINAL SEAL: 09/26/2024

MOSCOW CITY SHOP

CITY OF MOSCOW

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MRK	DATE	DESCRIPTION
1	08/07/24	PLAN REVIEW
2	09/06/24	ADDENDUM #2

JOB NO.: **24000.01**
DATE: **07/24/2024**
DRAWN BY: **MKC/CRH**
CHECKED BY: **GLJ**

PHASE: **PERMIT SET**

SYSTEMS PLAN - AREA B

SHEET NO.
E2.12S

EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

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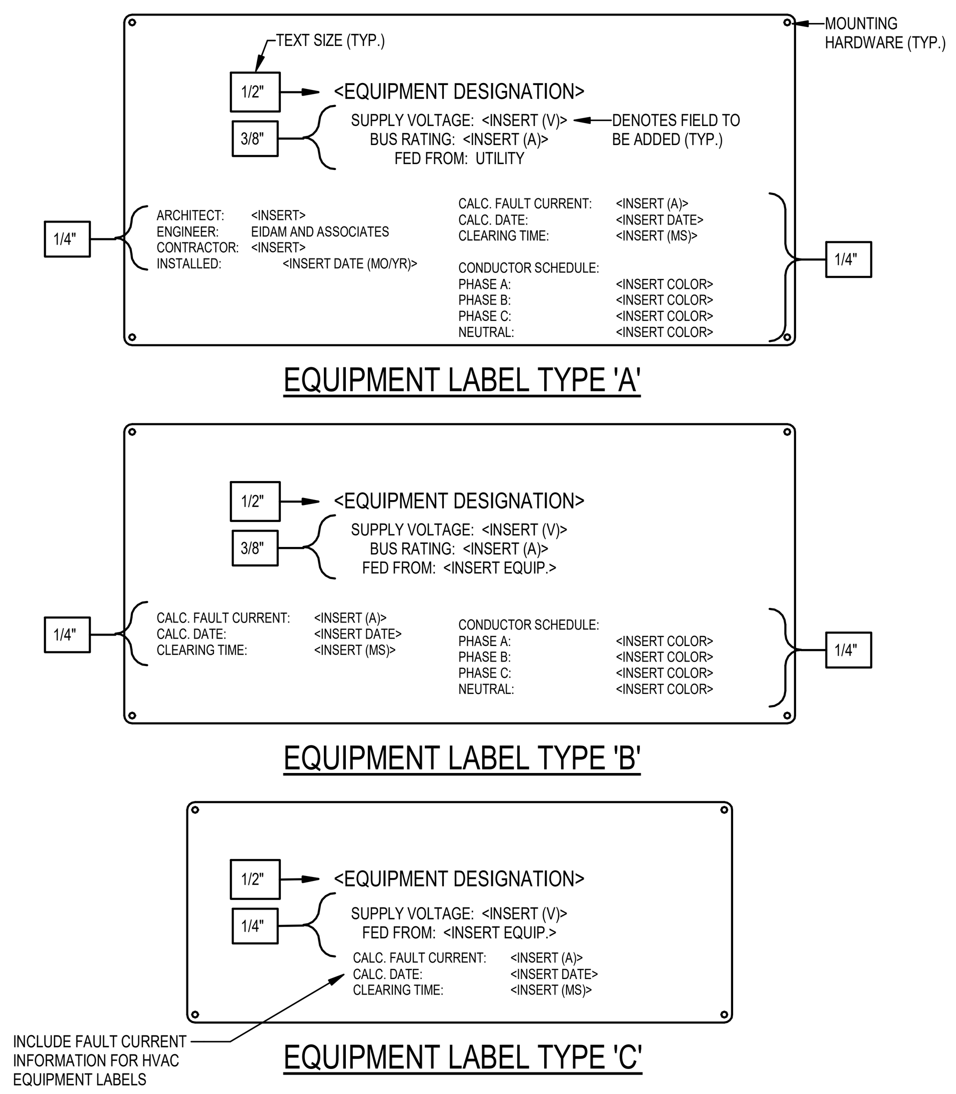
EQUIPMENT LABELING REQUIREMENTS:

1. BASIS OF DESIGN FOR ALL EQUIPMENT LABELS SHALL BE BRIMAR ENGRAVED PHENOLIC NAMEPLATES OR EQUAL. SIZE OF NAMEPLATES SHALL BE DETERMINED BASED ON FINAL LETTERING FOR EACH EQUIPMENT LABEL TYPE. CONTRACTOR SHALL COORDINATE FIELD OF TEXT AND DATA THAT ARE TO BE INSERTED WITH FINAL EQUIPMENT CALLOUTS. CONSULT ENGINEER FOR SPECIFIC INSTRUCTIONS.
2. IN ADDITION TO THE EQUIPMENT IDENTIFIED IN THE SCHEDULE, ALL GENERAL-USE DISCONNECT SWITCHES, ENCLOSED CIRCUIT BREAKERS, ETC. FEEDING EQUIPMENT SHALL BE FURNISHED WITH EQUIPMENT IDENTIFICATION LABELS. LABELS AT DISCONNECT SWITCHES SHALL BE TYPE C.
3. IN ADDITION TO THE EQUIPMENT IDENTIFIED IN THE SCHEDULE, ALL LIGHTING CONTROL PANELS SHALL BE FURNISHED WITH EQUIPMENT IDENTIFICATION LABELS. LABELS AT LIGHTING CONTROL PANELS SHALL BE TYPE C.



TYPICAL EQUIPMENT LABEL DETAILS (1 / E5.00)
NOT TO SCALE

Dist. Panelboard: DPN

Location: ELEC. 135 | Supply From: DPS | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 22K AIC | Mains Type: MAIN LUGS | Mains Rating: 800 A | MCB Rating: N/A | Surge Protection: 160kA PER PHASE

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL 'AN'	3	200 A	200 A	40117 VA	
2	PANEL 'MP'	3	200 A	200 A	34235 VA	
3	PANEL 'WP'	3	200 A	200 A	24657 VA	
4	PANEL 'FP'	3	200 A	200 A	23768 VA	
5	FC-1	2	70 A	70 A	14144 VA	
6	FC-2	3	70 A	70 A	22320 VA	
7	PANEL 'MS'	3	100 A	100 A	3502 VA	
8	SPARE	3	100 A	100 A	0 VA	
9	SPARE	3	100 A	100 A	0 VA	
				Total Conn. Load:	162741 VA	
				Total Amps:	452 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	19750 VA	100.00%	19750 VA		
HVAC	10800 VA	115.00%	12420 VA	Total Conn. Load:	162741 VA
Lighting	4476 VA	125.00%	5595 VA	Total Est. Demand:	152561 VA
Receptacle	22140 VA	72.58%	16070 VA	Total Conn.:	452 A
Electric Heat	41464 VA	100.00%	41464 VA	Total Est. Demand:	423 A
Water Heat	4500 VA	125.00%	5625 VA		
Equipment - Continuous	9909 VA	125.00%	12386 VA		
Welding	49920 VA	79.17%	39520 VA		

Notes:

Switchboard: DPS

Location: ELEC. 114 | Supply From: UTILITY | Mounting: Floor | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: A
A.I.C. Rating: 65K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 2000 A | MCB Rating: 2000 A | Surge Protection: 160kA PER PHASE

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	ATS	3	400 A	400 A	75606 VA	5
2	PANEL 'AS'	3	200 A	200 A	47194 VA	
3	PANEL 'SP1'	3	200 A	200 A	48496 VA	
4	PANEL 'SP2'	3	200 A	200 A	23764 VA	
5	PANEL 'FBP'	3	200 A	200 A	44963 VA	
6	PANEL 'FBW'	3	400 A	400 A	114268 VA	5
7	PANEL 'DPN'	3	800 A	800 A	162741 VA	5
8	FC-3	3	70 A	70 A	22320 VA	
9	FC-4	3	70 A	70 A	27000 VA	
10	SPARE	3	100 A	100 A	0 VA	
11	SPARE	3	100 A	100 A	0 VA	
				Total Conn. Load:	566337 VA	
				Total Amps:	1572 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	149822 VA	100.00%	149822 VA		
HVAC	27760 VA	105.84%	29380 VA	Total Conn. Load:	566337 VA
Lighting	11672 VA	125.00%	14590 VA	Total Est. Demand:	514886 VA
Motor	31032 VA	113.40%	35190 VA	Total Conn.:	1572 A
Receptacle	43020 VA	61.62%	26510 VA	Total Est. Demand:	1429 A
Cooking	8000 VA	100.00%	8000 VA		
Electric Heat	90784 VA	100.00%	90784 VA		
Water Heat	9000 VA	125.00%	11250 VA		
Equipment - Continuous	31659 VA	125.00%	39574 VA		
Welding	164160 VA	67.31%	110496 VA		

Notes:
1. ASSEMBLY SHALL BE UL LISTED FOR USE AS SERVICE ENTRANCE EQUIPMENT.
2. INSTALL ON CAST-IN-PLACE 4" TALL HOUSEKEEPING PAD.
3. ALL ADJUSTABLE INSTANTANEOUS TRIP SETTINGS SHALL BE SET TO VALUE LESS THAN AVAILABLE ARCING CURRENT.
4. MAIN BREAKER: ELECTRONIC TRIP, ADJUSTABLE LONG, SHORT, AND INSTANTANEOUS PICK-UP SETTINGS.
5. ELECTRONIC TRIP, ADJUSTABLE LONG, SHORT, AND INSTANTANEOUS PICK-UP SETTINGS.

MECHANICAL FAULT CURRENT SCHEDULE

EQUIPMENT	CALC. FAULT CURRENT	EQUIP. AIC RATING
HP-1	1,743	PER EQUIP. MANUFACTURER
HP-2	1,519	PER EQUIP. MANUFACTURER
HP-3	1,831	PER EQUIP. MANUFACTURER
HP-4	2,168	PER EQUIP. MANUFACTURER
EF-1	666	PER EQUIP. MANUFACTURER
EF-2	666	PER EQUIP. MANUFACTURER
EF-3A	517	PER EQUIP. MANUFACTURER
EF-3B	588	PER EQUIP. MANUFACTURER
EF-4	1,305	PER EQUIP. MANUFACTURER
EF-5	810	PER EQUIP. MANUFACTURER
EF-6	508	PER EQUIP. MANUFACTURER
EF-7A	534	PER EQUIP. MANUFACTURER
EF-7B	611	PER EQUIP. MANUFACTURER
EF-8	534	PER EQUIP. MANUFACTURER
EF-9A	1,207	PER EQUIP. MANUFACTURER
EF-9B	2,476	PER EQUIP. MANUFACTURER
EF-10	524	PER EQUIP. MANUFACTURER
EF-11	1,354	PER EQUIP. MANUFACTURER
FC-1	14,974	PER EQUIP. MANUFACTURER
FC-2	13,\855	PER EQUIP. MANUFACTURER
FC-3	16,172	PER EQUIP. MANUFACTURER
FC-4	19,835	PER EQUIP. MANUFACTURER
HR-1F	782	PER EQUIP. MANUFACTURER
HR-2F	1,062	PER EQUIP. MANUFACTURER

FAULT CURRENT SCHEDULE

EQUIPMENT	CALC. FAULT CURRENT	EQUIP. AIC RATING
AG	31,388	35K
AN	15,547	18K
AS	27,134	35K
DPN	20,268	22K
DPS	45,724	65K
FP	10,332	14K
FBP	8,564	10K
FBW	17,596	18K
MP	15,547	18K
SG	15,547	18K
SP1	14,966	18K
SP2	10,606	14K
WP	10,322	14K
MS	4,260	10K

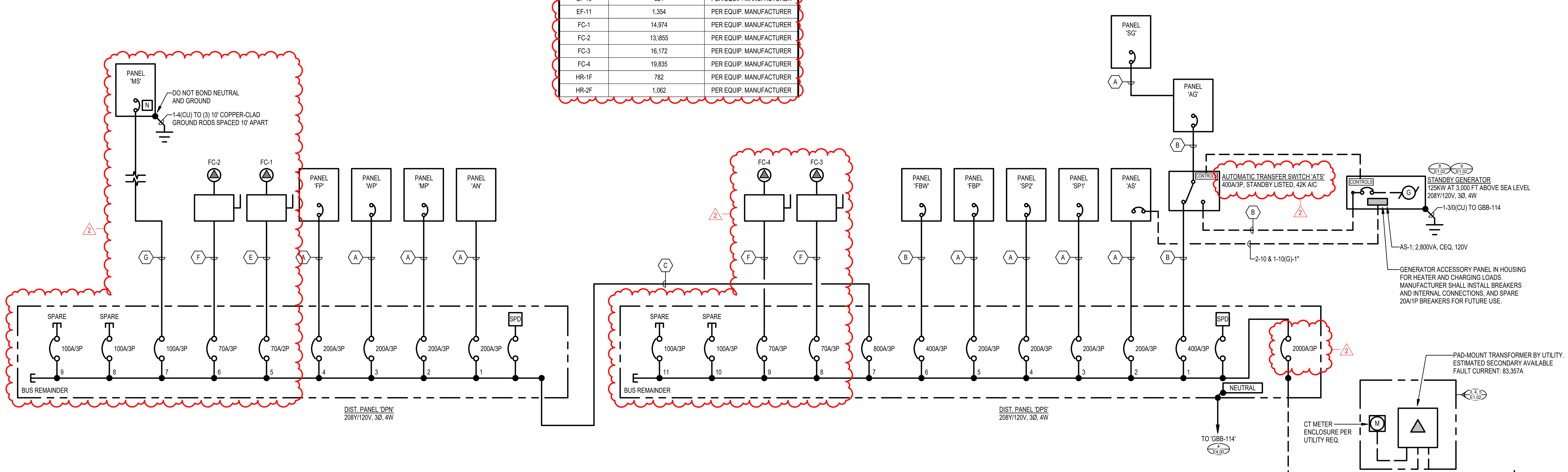
FEEDER SCHEDULE

DESIGNATOR	CONDUCTORS (IN EACH CONDUIT)	CONDUIT(S)	NOTES
A	4-4/0 & 1-6(G)	2 1/2"	
B	4-4/0 & 1-3(G)	(2) 3"	1
C	4-350KCMIL & 1-3/0(G)	(3) 4"	1
D	4-500KCMIL	(6) 4"	1
E	3-3 & 1-8(G)	1 1/4"	
F	4-1 & 1-8(G)	1 1/2"	
G	4-3/0 & 1-4(G)	2 1/2"	

NOTES:
1. PARALLEL CONDUCTORS.

VOLTAGE DROP CALCULATIONS

FEEDER	LENGTH (FT)	CALC. VOLTAGE DROP (%)
AG	10	0.07
AN	30	0.24
AS	30	0.27
DPN	225	1.12
DPS	190	1.77
FP	95	0.42
FBP	190	1.68
FBW	140	1.22
MP	30	0.19
SG	65	0.77
SP1	90	0.84
SP2	145	0.63
WP	95	0.43
BRANCH #12 (120V)	115	2.95
BRANCH #10 (120V)	190	2.94
BRANCH #8 (120V)	295	2.99



ONE LINE DIAGRAM
NOT TO SCALE

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ORIGINAL SEALED DOCUMENTS ON FILE WITH ENGINEER.
DATE OF ORIGINAL SEAL: 09/26/2024

MOSCOW CITY SHOP

CITY OF MOSCOW

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EAGLE, IDAHO 83616
(208) 345-7127

MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW
2	10/30/24	ADDENDUM #2

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

ONE LINE DIAGRAM

SHEET NO.
E5.00

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

Branch Panel: AN

Location: ELEC. 135 | Supply From: DPN | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 18K AIC | Mains Type: MAIN LUGS | Mains Rating: 200 A | MCB Rating: N/A | Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	BREAK / LOCKER LTG	20 A	1	LTG	869	540					CO	1	20 A	146 RECEPTS.	2	
	3	LOBBY / OFFICES LTG	20 A	1	LTG			740	540			CO	1	20 A	126 RECEPTS.	4	
	5	SPARE	20 A	1	--					0	540	CO	1	20 A	127 RECEPTS.	6	
	7	SPARE	20 A	1	--	0	720					CO	1	20 A	125 NORTH STATIONS	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	125 CENTER STATIONS	10	
	11	SPARE	20 A	1	--					0	360	CO	1	20 A	125 SOUTH STATIONS	12	
	13	SPARE	20 A	1	--	0	1200					CEQ	1	20 A	125 COPIER	14	
	15	SPARE	20 A	1	--			0	1080			CO	1	20 A	125 RECEPTS.	16	
4	17	NORTH NAC PANEL	20 A	1	CEQ					500	600	CEQ	1	20 A	ELECTRIC WATER COOLER	18	2
3	19	GUTTER HEAT TAPE	20 A	1	EQ	1160	900					CO	1	20 A	HALL 124 C.O.	20	
	21	135 T/C RACK	20 A	1	CEQ			1800	360			CO	1	20 A	EXT. RECEPTS.	22	
2	23	BREAK REFRIG.	20 A	1	CEQ					800	900	CO	1	20 A	RESTROOM C.O.	24	
2	25	LOCKER WASHER	20 A	1	CEQ	1200	360					CO	1	20 A	LOCKER COUNTER	26	
2	27	LOCKER DRYER	30 A	2	EQ			2250	900			CO	1	20 A	LOCKER C.O.	28	
	29	--	--	--	--					2250	1080	CO	1	20 A	BREAK EAST C.O.	30	
	31	WH-1	30 A	2	WH	2250	1200					EQ	1	20 A	BREAK 'DW'	32	2
	33	--	--	--	--			2250	180			CO	1	20 A	BREAK COUNTER EAST	34	
	35	EF-4, 5, RP-1	20 A	1	EQ;...					965	180	CO	1	20 A	BREAK COUNTER WEST	36	
	37	HP-2	30 A	3	AC	2160	1440					AC	3	20 A	HP-1	38	
	39	--	--	--	--			2160	1440			--	--	--	--	40	
	41	--	--	--	--					2160	1440	--	--	--	--	42	
	43	SPARE	20 A	1	--	0	--					--	1	--	BLANK	44	
	45	SPARE	20 A	1	--			0	--			--	1	--	BLANK	46	
	47	SPARE	20 A	1	--					0	--	--	1	--	BLANK	48	
	49	SPARE	20 A	1	--	0	--					--	1	--	BLANK	50	
	51	SPARE	20 A	1	--			0	--			--	1	--	BLANK	52	
	53	SPARE	20 A	1	--					0	--	--	1	--	BLANK	54	
	55	SPARE	20 A	1	--	0	--					--	1	--	BLANK	56	
	57	SPARE	20 A	1	--			0	--			--	1	--	BLANK	58	
	59	SPARE	20 A	1	--					0	--	--	1	--	BLANK	60	
					Total Load:	13958 VA		14385 VA		11775 VA							
					Total Amps:	119 A		123 A		98 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	6906 VA	100.00%	6906 VA		
Equipment - Continuous	7019 VA	125.00%	8774 VA	Total Conn. Load:	40117 VA
HVAC	10800 VA	115.00%	12420 VA	Total Est. Demand:	45000 VA
Lighting	1609 VA	125.00%	2011 VA	Total Conn.:	111 A
Receptacle	9360 VA	100.00%	9360 VA	Total Est. Demand:	125 A
Water Heat	4500 VA	125.00%	5625 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
3. 30mA 'GFP' TYPE CIRCUIT BREAKER.
4. PROVIDE WITH LOCKOUT HANDLE; PAINT RED.

2

Branch Panel: FP

Location: FINISH SHOP 144 | Supply From: DPN | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 14K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 200 A | MCB Rating: 200 A | Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-1 / CF-1'S	20 A	1	EQ	724	1200					EQ	1	20 A	MOTORIZED DOOR	2	
2	3	GUTTER HEAT TAPE	20 A	1	EQ			1080	180			CO	1	20 A	EQUIP: A2	4	1
	5	FINISH: EF-1	20 A	1	EQ;...					588	1080	CO	1	20 A	NORTH WALL RECEPTS.	6	
	7	FINISH: INTERIOR LTG	20 A	1	LTG	690	720					CO	1	20 A	WEST WALL RECEPTS.	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	SOUTH WALL RECEPTS.	10	
	11	SPARE	20 A	1	--					0	180	CO	1	20 A	WELD PANEL C.O.	12	
	13	SPARE	20 A	1	--	0	4160					WE	2	50 A	EQUIP: A3 (EAST)	14	1
	15	SPARE	20 A	1	--			0	4160			--	--	--	--	16	
	17	SPARE	20 A	1	--					0	4160	WE	2	50 A	EQUIP: A3 (WEST)	18	1
	19	SPARE	20 A	1	--	0	4160					--	--	--	--	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
	39	BLANK	--	1	--			--	--			--	1	--	BLANK	40	
	41	BLANK	--	1	--					--	--	--	1	--	BLANK	42	
					Total Load:	11621 VA		6140 VA		6008 VA							
					Total Amps:	97 A		51 A		50 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	3064 VA	100.00%	3064 VA		
Equipment - Continuous	528 VA	125.00%	660 VA	Total Conn. Load:	23768 VA
Lighting	690 VA	125.00%	863 VA	Total Est. Demand:	24065 VA
Receptacle	2880 VA	100.00%	2880 VA	Total Conn.:	66 A
Welding	16640 VA	100.00%	16640 VA	Total Est. Demand:	67 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
2. 30mA 'GFP' TYPE CIRCUIT BREAKER.

Branch Panel: MP

Location: OVERFLOW BAY 141 | Supply From: DPN | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 18K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 200 A | MCB Rating: 200 A | Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	SPARE	20 A	1	--	0	1200					EQ	1	20 A	NORTH MOTORIZED DOOR	2	
	3	SPARE	20 A	1	--			0	1200			EQ	1	20 A	SOUTH MOTORIZED DOOR	4	
	5	OVERFLOW: EF-3A	20 A	1	EQ;...					787	180	CO	1	20 A	EQUIP: A2 (NORTH)	6	1
	7	MECHANIC: EF-3B	20 A	1	CEQ	528	720					CO	1	20 A	NORTH WALL RECEPTS.	8	
	9	MECHANIC: CF-1'S	20 A	1	EQ			392	900			CO	1	20 A	NW WALL RECEPTS.	10	
	11	MECHANIC: UH-3, 4	20 A	1	EQ					1056	720	CO	1	20 A	SW WALL RECEPTS.	12	
	13	VGD-1	20 A	1	CEQ	500	720					CO	1	20 A	SOUTH WALL RECEPTS.	14	
2	15	GUTTER HEAT TAPE	20 A	1	EQ			1272	540			CO	1	20 A	MEZZ SOUTH RECEPTS.	16	
	17	EH-2	35 A	2	EH					2500	360	CO	1	20 A	EXT. RECEPTS.	18	
	19	--	--	--	--	2500	180					CO	1	20 A	'AN' PANEL C.O.	20	
	21	MECH BAY LTG	20 A	1	LTG			939	180			CO	1	20 A	EQUIP: A2 (SOUTH)	22	1
	23	MECH BAY MEZZANINE LTG	20 A	1	LTG					280	4160	WE	2	50 A	EQUIP: A3 (EAST)	24	1
	25	SPARE	20 A	1	--	0	4160					--	--	--	--	26	
	27	SPARE	20 A	1	--			0	4160			WE	2	50 A	EQUIP: A3 (WEST)	28	1
	29	SPARE	20 A	1	--					0	4160	--	--	--	--	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	SPARE	20 A	1	--					0	--	--	1	--	BLANK	36	
	37	SPARE	20 A	1	--	0	--					--	1	--	BLANK	38	
	39	SPARE	20 A	1	--			0	--			--	1	--	BLANK	40	
	41	SPARE	20 A	1	--					0	--	--	1	--	BLANK	42	
					Total Load:	10508 VA		9541 VA		14189 VA							
					Total Amps:	89 A		80 A		119 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Electric Heat	5000 VA	100.00%	5000 VA		
Equipment	5240 VA	100.00%	5240 VA	Total Conn. Load:	34235 VA
Equipment - Continuous	1695 VA	125.00%	2119 VA	Total Est. Demand:	34950 VA
Lighting	1219 VA	125.00%	1524 VA	Total Conn.:	95 A
Receptacle	4500 VA	100.00%	4500 VA	Total Est. Demand:	97 A
Welding	16640 VA	100.00%	16640 VA		

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
2. 30mA 'GFP' TYPE CIRCUIT BREAKER.

2

Branch Panel: MS

Location: Material Storage | Supply From: DPN | Mounting: Surface | Enclosure: Type 3R
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 10K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 100 A | MCB Rating: 100 A | Surge Protection: N/A

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	NE RECEPT.	20 A	1	CO	360	1800					EQ	1	20 A	NORTH MOTORIZED DOOR	2	
	3	SE RECEPT.	20 A	1	CO			360	230			LTG	1	20 A	LIGHTING	4	
	5	NW RECEPT.	20 A	1	CO					360	45	LTG	1	20 A	ENTRY GATE LTG.	6	
	7	SW RECEPT.	20 A	1	CO	360	--					--	1	--	BLANK	8	
	9	SPARE	20 A	1	--			0	--			--	1	--	BLANK	10	
	11	SPARE	20 A	1	--					0	--	--	1	--	BLANK	12	
	13	SPARE	20 A	1	--	0	--					--	1	--	BLANK	14	
	15	SPARE	20 A	1	--			0	--			--	1	--	BLANK	16	
	17	SPARE	20 A	1	--					0	--	--	1	--	BLANK	18	
	19	SPARE	20 A	1	--	0	--					--	1	--	BLANK	20	
	21	BLANK	--	1	--			--	--			--	1	--	BLANK	22	
	23	BLANK	--	1	--					--	--	--	1	--	BLANK	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
					Total Load:	2520 VA		583 VA		403 VA							
					Total Amps:	21 A		5 A		3 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	1800 VA	100.00%	1800 VA		
Lighting	275 VA	125.00%	344 VA	Total Conn. Load:	3502 VA
Receptacle	1440 VA	100.00%	1440 VA	Total Est. Demand:	3568 VA
				Total Conn.:	10 A
				Total Est. Demand:	10 A

Notes:
1. U.L. LISTED FOR USE AS SERVICE ENTRANCE EQUIPMENT.

Branch Panel: SG

Location: DRIVE THROUGH HEAVY... | Supply From: AG | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B (RED)
A.I.C. Rating: 18K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 200 A | MCB Rating: 200 A | Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-9, UH-10	20 A	1	EQ	1512	180					CO	1	20 A	EQUIP: B17 NORTH	2	2
	3	UH-11, UH-12	20 A	1	EQ			1512	180			CO	1	20 A	EQUIP: B17 CENTER	4	2
	5	AUTOMOTIVE: CF-1'S	20 A	1	EQ					392	180	CO	1	20 A	EQUIP: B17 SOUTH	6	2
	7	BAY LIGHTING 'A'	20 A	1	LTG	1222	1200					EQ	1	20 A	117 EAST MOTORIZED DOOR	8	
	9	BAY LIGHTING 'B'	20 A	1	LTG			1233	1200			EQ	1	20 A	116 EAST MOTORIZED DOOR	10	
	11	AUTO: LOUVERS	20 A	1	EQ					360	1200	EQ	1	20 A	115 EAST MOTORIZED DOOR	12	
	13	VGD-3	20 A	1	CEQ	500	1200					EQ	1	20 A	117 WEST MOTORIZED DOOR	14	
	15	SPARE	20 A	1	--			0	1200			EQ	1	20 A	116 WEST MOTORIZED DOOR	16	
	17	BLANK	--	1	--					--	1200	EQ	1	20 A	115 WEST MOTORIZED DOOR	18	
	19	BLANK	--	1	--	--	360					CO	1	20 A	BAY EAST RECEPTS.	20	
	21	BLANK	--	1	--			--	360			CO	1	20 A	BAY WOR STATION	22	
	23	BLANK	--	1	--					--	360	CO	1	20 A	BAY WEST RECEPTS.	24	
	25	BLANK	--	1	--	--	0					--	1	20 A	SPARE	26	
2	27	EQUIP: B4 NE	50 A	2	WE			4160	4160			WE	2	50 A	EQUIP: B4 SW	28	2
	29	--	--	--	--					4160	4160	--	--	--	--	30	
2	31	EQUIP: B20A WEST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER 1	32	2
	33	--	--	--	--			960	960			--	--	--	--	34	
	35	--	--	--	--					960	960	--	--	--	--	36	
2	37	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER 2	38	2
	39	--	--	--	--			960	960			--	--	--	--	40	
	41	--	--	--	--					960	960	--	--	--	--	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	HR-2D	20 A	1	EQ					1176	1176	EQ	1	20 A	HR-1D	48	
	49	HR-2F	20 A	3	EQ	480	480					EQ	3	20 A	HR-1F	50	
	51	--	--	--	--			480	480			--	--	--	--	52	
	53	--	--	--	--					480	480	--	--	--	--	54	
	55	EF-9B	30 A	3	MO	2400	2400					MO	3	30 A	EF-9A	56	
	57	--	--	--	--			2400	2400			--	--	--	--	58	
	59	--	--	--	--					2400	2400	--	--	--	--	60	
					Total Load:	15718 VA		23546 VA		23964 VA							
					Total Amps:	131 A		206 A		210 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	27728 VA	100.00%	27728 VA		
Equipment - Continuous	500 VA	125.00%	625 VA	Total Conn. Load:	63225 VA
Lighting	2455 VA	125.00%	3069 VA	Total Est. Demand:	65735 VA
Motor	14400 VA	112.50%	16200 VA	Total Conn.:	175 A
Receptacle	1620 VA	100.00%	1620 VA	Total Est. Demand:	182 A
Welding	16640 VA	100.00%	16640 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: WP

Location: WELDING 143 | Supply From: DPN | Mounting: Surface | Enclosure: Type 1
Volts: 120/208 Wye | Phases: 3 | Wires: 4 | Label Type: B
A.I.C. Rating: 14K AIC | Mains Type: CIRCUIT BREAKER | Mains Rating: 200 A | MCB Rating: 200 A | Surge Protection: 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	UH-2 / CF-1'S	20 A	1	EQ	952	1200					EQ	1	20 A	MOTORIZED DOOR	2	
	3	EF-6	20 A	1	EQ			528	180			CO	1	20 A	EQUIP: A2	4	1
	5	EF-2	20 A	1	EQ;...					727	720	CO	1	20 A	NORTH WALL RECEPT.	6	
	7	WELD INTERIOR LTG	20 A	1	LTG	683	540					CO	1	20 A	NW WALL RECEPT.	8	
	9	SPARE	20 A	1	--			0	720			CO	1	20 A	SW WALL RECEPT.	10	
	11	SPARE	20 A	1	--					0	720	CO	1	20 A	SOUTH WALL RECEPT.	12	
	13	SPARE	20 A	1	--	0	540					CO	1	20 A	FINISH PANEL / EXT. C.O.	14	
	15	SPARE	20 A	1	--			0	540			CO	1	20 A	MEZZ NORTH RECEPT.	16	
	17	SPARE	20 A	1	--					0	4160	WE	2	50 A	EQUIP: A3 (EAST)	18	1
	19	SPARE	20 A	1	--	0	4160					--	--	--	--	20	
	21	SPARE	20 A	1	--			0	4160			WE	2	50 A	EQUIP: A3 (WEST)	22	1
	23	SPARE	20 A	1	--					0	4160	--	--	--	--	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
	39	BLANK	--	1	--			--	--			--	1	--	BLANK	40	
	41	BLANK	--	1	--					--	--	--	1	--	BLANK	42	
					Total Load:	8044 VA		6128 VA		10487 VA							
					Total Amps:	69 A		51 A		90 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	2740 VA	100.00%	2740 VA		
Equipment - Continuous	667 VA	125.00%	834 VA	Total Conn. Load:	24657 VA
Lighting	683 VA	125.00%	854 VA	Total Est. Demand:	24986 VA
Receptacle	3960 VA	100.00%	3960 VA	Total Conn.:	68 A
Welding	16640 VA	100.00%	16640 VA	Total Est. Demand:	69 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING INTERIOR DESIGN
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ORIGINAL SEALED DOCUMENTS ON FILE WITH ENGINEER.
DATE OF ORIGINAL SEAL: 09/26/2024

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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HODGE & ASSOCIATES
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MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW
2	10/30/24	ADDENDUM #2

JOB NO.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

PANEL SCHEDULES

SHEET NO.
E5.01

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

Branch Panel: AG

Location: ELEC. 114 **Supply From:** ATS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B (RED)
A.I.C. Rating: 35K AIC **Mains Type:** CIRCUIT BREAKER **Mains Rating:** 400 A **MCB Rating:** 400 A **Surge Protection:** 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	TRAINING / LOCKER LTG.	20 A	1	LTG	971	0					--	1	20 A	SPARE	2	
	3	LOBBY / OFFICE LTG.	20 A	1	LTG			1010	1800			CEQ	1	20 A	114 NETWORK RACK	4	
	5	BLDG. EXT. LTG.	20 A	1	LTG					576	360	CO	1	20 A	114/147 RECEPTS.	6	
	7	BLANK	--	1	--	--	720					CO	1	20 A	101 NORTH FLOOR	8	
	9	BLANK	--	1	--			--	720			CO	1	20 A	101 SOUTH FLOOR	10	
	11	BLANK	--	1	--					--	900	CO	1	20 A	101 NORTH WALL C.O.	12	
	13	BLANK	--	1	--	--	540					CO	1	20 A	101 WEST WALL C.O.	14	
	15	BLANK	--	1	--			--	900			CO	1	20 A	101 SOUTH WALL C.O.	16	
	17	BLANK	--	1	--					--	0	--	1	20 A	SPARE	18	
	19	BLANK	--	1	--	--	0					--	1	20 A	SPARE	20	
	21	BLANK	--	1	--			--	0			--	1	20 A	SPARE	22	
	23	BLANK	--	1	--					--	0	--	1	20 A	SPARE	24	
	25	BLANK	--	1	--	--	0					--	1	20 A	SPARE	26	
	27	BLANK	--	1	--			--	0			--	1	20 A	SPARE	28	
	29	BLANK	--	1	--					--	0	--	1	20 A	SPARE	30	
	31	BLANK	--	1	--	--	0					--	1	20 A	SPARE	32	
	33	BLANK	--	1	--			--	0			--	1	20 A	SPARE	34	
	35	BLANK	--	1	--					--	0	--	1	20 A	SPARE	36	
	37	PANEL 'SG'	200 A	3	LTG;...	15718	0					--	1	20 A	SPARE	38	
	39	--	--	--	--			23546	2000			AC	2	30 A	EH-1	40	
	41	--	--	--	--					23964	2000	--	--	--	--	42	
					Total Load:	17908 VA		29931 VA		27772 VA							
					Total Amps:	149 A		262 A		244 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	27728 VA	100.00%	27728 VA		
Equipment - Continuous	2300 VA	125.00%	2875 VA	Total Conn. Load:	75606 VA
HVAC	4000 VA	125.00%	5000 VA	Total Est. Demand:	80179 VA
Lighting	5012 VA	125.00%	6265 VA	Total Conn.:	210 A
Motor	14400 VA	112.50%	16200 VA	Total Est. Demand:	223 A
Receptacle	5760 VA	100.00%	5760 VA		
Welding	16640 VA	100.00%	16640 VA		

Notes:

Branch Panel: AS

Location: ELEC. 114 **Supply From:** DPS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B
A.I.C. Rating: 35K AIC **Mains Type:** MAIN LUGS **Mains Rating:** 200 A **MCB Rating:** N/A **Surge Protection:** 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	GEN. ACC. PANEL	30 A	1	CEQ	2800	540					CO	1	20 A	100 WORKSTATION	2	
	3	PARKING LTG.	20 A	1	LTG			135	540			CO	1	20 A	103 RECEPTS.	4	
	5	SPARE	20 A	1	--					0	900	CO	1	20 A	104 RECEPTS.	6	
	7	SPARE	20 A	1	--	0	1200					CEQ	1	20 A	102 COPIER	8	
	9	SPARE	20 A	1	--			0	900			CO	1	20 A	102 C.O.	10	
3	11	GUTTER HEAT TAPE	20 A	1	EQ					1104	600	CEQ	1	20 A	102 EWC	12	2
3	13	GUTTER HEAT TAPE	20 A	1	EQ	824	180					CO	1	20 A	LOCKER COUNTER	14	
	15	SPARE	20 A	1	--			0	720			CO	1	20 A	LOCKER RECEPTS.	16	
	17	SPARE	20 A	1	--					0	1260	CO	1	20 A	HALL C.O.	18	
	19	SPARE	20 A	1	--	0	800					CEQ	1	20 A	BREAK REFRIG.	20	2
	21	SPARE	20 A	1	--			0	540			CO	1	20 A	BREAK RECEPTS.	22	
	23	SPARE	20 A	1	--					0	360	CO	1	20 A	EXTERIOR RECEPTS.	24	
2	25	WASHER	20 A	1	CEQ	1200	480					CO;...	1	20 A	BREAK COUNTER N, H-1	26	
2	27	DRYER	30 A	2	EQ			2250	180			CO	1	20 A	BREAK COUNTER CENTER	28	
	29	--	--	--	--					2250	180	CO	1	20 A	BREAK COUNTER SOUTH	30	
	31	WH-1	30 A	2	WH	2250	4000					CKG	2	50 A	RANGE	32	2
	33	--	--	--	--			2250	4000			--	--	--	--	34	
	35	EF-10, EF-11, H-1, RP-1	20 A	1	CEQ					798	0	--	1	20 A	SPARE	36	
	37	HP-3	30 A	3	AC	2160	2160					AC	3	30 A	HP-4	38	
	39	--	--	--	--			2160	2160			--	--	--	--	40	
	41	--	--	--	--					2160	2160	--	--	--	--	42	
	43	BLANK	--	1	--	--	500					CEQ	1	20 A	FIRE ALARM PANEL	44	4
	45	BLANK	--	1	--			--	500			CEQ	1	20 A	SOUTH NAC PANEL	46	4
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
	49	BLANK	--	1	--	--	--					--	1	--	BLANK	50	
	51	BLANK	--	1	--			--	--			--	1	--	BLANK	52	
	53	BLANK	--	1	--					--	--	--	1	--	BLANK	54	
	55	BLANK	--	1	--	--	--					--	1	--	BLANK	56	
	57	BLANK	--	1	--			--	--			--	1	--	BLANK	58	
	59	BLANK	--	1	--					--	--	--	1	--	BLANK	60	
					Total Load:	19094 VA		16328 VA		11772 VA							
					Total Amps:	165 A		142 A		98 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Cooking	8000 VA	100.00%	8000 VA		
Equipment	6728 VA	100.00%	6728 VA	Total Conn. Load:	47194 VA
Equipment - Continuous	8398 VA	125.00%	10498 VA	Total Est. Demand:	52071 VA
HVAC	12960 VA	112.50%	14580 VA	Total Conn.:	131 A
Lighting	135 VA	125.00%	169 VA	Total Est. Demand:	145 A
Receptacle	6480 VA	100.00%	6480 VA		
Water Heat	4500 VA	125.00%	5625 VA		

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.
3. 30mA 'GFP' TYPE CIRCUIT BREAKER.
4. PROVIDE WITH LOCKOUT HANDLE; PAINT RED.

2

Branch Panel: FBW

Location: FABRICATION SHOP 118 **Supply From:** DPS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B
A.I.C. Rating: 18K AIC **Mains Type:** CIRCUIT BREAKER **Mains Rating:** 400 A **MCB Rating:** 400 A **Surge Protection:** N/A

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
2	1	EQUIP: B4A	50 A	2	WE	4160	4160					WE	2	50 A	EQUIP: B4D	2	2
	3	--	--	--	--			4160	4160			--	--	--	--	4	
2	5	EQUIP: B4B	50 A	2	WE					4160	4160	WE	2	50 A	EQUIP: B4E	6	2
	7	--	--	--	--	4160	4160					--	--	--	--	8	
2	9	EQUIP: B4C	50 A	2	WE			4160	4160			CEQ	2	50 A	EQUIP: B5A	10	2
	11	--	--	--	--					4160	4160	--	--	--	--	12	
	13	EQUIP: B8	20 A	1	EQ	1200	4160					EQ	2	50 A	EQUIP: B12	14	2
	15	EQUIP: B8	20 A	1	EQ			1200	4160			--	--	--	--	16	
	17	EQUIP: B11	20 A	1	EQ					1600	4160	WE	2	50 A	EQUIP: B4 N	18	2
	19	EQUIP: B18	20 A	1	EQ	1600	4160					--	--	--	--	20	
	21	EQUIP: B19	20 A	1	EQ			1600	4160			WE	2	50 A	EQUIP: B4 E	22	2
	23	SPARE	20 A	1	--					0	4160	--	--	--	--	24	
	25	SPARE	20 A	1	--	0	4160					WE	2	50 A	EQUIP: B4 S	26	2
	27	SPARE	20 A	1	--			0	4160			--	--	--	--	28	
	29	SPARE	20 A	1	--					0	--	--	1	--	BLANK	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	SPARE	20 A	1	--					0	--	--	1	--	BLANK	36	
	37	SPARE	20 A	1	--	0	--					--	1	--	BLANK	38	
	39	SPARE	20 A	1	--			0	--			--	1	--	BLANK	40	
	41	SPARE	20 A	1	--					0	--	--	1	--	BLANK	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
	49	BLANK	--	1	--	--	--					--	1	--	BLANK	50	
	51	BLANK	--	1	--			--	--			--	1	--	BLANK	52	
	53	BLANK	--	1	--					--	--	--	1	--	BLANK	54	
	55	EQUIP: B7	40 A	3	EQ	3156	4800					WE	3	50 A	EQUIP: B5B	56	2
	57	--	--	--	--			3156	4800			--	--	--	--	58	
	59	--	--	--	--					3156	4800	--	--	--	--	60	
					Total Load:	39876 VA		39876 VA		34516 VA							
					Total Amps:	339 A		339 A		288 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	24988 VA	100.00%	24988 VA		
Equipment - Continuous	8320 VA	125.00%	10400 VA	Total Conn. Load:	114268 VA
Welding	80960 VA	74.82%	60576 VA	Total Est. Demand:	95964 VA
				Total Conn.:	317 A
				Total Est. Demand:	266 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: FBP

Location: **Supply From:** DPS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B
A.I.C. Rating: 10K AIC **Mains Type:** CIRCUIT BREAKER **Mains Rating:** 200 A **MCB Rating:** 200 A **Surge Protection:** 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	STORAGE: EF-7A	20 A	1	EQ;...	588	1200					EQ	1	20 A	STORAGE MOTORIZED DOOR	2	
	3	STORAGE: UH-6 / CF-1'S	20 A	1	EQ			724	1200			EQ	1	20 A	FAB NORTH MOTORIZED DOOR	4	
	5	VGD-2	20 A	1	CEQ					500	1200	EQ	1	20 A	FAB SOUTH MOTORIZED DOOR	6	
	7	FAB: UH-7, UH-8	20 A	1	EQ	1512	1440					CO	1	20 A	STORAGE WALL RECEPTS.	8	
	9	FAB: CF-1'S	20 A	1	EQ			392	720			CO	1	20 A	FAB NORTH WALL RECEPTS.	10	
	11	STORAGE: EF-7B	20 A	1	CEQ					528	540	CO	1	20 A	FAB NW WALL RECEPTS.	12	
	13	STORAGE: LTG.	20 A	1	LTG	451	720					CO	1	20 A	FAB SW WALL RECEPTS.	14	
	15	FABRICATION BAY LTG.	20 A	1	LTG			1347	720			CO	1	20 A	FAB SOUTH WALL RECEPTS.	16	
	17	FABRICATION MEZZ. LTG.	20 A	1	LTG					251	720	CO	1	20 A	MEZZ RECEPTS.	18	
	19	FAB: EF-8	20 A	1	EQ;...	1296	360					CO	1	20 A	EXTERIOR RECEPTS.	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	SPARE	20 A	1	--	0	--					--	1	--	BLANK	26	
	27	SPARE	20 A	1	--			0	--			--	1	--	BLANK	28	
	29	SPARE	20 A	1	--					0	--	--	1	--	BLANK	30	
	31	SPARE	20 A	1	--	0	--					--	1	--	BLANK	32	
	33	SPARE	20 A	1	--			0	--			--	1	--	BLANK	34	
	35	EQUIP: B9A	20 A	1	EQ					500	--	--	1	--	BLANK	36	
	37	EQUIP: B9	60 A	3	MO	5544	--					--	1	--	BLANK	38	
	39	--	--	--	--			5544	--			--	1	--	BLANK	40	
	41	--	--	--	--					5544	--	--	1	--	BLANK	42	
	43	BLANK	--	1	--	--	--					--	1	--	BLANK	44	
	45	BLANK	--	1	--			--	--			--	1	--	BLANK	46	
	47	BLANK	--	1	--					--	--	--	1	--	BLANK	48	
2	49	EQUIP: B20A NE	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A EAST	50	2
	51	--	--	--	--			960	960			--	--	--	--	52	
	53	--	--	--	--					960	960	--	--	--	--	54	
2	55	EQUIP: B20A NW	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A SE	56	2
	57	--	--	--	--			960	960			--	--	--	--	58	
	59	--	--	--	--					960	960	--	--	--	--	60	
					Total Load:	16929 VA		14426 VA		13611 VA							
					Total Amps:	142 A		121 A		113 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	18428 VA	100.00%	18428 VA		
Equipment - Continuous	2732 VA	125.00%	3415 VA	Total Conn. Load:	44963 VA
Lighting	2049 VA	125.00%	2561 VA	Total Est. Demand:	50293 VA
Motor	16632 VA	125.00%	20790 VA	Total Conn.:	125 A
Receptacle	5220 VA	100.00%	5220 VA	Total Est. Demand:	140 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: SP1

Location: DRIVE THROUGH HEAVY... **Supply From:** DPS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B
A.I.C. Rating: 18K AIC **Mains Type:** CIRCUIT BREAKER **Mains Rating:** 200 A **MCB Rating:** 200 A **Surge Protection:** 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	SPARE	20 A	1	--	0	540					CO	1	20 A	117 N. RECEPTS.	2	
	3	SPARE	20 A	1	--			0	720			CO	1	20 A	FLEET EAST EXT. RECEPTS.	4	
	5	SPARE	20 A	1	--					0	720	CO	1	20 A	FLEET SE RECEPTS.	6	
	7	SPARE	20 A	1	--	0	--					--	1	--	BLANK	8	
	9	SPARE	20 A	1	--			0	--			--	1	--	BLANK	10	
	11	SPARE	20 A	1	--					0	--	--	1	--	BLANK	12	
	13	SPARE	20 A	1	--	0	--					--	1	--	BLANK	14	
	15	SPARE	20 A	1	--			0	--			--	1	--	BLANK	16	
	17	SPARE	20 A	1	--					0	--	--	1	--	BLANK	18	
	19	SPARE	20 A	1	--	0	--					--	1	--	BLANK	20	
	21	SPARE	20 A	1	--			0	--			--	1	--	BLANK	22	
	23	SPARE	20 A	1	--					0	--	--	1	--	BLANK	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
	27	BLANK	--	1	--			--	--			--	1	--	BLANK	28	
	29	BLANK	--	1	--					--	--	--	1	--	BLANK	30	
	31	BLANK	--	1	--	--	--					--	1	--	BLANK	32	
	33	BLANK	--	1	--			--	--			--	1	--	BLANK	34	
	35	BLANK	--	1	--					--	--	--	1	--	BLANK	36	
	37	BLANK	--	1	--	--	--					--	1	--	BLANK	38	
2	39	EQUIP: B4 SE	50 A	2	WE			4160	--			--	1	--	BLANK	40	
	41	--	--	--	--					4160	--	--	1	--	BLANK	42	
2	43	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A WEST	44	2
	45	--	--	--	--			960	960			--	--	--	--	46	
	47	--	--	--	--					960	960	--	--	--	--	48	
2	49	EQUIP: B20A CENTER	30 A	3	EQ	960	6144					EQ	3	70 A	EQUIP: B14	50	
	51	--	--	--	--			960	6144			--	--	--	--	52	
	53	--	--	--	--					960	6144	--	--	--	--	54	
	55	EQUIP: B3	20 A	3	EQ	1788	1920					EQ	3	20 A	EQUIP: B6B	56	2
	57	--	--	--	--			1788	1920			--	--	--	--	58	
	59	--	--	--	--					1788	1920	--	--	--	--	60	
					Total Load:	13272 VA		17612 VA		17612 VA							
					Total Amps:	111 A		152 A		152 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	38196 VA	100.00%	38196 VA		
Receptacle	1980 VA	100.00%	1980 VA	Total Conn. Load:	48496 VA
Welding	8320 VA	100.00%	8320 VA	Total Est. Demand:	48496 VA
				Total Conn.:	135 A
				Total Est. Demand:	135 A

Notes:
1. CONSTRUCT PANELBOARD AS SINGLE-SECTION ASSEMBLY.
2. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

Branch Panel: SP2

Location: DRIVE THROUGH AUTOMOTIVE... **Supply From:** DPS **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4 **Label Type:** B
A.I.C. Rating: 14K AIC **Mains Type:** CIRCUIT BREAKER **Mains Rating:** 200 A **MCB Rating:** 200 A **Surge Protection:** 80kA PER PHASE

Notes	CKT	Circuit Description	Trip	Poles	Load	A		B		C		Load	Poles	Trip	Circuit Description	CKT	Notes
	1	BLANK	--	1	--	--	180					CO	1	20 A	FAB C.O.	2	
	3	BLANK	--	1	--			--	720			CO	1	20 A	FLEET WEST EXT. C.O.	4	
	5	BLANK	--	1	--					--	540	CO	1	20 A	FLEET SW RECEPTS.	6	
	7	BLANK	--	1	--	--	0					--	1	20 A	SPARE	8	
	9	BLANK	--	1	--			--	0			--	1	20 A	SPARE	10	
	11	BLANK	--	1	--					--	0	--	1	20 A	SPARE	12	
	13	BLANK	--	1	--	--	0					--	1	20 A	SPARE	14	
	15	BLANK	--	1	--			--	0			--	1	20 A	SPARE	16	
	17	BLANK	--	1	--					--	0	--	1	20 A	SPARE	18	
	19	BLANK	--	1	--	--	0					--	1	20 A	SPARE	20	
	21	BLANK	--	1	--			--	0			--	1	20 A	SPARE	22	
	23	BLANK	--	1	--					--	0	--	1	20 A	SPARE	24	
	25	BLANK	--	1	--	--	--					--	1	--	BLANK	26	
1	27	EQUIP: B4 NW	50 A	2	WE			4160	--			--	1	--	BLANK	28	
	29	--	--	--	--					4160	--	--	1	--	BLANK	30	
1	31	EQUIP: B20A EAST	30 A	3	EQ	960	960					EQ	3	30 A	EQUIP: B20A CENTER	32	1
	33	--	--	--	--			960	960			--	--	--	--	34	
	35	--	--	--	--					960	960	--	--	--	--	36	
	37	EQUIP: B10	20 A	3	EQ	1788	960					EQ	3	30 A	EQUIP: B20A WEST	38	1
	39	--	--	--	--			1788	960			--	--	--	--	40	
	41	--	--	--	--					1788	960	--	--	--	--	42	
					Total Load:	4848 VA		9548 VA		9368 VA							
					Total Amps:	40 A		85 A		84 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	14004 VA	100.00%	14004 VA		
Receptacle	1440 VA	100.00%	1440 VA	Total Conn. Load:	23764 VA
Welding	8320 VA	100.00%	8320 VA	Total Est. Demand:	23764 VA
				Total Conn.:	66 A
				Total Est. Demand:	66 A

Notes:
1. 5mA 'GFCI' TYPE CIRCUIT BREAKER.

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
472 W. Washington St. | Boise, ID 83702
P 208.345.6677 | F 208.344.9002

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ORIGINAL SEALED DOCUMENTS ON FILE WITH ENGINEER.
DATE OF ORIGINAL SEAL: 09/26/2024

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
405 S WASHINGTON ST.
MOSCOW, ID 83843
(208) 882-3520

STRUCTURAL ENGINEER
LOCHSA ENGINEERING
201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
291 E. SHORE DR., SUITE 210
EAGLE, IDAHO 83616
(208) 345-7127

MRK	DATE	DESCRIPTION
1	09/27/24	PLAN REVIEW
2	10/30/24	ADDENDUM #2

JOB N0.: 24000.01
DATE: 07/24/2024
DRAWN BY: MKC/CRH
CHECKED BY: GLJ

PHASE: PERMIT SET

PANEL SCHEDULES

SHEET NO.
E5.02

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EIDAM AND ASSOCIATES PROJECT NUMBER 23-052

CONDOC

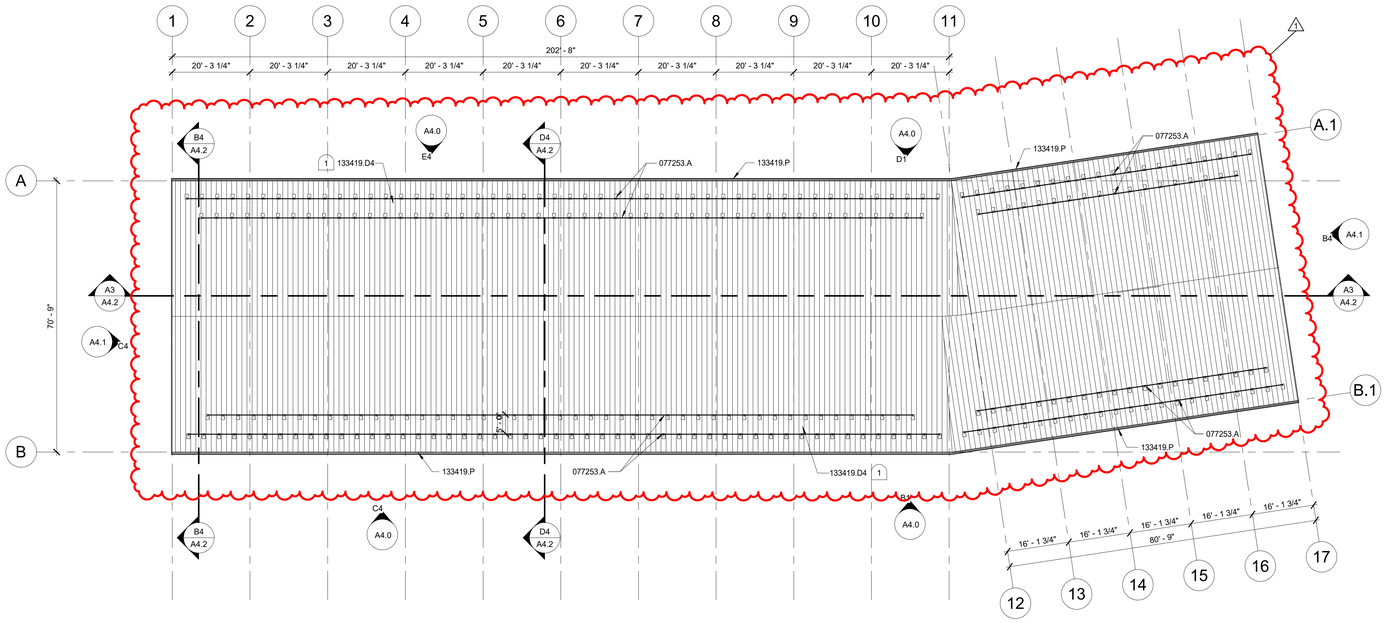
077253.A	SNOW GUARD.
133419.D4	INSULATED METAL ROOF PANEL - STANDING SEAM.
133419.P	GUTTER.

KEYNOTES

1. SEE DETAIL **C4/A7.0** FOR ROOF STANDING SEAM PANEL JOINT.

GENERAL NOTES

1. PROVIDE WATER TIGHT SEAL AROUND ALL ROOFTOP EQUIPMENT AND PENETRATIONS. INCLUDING THOSE NOT SHOWN HERE. REFER TO MECHANICAL DRAWINGS FOR EQUIPMENT NOT SHOWN HERE.



D2 ROOF PLAN
1/16" = 1'-0"

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

472 W. Washington St. | Boise, ID 83702
P 208.345.6877 | F 208.344.9002

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STAMP:

LICENSED ARCHITECT AR-985148
9-27-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP EXISTING BUILDING

CITY OF MOSCOW

CONSULTANTS:

MRK	DATE	DESCRIPTION
1	10/09/24	ADDENDUM #2

JOB NO.:	**24000.01**
DATE:	**09/27/24**
DRAWN BY:	**BC**
CHECKED BY:	**MG**
PHASE:	**Construction Documents**

ROOF PLAN

SHEET NO.
A2.1

10/30/2024 4:33:09 PM C:\Users\bchurch\Documents\24000-01 Moscow City Shop Existing_Central_V23_bchurch4DWZ7.rvt

ALL BIDS SHALL BEAR THIS ADDRESS:
City of Moscow
206 East Third Street
Moscow, ID 83843

ARTICLE 1

PROJECT NAME AND LOCATION	Moscow City Shop Facility 650 N. Van Buren St. Moscow, ID 83843
ARCHITECT OR ENGINEER	Lombard-Conrad Architects (208) 780-0022 472 W. Washington St. Boise, Idaho 83702

CONTRACT TIME **CALENDAR DAYS:** 365 consecutive calendar days consecutive calendar days from commencement of construction, substantial completion by no later than 3/1/2026

LIQUID. DAMAGES **EACH EXCESS CALENDAR DAY:** $250.00

BID OPENING	**DATE:**	November 6, 2024
	TIME:	2:00 p.m.
	PLACE:	Bid opens at Council Chambers, Moscow City Hall 206 E. Third Street, Moscow, Idaho 83843

NAME AND ADDRESS OF BIDDER TELEPHONE NO.

IF PARTNERSHIP NAMES OF PARTNERS

IF CORPORATION STATE OF INCORPORATION

BID GUARANTEE **UNDERLINE ONE:**
Min. 5% of Bid BID BOND, CASH, CERTIFIED CHECK, CASHIER'S CHECK

ADDENDA RECEIPT ACKNOWLEDGED **ADDENDA NUMBERED: 1____ 2____ 3____ 4____**
(Check all that have been received)

ALLOWANCE ACKNOWLEDGED **NONE LISTED:**

ARTICLE 2

IN COMPLIANCE WITH THE NOTICE TO CONTRACTORS-INVITATION TO BID, AND IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS, THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS FOR THE PROJECT, THE UNDERSIGNED BIDDER, BEING DULY LICENSED TO PERFORM SUCH WORK BY THE STATE OF IDAHO AND BEING THOROUGHLY FAMILIAR WITH ALL LOCAL CONDITIONS AFFECTING THE COST OF THE PROJECT, HAVING CAREFULLY EXAMINED THE SITE, CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AND ANY ADDENDA THERETO PREPARED BY THE PROJECT ARCHITECT OR ENGINEER, PROPOSES TO PROVIDE, AND TO FURNISH FOR THE COSTS SET FORTH IN THE FOLLOWING BID SCHEDULE, ALL LABOR AND MATERIAL, TOOLS, UTILITIES, TRANSPORTATION, EQUIPMENT AND SERVICES REQUIRED TO PERFORM AND TO COMPLETE IN A WORKMANLIKE MANNER ALL THE WORK FROM THE DATE OF THE NOTICE TO PROCEED WITHIN THE ESTABLISHED CONSTRUCTION TIME, SUBJECT TO LIQUIDATED DAMAGES FOR EXCESS WORKING TIME AS ESTABLISHED UNDER ARTICLE 1.

ARTICLE 3 BID SCHEDULE

BASE BID **DESCRIPTION:** Base Bid.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #1 **DESCRIPTION:** Pre-engineered Metal Building Envelope System.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #2 **DESCRIPTION:** Salt and Material Storage Building.

FOR THE SUM OF:

_____**DOLLARS ($)**

ALTERNATE #3 **DESCRIPTION:** Existing Shop Building Exterior Cladding.

FOR THE SUM OF:

_____**DOLLARS ($)**

THE LOW BIDDER WILL BE DETERMINED ON THE BASIS OF THE BASE BID PLUS ANY ALTERNATES WHICH ARE ACCEPTED. ALTERNATES MAY BE ACCEPTED IN ANY ORDER AND ARE NOT REQUIRED TO BE ACCEPTED IN SEQUENTIAL ORDER AS THEY ARE LISTED ON THE BID PROPOSAL FORM.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good for a period of sixty (60) calendar days after the scheduled opening time for receiving bids.

Upon receipt of written Notice of Intent to Award of this bid, Bidder will execute the formal Contract within ten (10) calendar days and deliver a Surety Bond or Bonds as required by Article 7 “Performance and Payment Bonds” of the Instructions to Bidders.

ARTICLE 4 LIST OF SUBCONTRACTORS

Plumbing

(Name) _____

(Address) _____

Idaho Plumbing Contractors License No. _____

Heating, Ventilating & Air Conditioning

(Name)_____

(Address)_____

Idaho Public Works Contractors License No._____

Idaho HVAC Contractors License No. _____

Electrical

(Name) _____

(Address) _____

Idaho Public Works Contractors License No. _____

Idaho Electrical Contractors License No. _____

Should the listing of subcontractors change due to selection of alternates or other similar circumstances, attach explanation.

Bidder warrants that bid has been prepared and that any contract resulting from acceptance of this bid is subject to Executive Order 2009-10 and the Fixed Price Construction Contract.

The undersigned notifies that it is of this date duly licensed as an Idaho Contractor and further that it possesses Idaho Contractor's License No. _____, and is domiciled in the State of _____.

Dated this _____ day of_____,_____.
(date) (month) (year)

Respectfully submitted by:

_____
(Company)

(Seal - if bid is by a corporation)

_____
(Street or PO Address)

_____
(City, State and zip code)

_____
(Authorized Signature)

_____
(Title)

_____
(Telephone Number)

_____
(FAX Number)

_____
(UEI Number)

Have you remembered to include bid security (bid bond or a certified or cashiers check), Contractor's Affidavit Concerning Alcohol and Drug-Free Workplace?

Execute and Submit with Bid

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF _____

COUNTY OF _____

Pursuant to the Section 72-1717, Idaho Code, I, the undersigned, being duly sworn, depose and certify that _____ is in compliance with the provisions of Section 72-1717, Idaho Code; that _____ provides a drug-free workplace program that complies with the provisions of Title 72, Chapter 17, Idaho Code, and will maintain such program throughout the life of a state construction contract; and that _____ shall subcontract Work only to subcontractors meeting the requirements of Section 72-1717(1)(a), Idaho Code.

_____
Name of Contractor

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this _____ day of _____, _____.

Commission expires:

_____
NOTARY PUBLIC, residing at

_____

_____

FAILURE TO EXECUTE THIS AFFIDAVIT AND SUBMIT IT ALONG WITH YOUR BID SHALL MAKE YOUR BID NON-RESPONSIVE.

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:

1. Concrete unit masonry.

B. Related Requirements:

1. Section 033000 "Cast-In-Place" for cast-in-place concrete walls above grade.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's printed statement of VOC content.
2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Applicator.

B. Product Certificates: For each type of water repellent.

C. Sample Warranty: For special warranty.

1.6 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

1.7 FIELD CONDITIONS

A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:

1. Concrete surfaces and mortar have cured for not less than 28 days.
2. Ambient temperature is above 40 deg F and below 100 deg F and will remain so for 24 hours.
3. Substrate is not frozen and substrate-surface temperature is above 40 deg F and below 100 deg F.
4. Rain or snow is not predicted within 24 hours.
5. Not less than 24 hours have passed since surfaces were last wet.
6. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree(s) to repair or replace materials that fail to maintain water repellency specified in "Performance Requirements" Article within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

A. Penetrating Water Repellent: Clear, solvent-based silicone elastomer product.

1. Products: Subject to compliance with requirements, products that may be incorporated into the Work but are not limited to:

a. PROSOCO, Inc; Sure Klean Weather Seal Blok-Guard and Graffiti Control.

1) FORM: Clear liquid
2) SPECIFIC GRAVITY: 0.802
3) pH: not applicable
4) WEIGHT/GALLON: 6.67 pounds
5) ACTIVE CONTENT: 9%
6) TOTAL SOLIDS: 9 percent ASTM D 2369
7) FLASH POINT: 100 degrees F (38 degrees C) ASTM D 3278
8) FREEZE POINT: less than -22 degrees F (less than -30 degrees C)
9) VOC CONTENT: greater than 600 g/L. Manufactured and marketed in compliance with USEPA AIM VOC regulations (40 CFR 59.403).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
3. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, according to repellent manufacturer's written instructions.

B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions and as follows:

1. Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents.

C. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.

D. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

E. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION

A. Apply coating of water repellent on surfaces to be treated using 15 psi- pressure spray with a fan-type spray nozzle to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

B. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of

surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

1. Provide written verification to Architect that two separate coatings were applied and witnessed by project superintendent.

C. Protection: Protect treated surfaces from rain for 4-6 hours.

3.4 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071900

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical door hardware

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:

    a. "Metal Doors and Frames"
    b. "Flush Wood Doors"
    c. "Aluminum-Framed Entrances and Storefronts"

1.2 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives

2. NFPA 101 – Life Safety Code
3. NFPA 105 – Smoke and Draft Control Door Assemblies
4. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.3 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:

a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

3. Door Hardware Schedule:

a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
c. Indicate complete designations of each item required for each opening, include:

1) Door Index: door number, heading number, and Architect's hardware set number.
2) Quantity, type, style, function, size, and finish of each hardware item.

3) Name and manufacturer of each item.
4) Fastenings and other pertinent information.
5) Location of each hardware set cross-referenced to indications on Drawings.
6) Explanation of all abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for hardware.
8) Door and frame sizes and materials.
9) Degree of door swing and handing.

4. Key Schedule:

a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Final approved hardware schedule edited to reflect conditions as installed.
d. Final keying schedule
e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:

a. Fire door assemblies, in compliance with NFPA 80.
b. Required egress door assemblies, in compliance with NFPA 101.

1.4 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

    a. For door hardware: DHI certified AHC or DHC.
    b. Can provide installation and technical data to Architect and other related subcontractors.
    c. Can inspect and verify components are in working order upon completion of installation.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

    a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
    b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:

    a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
    b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Accessibility Requirements:

    a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference

   a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

      1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      2) Preliminary key system schematic diagram.
      3) Requirements for key control system.
      4) Address for delivery of keys.

2. Pre-installation Conference

   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Review required testing, inspecting, and certifying procedures.
   d. Review questions or concerns related to proper installation and adjustment of door hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.6 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

a. Mechanical Warranty

1) Locks

a) Best 9K Series: 10 years

2) Exit Devices

a) Von Duprin: 10 years

3) Closers

a) LCN 4000 Series: 30 years

1.8 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.3 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Ives 5BB series

2. Acceptable Manufacturers and Products:

a. Hager BB1191/1279 series
b. McKinney TB series
c. Best FBB series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:

a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

a. Steel Hinges: Steel pins
b. Non-Ferrous Hinges: Stainless steel pins
c. Out-Swinging Exterior Doors: Non-removable pins
d. Out-Swinging Interior Lockable Doors: Non-removable pins
e. Interior Non-lockable Doors: Non-rising pins

2.4 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Select
b. Best
c. Roton
d. ABH
e. Hager

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.5 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Best, 9K Series 14D

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide escutcheon with lock status indicator window on top of lockset rose:

a. Escutcheon height (including rose) 6.05 inches high by 3.68 inches wide.

b. Indicator window measuring a minimum 3.52-inch by .60 inch with 1.92 square-inches of front facing viewing area and 180-degree visibility with a total of .236 square-inches of total viewable area.
c. Provide snap-in serviceable window to prevent tampering. Lock must function if indicator is compromised.
d. Provide messages color-coded with full text and symbol, as scheduled, for easy visibility.
e. Unlocked and Unoccupied message will display on white background, and Locked and Occupied message will display on red background.

3. Cylinders: Refer to "KEYING" article, herein.
4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

a. Vandlgard: Provide levers with vandal resistant technology for use at heavy traffic or abusive applications.
b. Lever Design: Rhodes

2.6 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Best Cormax

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

a. Patented Restricted Small Format: cylinder with small format interchangeable cores (SFIC) with restricted, patented keyway.

3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.7 KEYING

A. Scheduled System:

1. New factory registered system:

a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

a. Replaceable Construction Cores.

1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.

a) 3 construction control keys
b) 12 construction change (day) keys.

2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:

a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

1) Master Keying system as directed by the Owner.

b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.

c. Provide keys with the following features:

1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
2) Patent Protection: Keys and blanks protected by one or more utility patent(s).

d. Identification:

1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
2) Identification stamping provisions must be approved by the Architect and Owner.
3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

e. Quantity: Furnish in the following quantities.

1) Permanent Control Keys: 3.
2) Master Keys: 6.
3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
4) Key Blanks: Quantity as determined in the keying meeting.

2.8 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer:

   a. Telkee

2. Acceptable Manufacturers:

   a. HPC
   b. Lund

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.

   a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
   b. Provide hinged-panel type cabinet for wall mounting.

2.9 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

   a. LCN 4050A series

2. Acceptable Manufacturers and Products:

   a. Norton 7500 series
   b. Sargent 351 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.

8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.10 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:

   a. Ives

2. Acceptable Manufacturers:

   a. Elmes
   b. Burns
   c. Trimco
   d. Rockwood

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.11 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:

   a. Ives

2. Acceptable Manufacturers:

   a. Burns
   b. Trimco
   c. Rockwood

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.12 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:

a. Glynn-Johnson

2. Acceptable Manufacturers:

a. Rixson
b. Sargent
c. ABH

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.13 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco
c. Rockwood

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.14 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:

a. Zero International

2. Acceptable Manufacturers:

a. National Guard
b. Reese
c. DHSI
d. Legacy
e. Pemko

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.15 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:

   a. Ives

2. Acceptable Manufacturers:

   a. Burns
   b. Rockwood
   c. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.16 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

Abbreviation	Name
BES	Best
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
VON	Von Duprin
ZER	Zero International Inc

116909 OPT0383769 Version 1

HW SET: 01

For use on Door #(s):
147

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	93K7D14D	626	BES
1	EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER

HW SET: 02

For use on Door #(s):
115C 115D 118A 120A 141A 143A

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	ENTRANCE LOCK	93K7AB14D	626	BES
1	EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER

HW SET: 03

For use on Door #(s):
113 134 145

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	93K7D14D	626	BES
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 04

For use on Door #(s):
128

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	93K7AB14D	626	BES
1	EA	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 05

For use on Door #(s):
103 104 126 127 146

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE LOCK	93K7AB14D	626	BES
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 06

For use on Door #(s):
112

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	78-L-BE-06	626	VON
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 07

For use on Door #(s):
105 109 110 137 139

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	93K0L14D	626	BES
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: 08

For use on Door #(s):
125 140 143B 144A 144C

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	93K0N14D	626	BES
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 09

For use on Door #(s):
101 102 142A 144B

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	93K0N14D	626	BES
1	EA	SURFACE CLOSER	4050A CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 10

For use on Door #(s):
106 107 108 129 130 136

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 6" X 16"	630	IVE
1	EA	PULL PLATE	8305 8" 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 11

For use on Door #(s):
149

Each to have:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	SURFACE BOLT	SB360 12" T	604	IVE
2	EA	PULL PLATE	8305 8" 4" X 16"	630	IVE
2	EA	SURFACE CLOSER	4050A HEDA	689	LCN
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 12

For use on Door #(s):
114 135

Each to have:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	78-L-06	626	VON
1	EA	SURFACE CLOSER	4050A RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: A1

For use on Door #(s):

100 112A 122

Each to have:

1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-75-NL-OP-388	626	VON
1	EA	SFIC MORTISE HOUSING	80-102	626	SCH
1	EA	SFIC RIM HOUSING	80-129	626	SCH
2	EA	SFIC CORE	1E72 CORMAX	626	BES
1	EA	90 DEG OFFSET PULL	8190HD 10" STD	630	IVE
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	4050A EDAW/62G	689	LCN
1	EA	PA MOUNTING PLATE	4050A-18PA	689	LCN
1	EA	CUSH SHOE SUPPORT	4050A-30 SRT	689	LCN
1	EA	PERIMETER GASKET.	BY DOOR ASSEMBLY MANUFACTURER		
1	EA	THRESHOLD.	BY DOOR ASSEMBLY MANUFACTURER		
1	SET	SWEEP.	BY DOOR ASSEMBLY MANUFACTURER		

HW SET: R1

For use on Door #(s):

115 115A 116 116A 117 117A
118 119 119A 120 141 142
143 144

Each to have:

	EA	NOTE	ALL HARDWARE BY DOOR SUPPLIER/MANUFACTURER

END OF SECTION

LOMBARD
CONRAD
ARCHITECTS

10/30/2024

RFI List – Moscow City Shop

RFI	Answer:
All exterior windows and doors are Kawneer 451T-center glaze storefront, in a #14 clear anodized finish with Kawneer 500T thermal doors.	Confirmed
I see a spec section for 085113-Alluminum windows. If this is the interior windows, details show insulated storefront, with an insulated sliding window. Could this be Kawneer 450 single glaze storefront with a CRL siding window? Or would you like a CRL siding window with single glaze glass?	We were intending for the interior sliding window to be a prefabricated aluminum window.
Will 3rd party testing be contracted through the owner or the GC?	3rd party testing will be contracted through owner
Could we get a clarification if resilient tread finish is desired (and if so is that on all three sets of stairs)?	The stairs are just sealed concrete. We will remove the resilient note on Detail A6/A9.1.
Are access cards needed for this project?	Access controls will not be part of this project.
Section 019113 is in related requirements but there is not a section 019113 in the spec book. Will this section be provided?	Please disregard this reference.
On page S1.01B between grid lines C11 and C16 the continuous footings do not have a call out for size. What size are these footings meant to be?	The referenced footings should be footing type C2.

LOMBARD CONRAD ARCHITECTS, INC. | lombardconrad.com
472 W Washington Street | Boise, ID | 83702 | **O:** 208.345.6677

Ernest J. Lombard (Retired) & Joe Ed Conrad (Retired) | **FOUNDING PRINCIPALS**
Alexis Townsend, Ken Gallegos, Mark Heazle | **BOARD OF DIRECTORS**

LOMBARD CONRAD ARCHITECTS

ADDENDUM

Date:	November 4th, 2024	**Addendum #:**	03
Project:	Moscow City Shop	**Project #:**	24000.01
Address:	650 N Van Buren St, Moscow, ID., 83843		

	BIDS DUE
Time:	2:00 pm
Date:	November 6th, 2024
Place:	Moscow City Hall
Address:	206 E. Third Street,
City, State:	Moscow, ID., 83843

To All Planholders: Please notify everyone concerned as your sub-contractors and suppliers of the issuance and contents of this addendum prior to date of bid opening.

SPECIFICATIONS:

MOSCOW CITY SHOP:

Architectural:

Section 133419:

- Revise Section 133419 2.3.M.1.a Roof R-Value from 25 to 30 (to match drawings).
- Revise Section 133419 2.3.M.1.b Wall R-Value from 30 to 25 (to match drawings).

DRAWINGS

MOSCOW CITY SHOP:

Architectural:

Sheet A1.00 – ARCHITECTURAL SITE PLAN:

- Revised keynote #17.
- Add gate height to detail A3.

Sheet A4.00 – EXTERIOR ELEVATIONS – AREA A:

- Revised detail callout to reference detail E1/A7.0.

Structural:

Sheet S1.01A – FOUNDATION PLAN – AREA A:

- Revise TOW elevations along exterior extents of east side of building (to match architectural elevations).
- Revise/add TOP elevations along exterior extents of east side of building.
- Revise grid line 6.
- Revise/add detail callouts along exterior extents of east side of building.

Sheet S1.01B – FOUNDATION PLAN – AREA B:

- Revise TOW elevations along exterior extents of east, south, and southwest side of building (to match architectural elevations).
- Revise/add TOP elevations along exterior extents of east, south, and southwest side of building.
- Revise/add detail callouts along exterior extents of east side of building.

Sheet S6.01 – FOUNDATION DETAILS:

- Revise detail 1 to reflect high stem wall (to match architectural elevations).
- Revise detail 8 to reflect high stem wall (to match architectural elevations).
- Revise detail 11 to "not used".

Sheet S6.02 – FOUNDATION DETAILS:

- Add detail 5 to reflect high stem wall (to match architectural elevations).

APPROVALS: *Approvals are based on manufacturers only. Contractors are responsible for bidding on approved equipment equivalent in size and performance to that specified. Contractor is also responsible for all special electrical, mechanical, or other field adaptations required for equipment or items used other than that shown in the original project design. All mechanical and electrical equipment shall bear the UL label.*

Architectural:

Section 081113– Hollow Metal Doors and Frames: Daybar

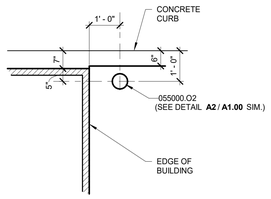
Section 081416: Oregon Door

ATTACHMENT LIST:

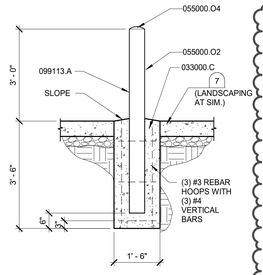
MOSCOW CITY SHOP

Architectural Sheets: A1.00, A4.00

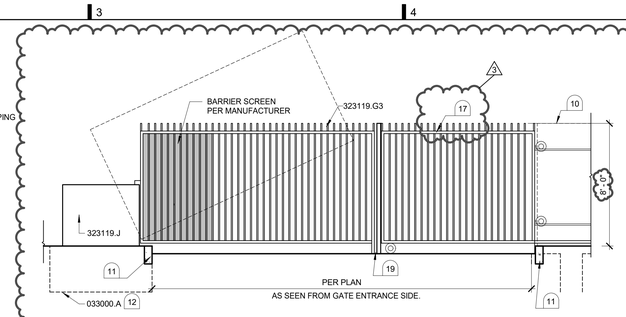
Structural Sheets: S1.01A, S1.01B, S6.01, S6.02



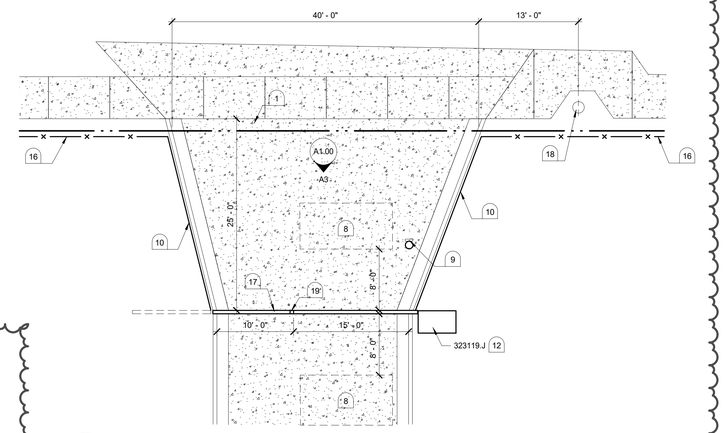
A1 BOLLARD AT BLDG.
1/2" = 1'-0"
BOLLARD AT BLDG.



A2 PIPE BOLLARD
1/2" = 1'-0"
PIPE BOLLARD



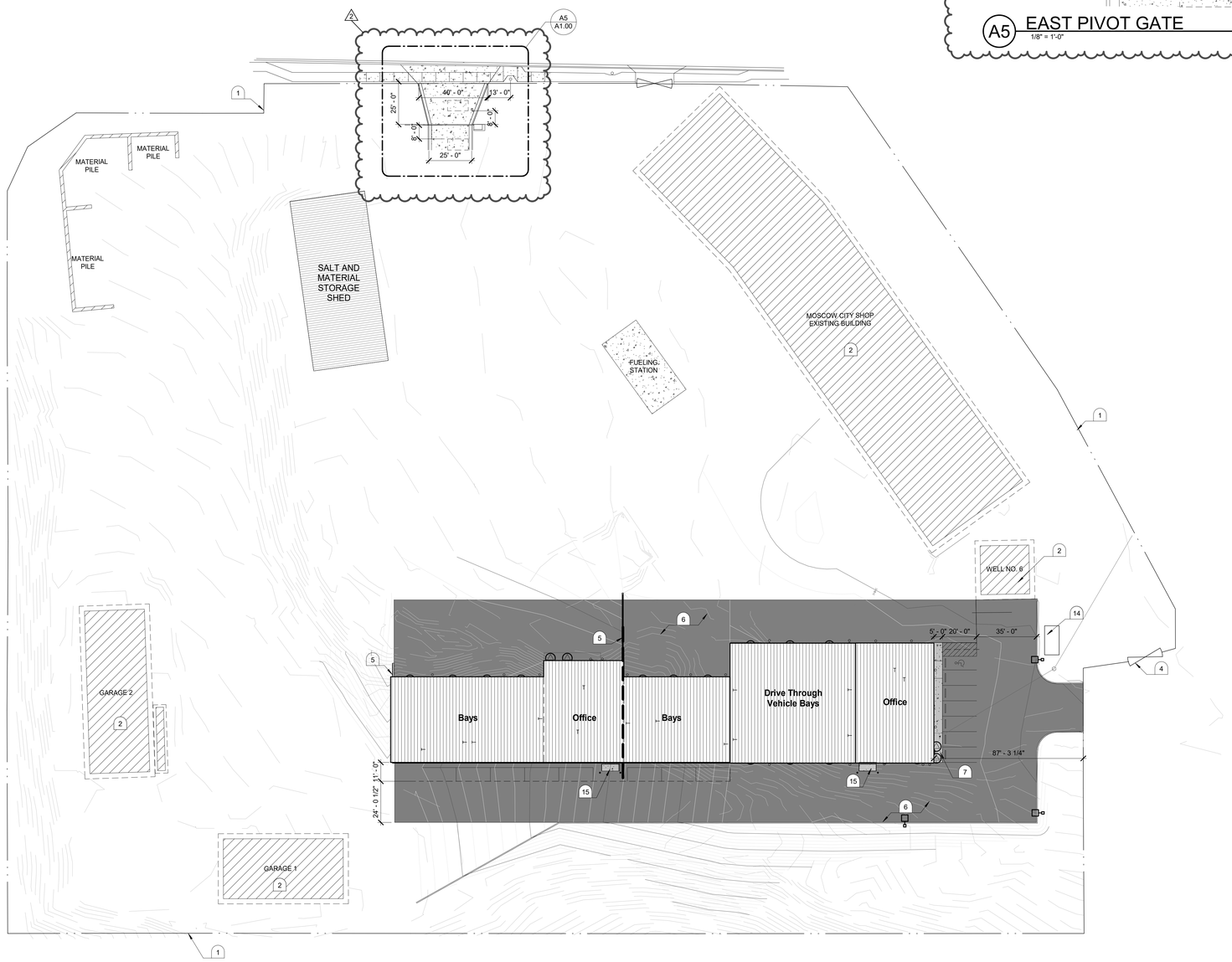
A3 PIVOT GATE
1/4" = 1'-0"



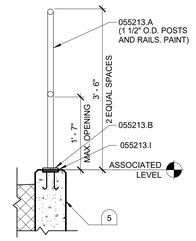
A5 EAST PIVOT GATE
1/8" = 1'-0"

CONDOC

033000.A	CONCRETE, SEE STRUCTURAL.
033000.C	CONCRETE FOUNDATION WALL, SEE STRUCTURAL.
055000.O2	6" DIAMETER METAL BOLLARD.
055000.O4	PREMANUFACTURED METAL BOLLARD CONCRETE CAP.
055213.A	METAL PIPE RAILING.
055213.B	METAL PLATE.
055213.I	WELDED CONNECTION.
099113.A	EXTERIOR PAINT.
323119.G3	VERTICAL PIVOT GATE.
323119.J	GATE OPERATOR.



E1 ARCHITECTURAL SITE PLAN
1" = 30'-0"



B6 GUARDRAIL
3/4" = 1'-0"

KEYNOTES

1. PROPERTY LINE.
2. EXISTING BUILDING TO REMAIN.
3. GATE.
4. EXISTING GATE.
5. RETAINING WALL, SEE CIVIL DRAWINGS SHEET **C2**.
6. ASPHALT PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
7. CONCRETE PAVING, SEE CIVIL DRAWINGS SHEET **C2**.
8. AUTO LOOP.
9. ENTRY GATE CARD READER PEDESTAL, SEE ELECTRICAL.
10. NEW FENCE. MATCH EXISTING. SEE CIVIL DRAWINGS FOR LOCATION.
11. CONCRETE CURB, SEE CIVIL DRAWINGS SHEET **2/C3**.
12. CONCRETE FOUNDATION FOR GATE CONTROLLER AS REQUIRED BY MANUFACTURER.
13. PAD MOUNTED GATE YOKE BY GATE MANUFACTURER. BREAK ISLAND FOR GATES AS REQUIRED.
14. GENERATOR, SEE ELECTRICAL.
15. MECHANICAL PAD AND EQUIPMENT, SEE MECHANICAL.
16. EXISTING FENCE.
17. MANUAL ROLLING GATE. GATE TO MATCH DECORATIVE METAL SEE SPEC SECTION **323119**.
18. EXISTING ELECTRICAL POLE TO REMAIN.
19. REMOVEABLE CENTER POST.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

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STAMP:

LICENSED ARCHITECT AR-985148
07-24-24
MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

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HODGE & ASSOCIATES
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MECHANICAL ENGINEER
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(208) 384-0585

ELECTRICAL ENGINEER
EIDAM AND ASSOCIATES
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BOISE, IDAHO 83709
(208) 345-7127

LANDSCAPE ARCHITECT
PLACE LANDSCAPE
1325 W. 1ST AVE., SUITE 204
SPOKANE, WA 99201
(509) 293-6163

MRK	DATE	DESCRIPTION
1	08/27/24	PLAN REVIEW COMMENTS
2	10/09/24	ADDENDUM #2
3	11/04/24	ADDENDUM #3

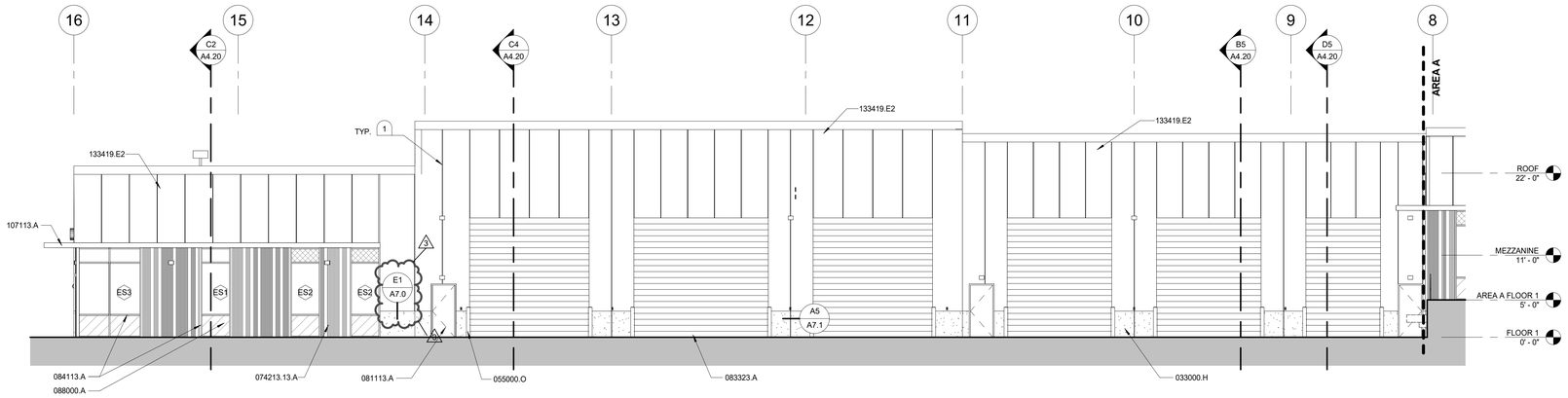
JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

PHASE: **PERMIT SET**

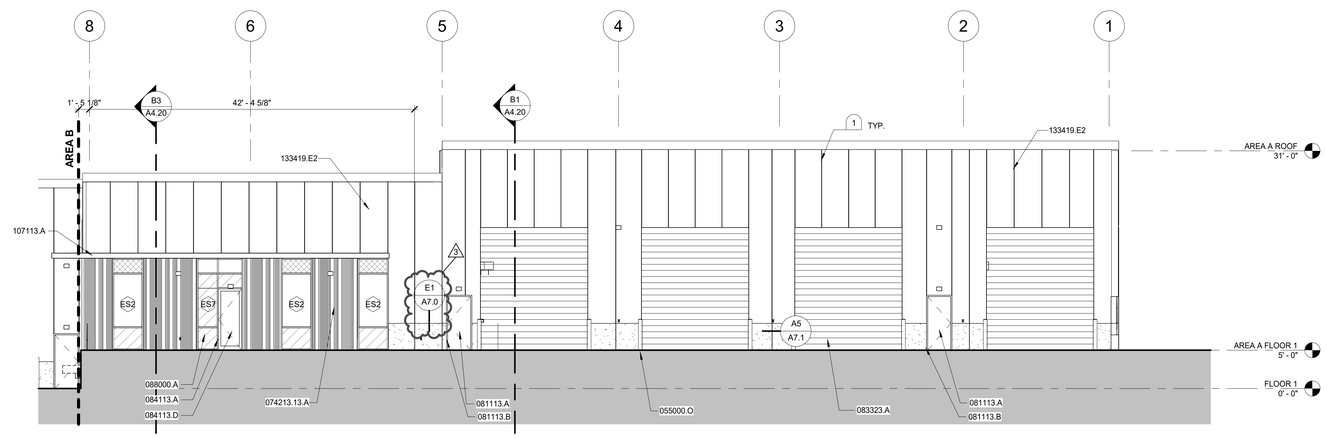
ARCHITECTURAL SITE PLAN

SHEET NO.
A1.00

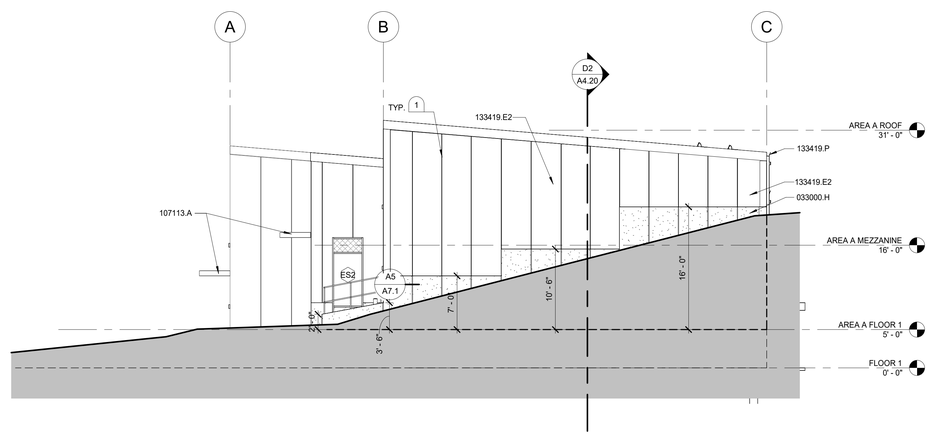
11/5/2024 7:33:59 AM C:\Users\matty\Documents\24000-01 Moscow City Shop_Central_V23_mattyWT3GF.rvt



B1 EAST - AREA B
1/8" = 1'-0"



D3 EAST - AREA A
1/8" = 1'-0"



E4 NORTH ELEVATION
1/8" = 1'-0"

CONDOC

033000.H	CONCRETE WALL, SEE STRUCTURAL.
055000.O	METAL BOLLARD.
074213.13.A	LAP-SEAM METAL WALL PANEL.
081113.A	HOLLOW-METAL DOOR
081113.B	HOLLOW-METAL FRAME.
083323.A	OVERHEAD COILING DOOR.
084113.A	ALUMINUM STOREFRONT FRAMING.
084113.D	ENTRANCE DOOR.
088000.A	GLASS, SEE LEGEND FOR TYPE.
107113.A	EXTERIOR SUN CONTROL DEVICE
133419.E2	INSULATED METAL WALL PANEL.
133419.P	GUTTER.

KEYNOTES

1. INSULATED METAL PANEL JOINT PER MANUFACTURERS STANDARD DETAIL.

GENERAL NOTES

1. ALL SURFACES OF EXPOSED STEEL, STEEL FABRICATIONS, HOLLOW METAL FRAMES, AND HOLLOW METAL DOORS SHALL BE PRE-FINISHED OR PAINTED U.O.N.
2. ALL EXPOSED METAL FLASHING ADJACENT TO CURTAIN WALL FRAMING SHALL BE PRE-FINISHED TO MATCH STOREFRONT FRAMING. **(084413)**
3. SEE SHEET **A3.10** FOR EXTERIOR WINDOW ELEVATIONS.
4. ALIGN CLADDING JOINTS AND/OR REVEALS WITH WINDOW MULLIONS AND OTHER BUILDING ELEMENTS AS INDICATED. PROVIDE BLOCKING OR STRAPPING BEHIND CLADDING JOINTS AS REQUIRED BY MANUFACTURER.
5. INSTALL SEALANT BETWEEN ALL DISSIMILAR MATERIALS IN COLORS THAT APPROXIMATRE COLORS OF ADJACENT FINISHES U.O.N. **(079200)** (COLOR SELECTIONS SHALL BE CONFIRMED BY ARCHITECT)
6. SEE CIVIL DRAWINGS SHEET **C2** FOR SITE IMPROVEMENTS INCLUDING GRADING, PAVING, AND FLATWORK.
7. SEE STRUCTURAL DRAWINGS **S1/A1.01A** FOR RETAINING WALL INFORMATION.

LOMBARD CONRAD ARCHITECTS

ARCHITECTURE | PLANNING
INTERIOR DESIGN

472 W. Washington St. | Boise, ID 83702
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MARK W. HEAZLE
STATE OF IDAHO

MOSCOW CITY SHOP

CITY OF MOSCOW

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(509) 293-6163

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3	11/04/24	ADDENDUM #3

JOB NO.:	**24000.01**
DATE:	**07/24/2024**
DRAWN BY:	**RB/BC/SB**
CHECKED BY:	**MG**

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EXTERIOR ELEVATIONS

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A4.00

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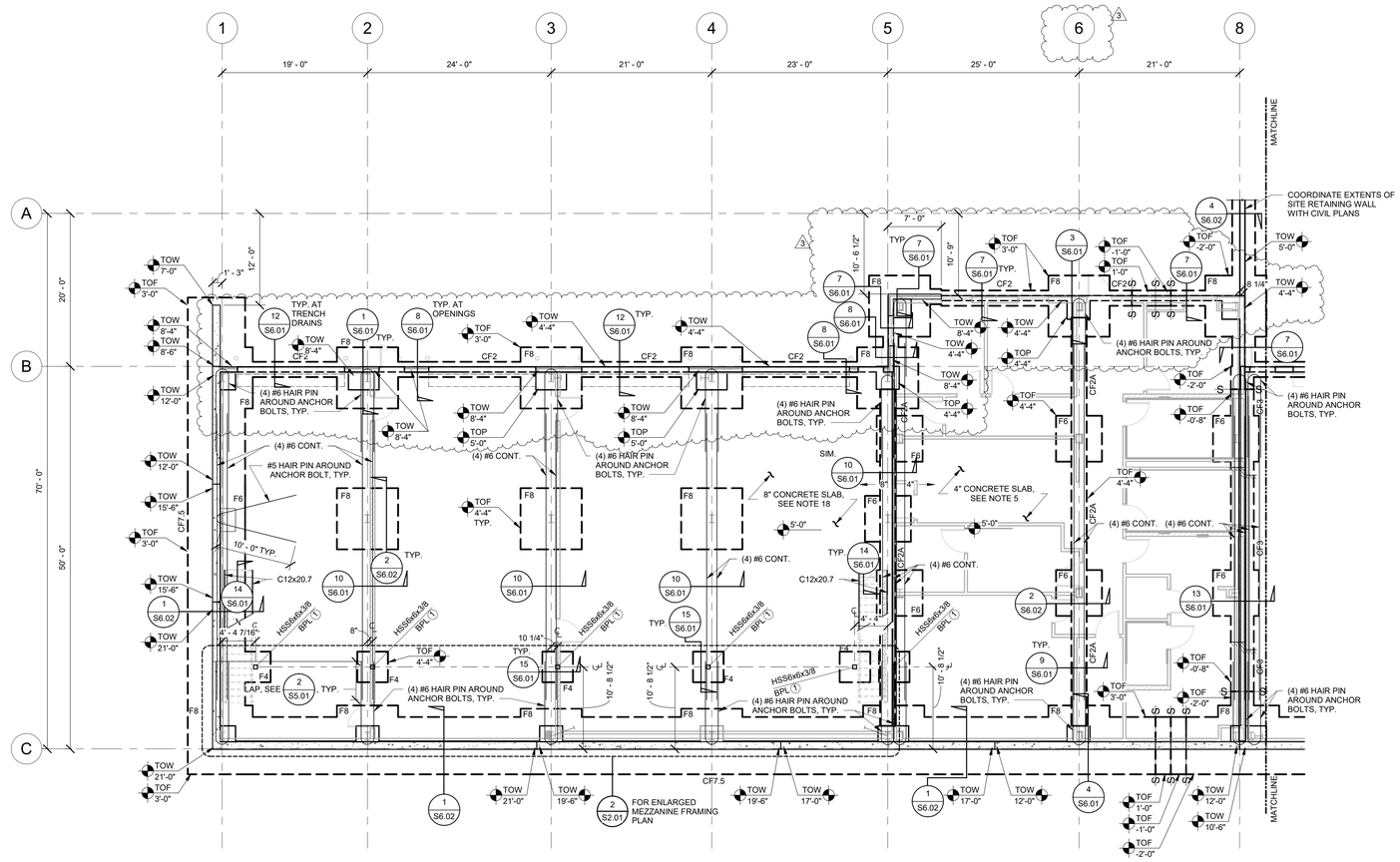
FOUNDATION PLAN NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the Architect and Structural Engineer before performing alteration work.
4. Top of concrete floor reference elevation = 0'-0" typical uno thus. X' - X"
5. Slab on grade shall be 4" thick concrete with 4x4 W2.9xW2.9 welded wire fabric, placed 2" clear from top of concrete. See architectural drawings for slab depressions, slopes, etc.
6. Top of exterior footing shall be elevation -2'-0" max. and top of interior footing shall be -0'-8" max., typ. uno. thus. TOF X' - X"
7. Contractor to coordinate slab on grade control joints with 1 / S5.02 .
8. Contractor to coordinate additional structural backfill quantities and requirements per Geo-Tech report.
9. For general concrete/foundation details, see sheets S5.01 and S5.02.
10. F# and CF# — Denotes footing type, see 4 / S4.01 .
11. Contractor to coordinate placement of utilities thru or adjacent to the footings or stem walls with detail 7 / S5.01 or the footings may be stepped per 8 / S5.01 at contractors option, typ.
12. S S — Indicates step(s) in footing, see 8 / S5.01 .
13. BPL # — Denotes base plate type, see 1 / S4.01 .
14. Denotes recess, sloped or elevated floor elevations, coordinate size and location with arch. Also see 7 / S5.02 where applicable.
15. For typical elevated concrete pad or curb construction, see 6 / S5.02. Coordinate size, location, and thickness with equipment supplier.
16. Exterior non-structural cold-formed steel framing shown for reference only.
17. Denotes change (step) in slab on grade elevation, see 13 / S6.01.
18. Slab on grade shall be 8" thick concrete with #4 rebar at 18" oc. each way, placed 3" clear from top of concrete. See Architectural drawings for slab depressions, slopes, etc.
19. Denotes extents of bridge crane to be supported by Pre-Engineered metal building, see plan for weights.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.



1 FOUNDATION PLAN - AREA-A
1/8" = 1'-0"

KEY PLAN

APPROVAL AREA

Lochsa engineering
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BOISE IDAHO 83704
Phone (208) 342-7168
LE JOB #24LOC4042

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EXP. 05/31/2026

MOSCOW CITY SHOP

CITY OF MOSCOW

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(208) 343-3663

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3	11/04/24	ADDENDUM #3

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DATE:	07/24/2024
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CHECKED BY:	KF/CH

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FOUNDATION PLAN - AREA A

SHEET NO.
S1.01A

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FOUNDATION PLAN NOTES

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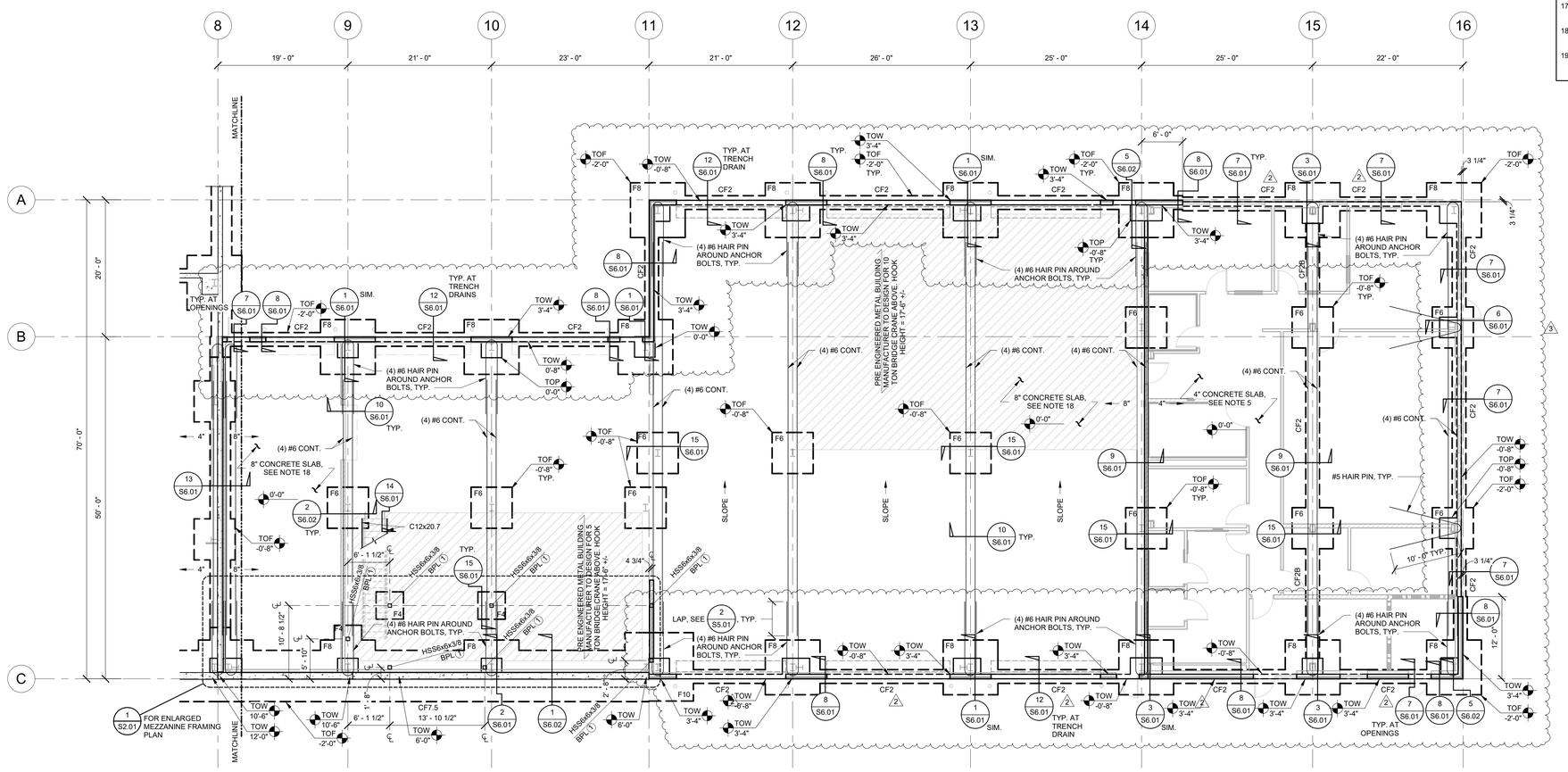
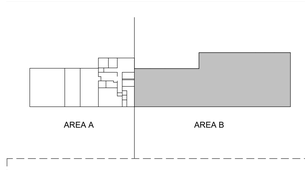


1 FOUNDATION PLAN - AREA B
1/8" = 1'-0"

KEY PLAN



APPROVAL AREA

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MRK	DATE	DESCRIPTION
2	10/02/24	ADDENDUM #2
3	11/04/24	ADDENDUM #3

JOB NO.:	24000.01
DATE:	07/24/2024
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CHECKED BY:	KF/CH
PHASE:	PERMIT SET

FOUNDATION PLAN - AREA B

SHEET NO.
S1.01B

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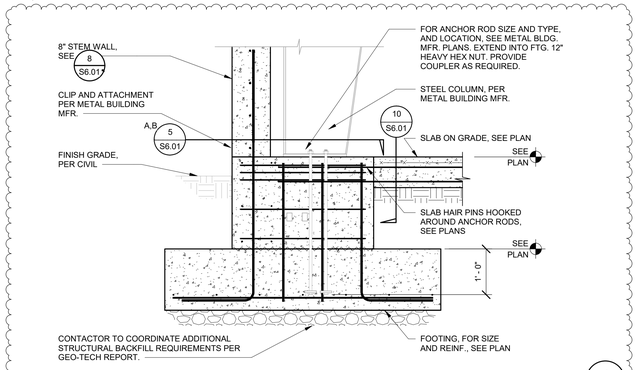
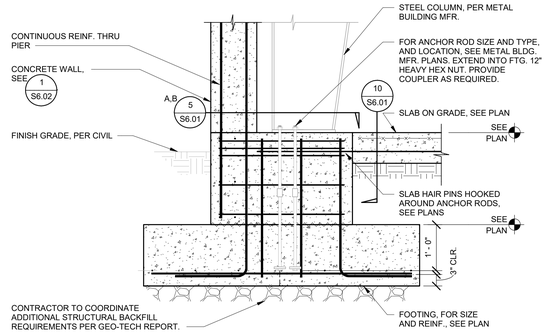


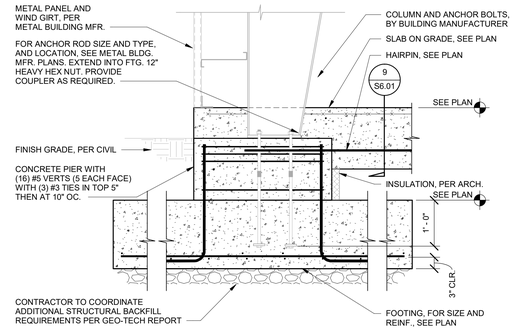
PRE-MANUFACTURED BUILDING COLUMN AT SHOP (1)

3/4" = 1'-0"



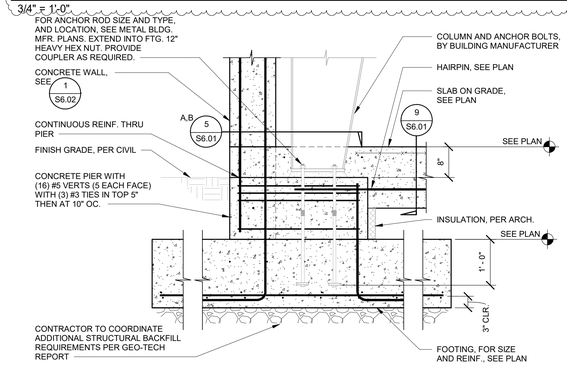
PRE-MANUFACTURED BUILDING COLUMN AT RETAINING WALL (2)

3/4" = 1'-0"



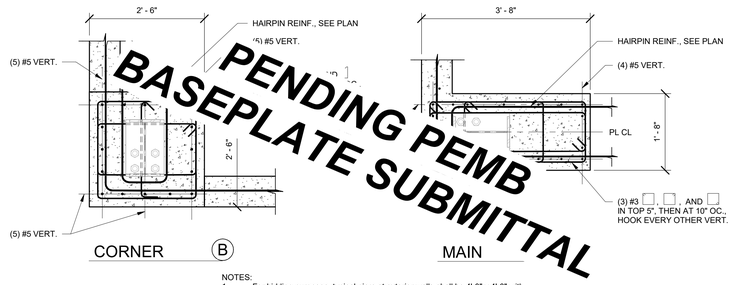
PRE-MANUFACTURED BUILDING COLUMN AT OFFICE AREA (3)

3/4" = 1'-0"



PRE-MANUFACTURED BUILDING COLUMN AT RETAINING WALL (4)

3/4" = 1'-0"

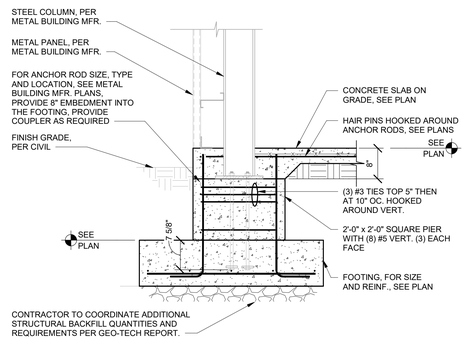


PENDING PEMB BASEPLATE SUBMITTAL

NOTES:
1. For bidding purposes, typical piers at exterior walls shall be 4'-0" x 4'-0" with (16) #5 vertical bars and (3) #3 ties at 3" and 12" oc. below.
2. For bidding purposes, corner piers shall be 3'-0" x 3'-0" with (12) #5 vertical bars and (3) #3 ties at 3" and 12" oc. below.

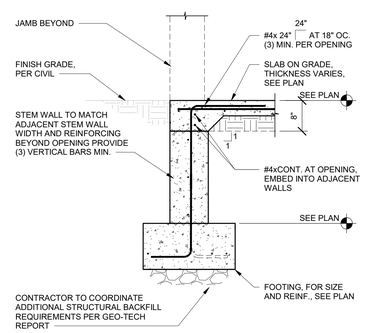
BUILDING PIER REBAR LAYOUT (5)

3/4" = 1'-0"



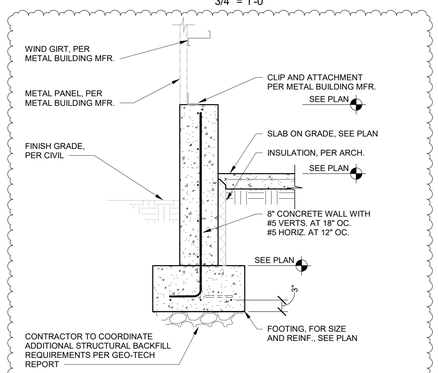
METAL BUILDING COLUMN AT FOOTING (6)

3/4" = 1'-0"



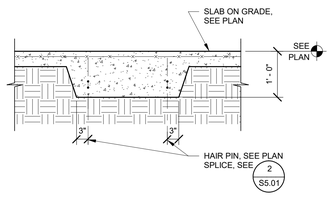
SLAB AT OPENING OR WINDOW SYSTEM (7)

3/4" = 1'-0"



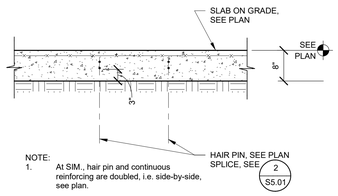
CONCRETE STEM WALL AT FOOTING (8)

3/4" = 1'-0"



THICKENED SLAB AT HAIR PIN (9)

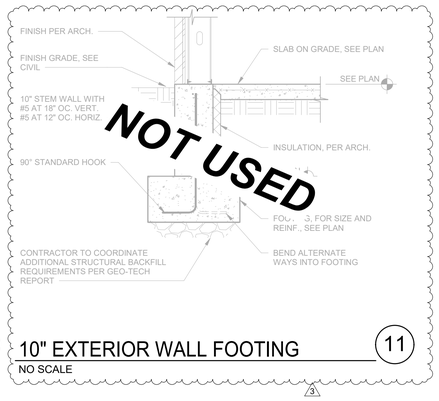
NO SCALE



NOTE:
1. At SIM., hair pin and continuous reinforcing are doubled, i.e. side-by-side, see plan.

THICKENED SLAB AT HAIR PIN (10)

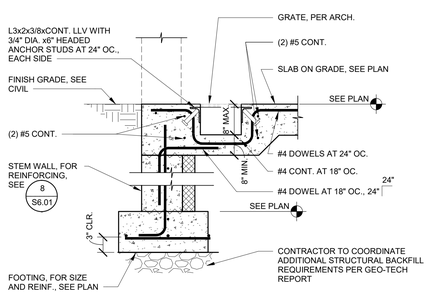
3/4" = 1'-0"



NOT USED

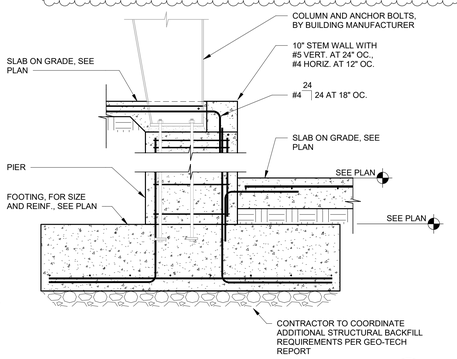
10" EXTERIOR WALL FOOTING (11)

NO SCALE



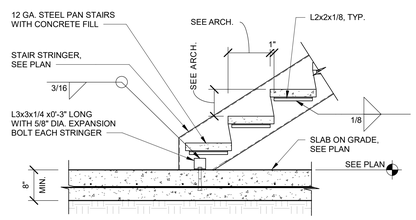
FLOOR TRENCH DETAIL (12)

1" = 1'-0"



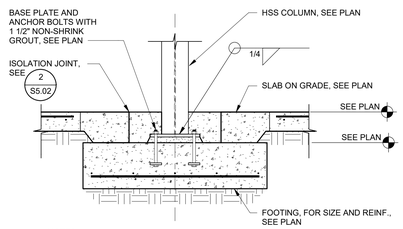
WALL AT STEPPED SLAB (13)

3/4" = 1'-0"



STEEL PAN STAIR AT CONCRETE SLAB ON GRADE (14)

3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.
4. Grout to be placed prior to applying loads to column.

INTERIOR SPREAD FOUNDATION AT COLUMN (15)

3/4" = 1'-0"

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4. For concrete and foundation general details, see sheets S5.01 and S5.02.
5. Footing designations are called out on the foundation plans and coordinated on the schedule sheet S4.01.
6. Slab on grade construction is called out on plans. Coordinate slab on grade construction with sheet S5.01.
7. Coordinate top of footing and top of slab elevations with foundation plans.
8. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
9. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report. Coordinate vapor barrier placement below slab with arch and geo-tech report.
10. Contractor to coordinate exterior finish grade with architect and civil.
11. Coordinate non-shrink grout under steel columns with base plate schedule on sheet S4.01.
12. All rebar to maintain clear distances per concrete notes on sheet S0.02.
13. All concrete cold joints are to be roughened and cleaned to 1/4" amplitude, uno.
14. All hooked dowels are shown with 90° std. hook, see 3 / S5.01, uno.
15. All rebar shall maintain tension lap splice, see 2 / S5.01.
16. All dowels shall maintain development lengths, see 1 / S5.01. Concrete wall dowels are to extend to bottom of the footings and face of the footings. for dowels that are centered in wall alternate the hook direction.
17. Concrete strengths are provided in notes on sheet S0.02.
18. All exposed concrete edges shall have a 3/4" chamfer, typ., uno.
19. All cast in place anchor bolts are to be coordinated with the base plate schedule on sheet S4.01.
20. Minimum concrete pier horizontal reinforcing shall be, #3 tie sets at 12" OC. with (3) #3 tie sets at top 5", uno.
21. Provide 3" minimum concrete cover between surrounding soil and all embedded steel including, base plates, anchor bolts, headed anchors, columns, etc., uno.
22. All stem wall and footing reinforcing is to be continued thru column piers and footings, uno.
23. For structural bearing wall construction, see plans. Coordinate location with plans and architectural.
24. For all interior and exterior wall finishes, see architectural.
25. Rigid foundation insulation shown for reference only. Coordinate thickness and placement with arch.

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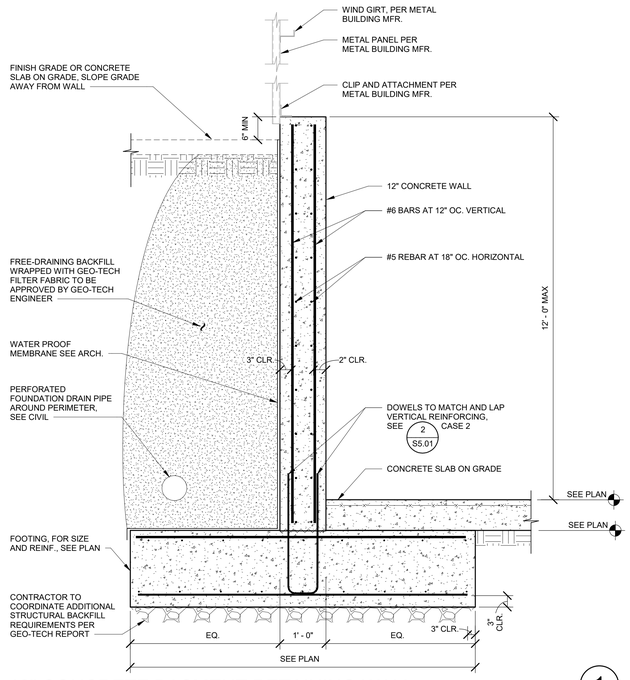
FOUNDATION DETAILS

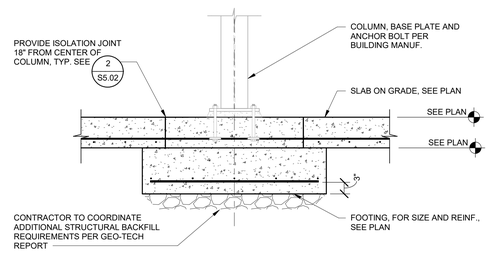
SHEET NO.
S6.01

11/4/2024 12:14:26 PM C:\Users\Kyle.Friederich\OneDrive - Lochsa Engineering\Documents\24LOC4042_Moscow City Shop_R23_JGowans23.rvt



12" CONCRETE BASMENT RETAINING WALL (1)

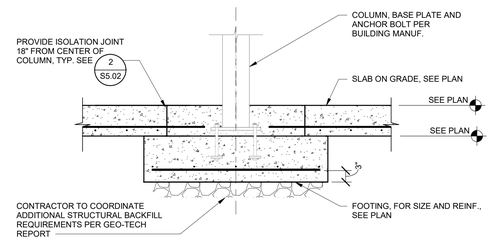
3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.

SURFACE MOUNTED PEMB INTERIOR COLUMN AT FOOTING (2)

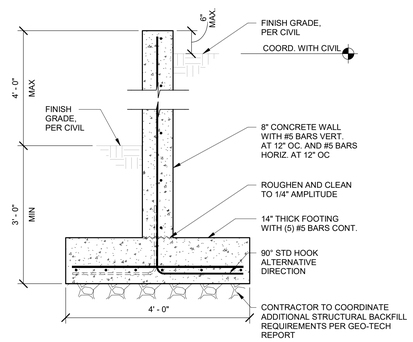
3/4" = 1'-0"



NOTES:
1. See plan or schedule for footing size and reinforcing.
2. Anchor bolts shall be secured in place prior to concrete placement.
3. Contractor is responsible for leveling of base plate.

RECESSED PEMB INTERIOR COLUMN AT FOOTING (3)

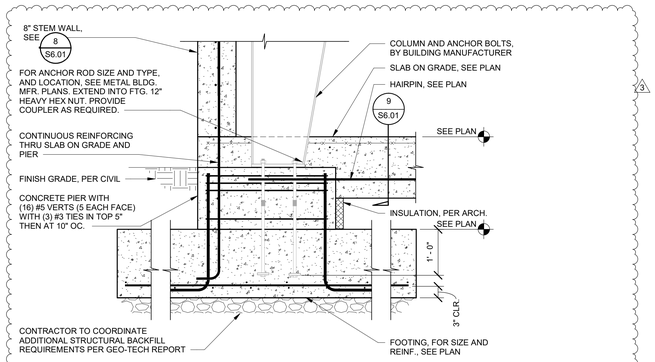
3/4" = 1'-0"



NOTE:
1. For location of retaining wall, see civil drawings.

SHORT RETAINING WALL (4)

3/4" = 1'-0"



PRE-MANUFACTURED BUILDING COLUMN AT HIGH STEM WALL AT OFFICE AREA (5)

NO SCALE

FOUNDATION DETAIL NOTES

1. For structural design notes, see sheets starting at S0.01.
2. Architectural backgrounds are shown for reference only. The dimensions shown apply to structural elements only. For dimensions not shown, see architect of record submittal.
3. Contractor shall field verify existing structural conditions. If any discrepancies are found, contractor shall contact the architect and structural engineer before performing alteration work.
4. For concrete and foundation general details, see sheets S5.01 and S5.02.
5. Footing designations are called out on the foundation plans and coordinated on the schedule sheet S4.01.
6. Slab on grade construction is called out on plans. Coordinate slab on grade construction with sheet S5.01.
7. Coordinate top of footing and top of slab elevations with foundation plans.
8. Columns and base plates are called out on plans and coordinated in the schedule shown on S4.01.
9. Sub-grade material below slabs and footings shall be constructed as indicated by geo-tech report. Coordinate vapor barrier placement below slab with arch and geo-tech report.
10. Contractor to coordinate exterior finish grade with architect and civil.
11. Coordinate non-shrink grout under steel columns with base plate schedule on sheet S4.01.
12. All rebar to maintain clear distances per concrete notes on sheet S0.02.
13. All concrete cold joints are to be roughened and cleaned to 1/4" amplitude, uno.
14. All hooked dowels are shown with 90° std. hook, see 3 / S5.01, uno.
15. All rebar shall maintain tension lap splice, see 2 / S5.01.
16. All dowels shall maintain development lengths, see 1 / S5.01. Concrete wall dowels are to extend to bottom of the footings and face of the footings. for dowels that are centered in wall alternate the hook direction.
17. Concrete strengths are provided in notes on sheet S0.02.
18. All exposed concrete edges shall have a 3/4" chamfer, typ., uno.
19. All cast in place anchor bolts are to be coordinated with the base plate schedule on sheet S4.01.
20. Minimum concrete pier horizontal reinforcing shall be, #3 tie sets at 12" OC. with (3) #3 tie sets at top 5", uno.
21. Provide 3" minimum concrete cover between surrounding soil and all embedded steel including, base plates, anchor bolts, headed anchors, columns, etc., uno.
22. All stem wall and footing reinforcing is to be continued thru column piers and footings, uno.
23. For structural bearing wall construction, see plans. Coordinate location with plans and architectural.
24. For all interior and exterior wall finishes, see architectural.
25. Rigid foundation insulation shown for reference only. Coordinate thickness and placement with arch.

NOTE: The foundation shall not be placed until the foundation design is finalized. This cannot be completed until the final Pre-Engineered-Building drawings have been submitted and reviewed.

LOMBARD CONRAD ARCHITECTS
ARCHITECTURE | PLANNING
INTERIOR DESIGN
472 W. Washington St. | Boise, ID 83702
P 208.345.6677 | F 208.344.9002

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STAMP:

PROFESSIONAL ENGINEER REGISTERED 7453 11/04/24 STATE OF IDAHO KELLEY F. MAHAFFEY EXP. 03/31/2026

MOSCOW CITY SHOP

CITY OF MOSCOW

CONSULTANTS:

CIVIL ENGINEER
HODGE & ASSOCIATES
405 S WASHINGTON ST.
MOSCOW, ID 83843
(208) 882-3520

STRUCTURAL ENGINEER
LOCHSA ENGINEERING
201 N. MAPLE GROVE RD., SUITE 100
BOISE, IDAHO 83704
(208) 342-7168

MECHANICAL ENGINEER
MUSGROVE ENGINEERING P.A.
234 S. WHISPERWOOD WAY
BOISE, IDAHO 83709
(208) 384-0585

ELECTRICAL ENGINEER
CATOR RUMA
420 S. ORCHARD ST.
BOISE, IDAHO 83705
(208) 343-3663

MRK	DATE	DESCRIPTION
3	11/04/24	ADDENDUM #3

JOB NO.:	24000.01
DATE:	07/24/2024
DRAWN BY:	JG/CE
CHECKED BY:	KF/CH

PHASE: **PERMIT SET**

FOUNDATION DETAILS

SHEET NO.
S6.02

Lochsa engineering
201 N. Maple Grove Ste. 100
BOISE IDAHO 83704
Phone (208) 342-7168
LE JOB #24LOC4042

ALL STRUCTURAL DETAILS USED ON THIS PLAN ARE COPYRIGHT © OF LOCHSA. THE RE-USE OF ANY DETAILS AND CONCEPTS IS NOT ACCEPTABLE WITHOUT WRITTEN CONSENT OF LOCHSA ENGINEERING.

APPROVAL AREA

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COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

Development Agreement for 2216 S. Main St. (Fountain's Business Park) (ACTION ITEM) - Bob Buvel

RESPONSIBLE STAFF

Bob Buvel, Senior Civil Engineer

ADDITIONAL PRESENTER(S)

DESCRIPTION

On December 18, 2023, City council approved the annexation of the property at 2216 S. Main, also known as the Fountain Business Park. As part of the annexation, the City of Moscow requested that the subject property be connected to the City water and sewer systems. Joel Cohen has submitted to the City a proposal to connect the property to the City water and sewer system. Part of that work would require up-sizing the existing 6-inch water main located in US95 to a 10-inch water main. The water main would be oriented in a way that it could be continued east when Nelson Avenue is extended. Staff has concluded that it is prudent to have the line upgraded at this time and recommends contributing funding to cover the cost difference with up-sizing the existing main. The bid from Cohen's contractor, 4G Contracting, has the work valued at $57,000.00. Staff reached out to a third party contractor for a quote to do the work. M.L. Albright's responded with a quote of $67,880.00. The attached Development Agreement reflects the recommended funding contribution to have 4G Contracting complete the work.

REVIEWED BY

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval of the Development Agreement with Joel Cohen, deny Development Agreement with Joel Cohen, or provide staff with further direction.

STAFF RECOMMENDATION

Recommend approval of the Development Agreement with Joel Cohen.

OTHER RESOURCES

FISCAL IMPACT

$57,000.00 From Water Developer Participation 220-220-770-73

PERSONNEL IMPACT

ATTACHMENTS

1. DevelopmentAgreement with Dev Participation - 2216 S Main St_final
2. 2216 S. Main Water Plan

DEVELOPMENT AGREEMENT
FOR CONNECTION TO CITY SANITARY SEWER AND WATER
BETWEEN JOEL COHEN
AND CITY OF MOSCOW, IDAHO

THIS DEVELOPMENT AGREEMENT BETWEEN JOEL COHEN AND THE CITY OF MOSCOW, IDAHO is entered into this _____ day of _____, 2024, by and between Joel Cohen, whose address is 418 East B Street, Moscow, Idaho, 83843 (hereinafter "DEVELOPER"), and the City of Moscow, Idaho, a municipal corporation of the State of Idaho, 206 East Third Street, Moscow, Idaho, 83843 (hereinafter "CITY");

W I T N E S S E T H :

WHEREAS, DEVELOPER has annexed property to be known as 2216 S. Main Street, Moscow, Idaho, 83843 into the City of Moscow pursuant to Idaho Code § 50-222 on December 18, 2023, through Ordinance 2023-10, which was later repealed and replaced with Ordinance 2024-01 on January 16, 2024; and

WHEREAS, DEVELOPER understands that upon annexation, connection to CITY sanitary sewer and water is required within ninety (90) days pursuant to Moscow City Code Title 5, Chapter 3 "Sewers" and Title 5, Chapter 4 "Water Regulations"; and

WHEREAS, DEVELOPER and CITY believe that, without the public improvements required herein, CITY would not be able to otherwise provide for mitigation of the effects of the annexation on the ability of CITY to deliver services, without compromising quality of such service delivery to current City residents, or without imposing substantial additional costs upon current City residents to accommodate the proposed annexation; and

WHEREAS, CITY desires to ensure that public improvements, consisting of water mains, fire hydrants, water services, sanitary sewer mains and stubs, are constructed; and

WHEREAS, DEVELOPER requests twenty-four (24) months to complete the required public improvements and to connect to CITY sanitary sewer and water. DEVELOPER enters into this Agreement of DEVELOPER's own free will and accord, without coercion, without inducement, and at DEVELOPER's request; and

WHEREAS, DEVELOPER has read this Agreement, has understood it, and has had the opportunity to avail themself of legal and other counsel prior to entering into this Agreement and prior to signing it;

NOW, THEREFORE, DEVELOPER and CITY hereby agree that all matters stated above are true and correct and are incorporated herein by reference as if copied in their entirety and shall be adopted with the following:

I. PROPERTY AFFECTED.

This Agreement affects property to be known as 2216 S. Main Street, Moscow, Idaho 83843 shown as "Parcel 2" on Attachment "A" more particularly described as follows:

A parcel of land located in the Northeast Quarter of the Northeast Quarter of Section 19, Township 39 North, Range 5 West, Latah County Idaho, described as follows:

Commencing at the Northeast Corner of said Section 19; thence, S01°06'54"W, 916.25 feet, to a point on the east line of said Northeast Quarter, thence leaving said east line, West, 19.24 feet, to the **Point of Beginning:**

Thence West, 211.75 feet, to a point;
Thence N45°10'28"W, 250.45 feet, to a point on the north line of a parcel described in Trustees'
Deed, Instrument #553985, Latah County Records;
Thence continuing N45°10'28"W, 28.30 feet, to a point on the east line of a parcel described in
Right-of-Way Deed, Instrument #137288, Latah County Records;
Thence along said east line, N09°36'37"E, 186.72 feet, to the southeast corner of a parcel
described in Warranty Deed, Instrument #526993, Latah County Records;
Thence along the east line of said parcel, N01°15'20"E, 24.45 feet, to a point;
Thence leaving said west line, S37°31'27"E, 101.27 feet, to a point;
Thence S86°21'39"E, 316.70 feet, to a point;
Thence South, 304.63 feet, to the **Point of Beginning**.

Parcel contains two existing structures known as Building A and Building B of the Fountain Industrial Park.

Parcel contains 2.57 Acres, more or less.

II. PUBLIC IMPROVEMENTS.

DEVELOPER agrees to install, at DEVELOPER's expense, within the subdivision, public improvements and appurtenances required by Moscow City Code Title 5, Chapter 1, Sections 1-4 and 1-5, including, but not limited to:

A. Water mains, valves, fire hydrants, water services, sanitary sewer mains and stubs, storm sewer mains and stubs, storm water detention facilities, street lighting, franchise utilities, erosion control, streets, paving, curbs, traffic control devices (to include but not be limited to stop signs and street signs), and sidewalks; all in

accordance with CITY Standard Construction Specifications and Standard Construction Drawings duly adopted by Resolution 2021-07 of the City Council (hereinafter "CITY Standards"), and as may be amended and in accordance with approved engineering plans; and

B. DEVELOPER agrees to replace the current 6" water main located in Highway 95 with a 10" water main, per the approved "Fountains Industrial Park Water & Sewer Project" Civil Construction Plan Set; and

C. CITY agrees to reimburse the cost of upsizing the 6" water main located within Highway 95 as shown on Attachment "A", as follows:

a. CITY shall reimburse one hundred percent (100%) of the costs of replacing and upsizing the current water main in Highway 95, which shall not exceed a total amount of Fifty-Seven Thousand Dollars ($57,000) per the approved "Fountains Industrial Park Water & Sewer Project" Civil Construction Plan, unless otherwise approved by CITY in writing.

b. Subject to the amounts and limitation contained in paragraph a. of this Section, CITY's contribution will only be utilized to reimburse DEVELOPER for the cost of replacing and upsizing the current water main in Highway 95. Construction of the water main shall include, but not be limited to, the procurement and construction of the water main, including pipe, fittings, valves, hydrants, thrust blocks, testing, and all materials and construction that are ancillary to the construction of the water main including, but not limited to, excavation, backfill, paving, material testing, and traffic control.

c. CITY's contribution for the costs of replacing and upsizing the water main shall not be disbursed until completion of the public improvements and acceptance of said improvements by CITY.

III. TERM.

This Agreement shall remain in full force and effect in accordance with all of its terms and conditions as follows:

A. Until all public improvements have been completed and accepted in writing by CITY; and

B. Until the warranty period for public improvements has expired; and

C. Until all development fees, as required and assessed by CITY, have been paid in full.

IV. CITY'S COVENANT.

CITY shall deem the property in full compliance only after the following have occurred:

A. Payment of all applicable developmental fees required and assessed by CITY; and

B. CITY has determined that the construction of all required public improvements is complete and after adequate security has been provided to ensure construction and warranty repairs of the required public improvements; and

C. Compliance with applicable CITY permit issuance requirements.

V. DEVELOPER'S COVENANT.

A. DEVELOPER agrees to construct, at DEVELOPER's expense, the public improvements described in Section II of this Agreement, all in accordance with CITY approved engineering design plans, to CITY standards, during and under the terms of this Agreement; and

B. DEVELOPER agrees to furnish to CITY, at DEVELOPER's expense, engineering design plans (for the required public improvements) prepared by an Idaho Licensed Professional Engineer and any and all necessary easement documents prepared by an Idaho Licensed Professional Land Surveyor (PLS). Such plans shall be approved by CITY Engineer prior to beginning any public improvements' construction; and

C. DEVELOPER agrees that the Occupancy Permit issued for the property by the County prior to annexation is no longer in effect and DEVELOPER shall obtain a temporary occupancy permit from CITY and comply with all inspections and requirements for said occupancy permit.

D. DEVELOPER agrees that DEVELOPER shall construct the public improvements described in Section II of this Agreement, within twenty-four (24) months from the date of this Agreement; and

E. If DEVELOPER fails to complete installation of the required public improvements within twenty-four (24) months from the date of this Agreement, to CITY standards and as per the approved plans, CITY shall revoke occupancy of the entire development and shall revoke any applicable permit issued to DEVELOPER by CITY. Upon said revocation, DEVELOPER shall immediately vacate the property.

VI. SECTION INTENTIONALLY LEFT BLANK

VII SECTION INTENTIONALLY LEFT BLANK

VIII. WARRANTY.

A. All required public improvements, once constructed and accepted by CITY for ownership and maintenance, shall remain free of defects in materials and workmanship for a period of one (1) year following the date of CITY's written acceptance of such required public improvements (i.e., warranty period).

B. DEVELOPER shall be responsible for correcting any and all deficiencies which occur within the one (1) year warranty period.

C. Upon completion of the improvements required in Section II of this Agreement and written acceptance of said improvements by CITY, a warranty security or performance bond in the amount of fifteen percent (15%) of the estimated value of the required public improvements, as determined by CITY Engineer, shall be furnished to CITY by the DEVELOPER. This warranty Security shall be held by the CITY, or shall name the CITY as a holder of the warranty or as the beneficiary of the bond, and shall be in effect for a minimum period of one (1) year from the date of CITY's written acceptance of the public improvements described in Section II of this Agreement.

D. If DEVELOPER fails to correct all deficiencies within a reasonable amount of time, CITY may claim the warranty Security and correct the deficiencies.

E. The warranty Security may be in the form of cash, construction bond, irrevocable letter of credit from a certified bank or financial institution, or such other form of security acceptable to CITY.

IX. PARKLAND DEDICATION.

There is no parkland dedication required as part of this annexation.

X. PHASING.

No phasing is being requested.

XI. AS-CONSTRUCTED DRAWINGS.

DEVELOPER agrees to furnish, prior to acceptance by CITY of the public improvements as required herein, one (1) set of complete, mylar and AutoCAD, final as-constructed drawings for the public improvements described herein, unless such requirement is waived by the City Engineer.

XII. FAILURE TO COMPLY.

DEVELOPER agrees to pay all expenses incurred by CITY in enforcing this Agreement.

XIII. BINDING ON HEIRS, ASSIGNS AND PURCHASER.

This Agreement shall be binding upon the heirs, executors, administrators, and assignees of the Parties, and subsequent purchasers of and/or within the property described herein.

XIV. OCCUPANCY.

DRAFT

DEVELOPER agrees that no person shall be allowed to occupy any part of the development for any purpose until the described public improvements are completed and accepted by CITY for maintenance or as otherwise provided for by a subsequent development agreement between the Parties.

XV. VENUE AND ATTORNEY FEES.

The Parties agree that, should any provision of this Agreement be litigated in the future, venue for such litigation shall be with the District Court of the Second Judicial District of the State of Idaho in and for the County of Latah. In the event either Party incurs legal expenses to enforce the terms and conditions of this Agreement, the prevailing Party is entitled to recover reasonable attorney's fees and other costs and expenses, whether the same are incurred with or without a lawsuit.

XVI. MODIFICATION.

DEVELOPER and CITY agree that the provisions of this Agreement may be modified only upon request of DEVELOPER accompanied by a complete set of development plans, and acceptance of such modification by the Moscow City Council or by a subsequent development agreement between the Parties.

XVII. SEVERABILITY

If any part of this Agreement is held unenforceable, the remaining portions of this Agreement will, nevertheless, remain in full force and effect so long as the remainder of this Agreement is capable of completion.

XVIII. COVENANTS TO RUN WITH LAND.

This Agreement shall run with the land affected hereby, as shall all covenants contained herein, and shall be to the benefit of CITY, its successors and assigns. This Agreement shall be recorded with the Latah County Recorder.

XIX. NOTICES.

Any notice required or called for by this Agreement shall be deemed served upon the Party to whom it is sent when delivered by certified United States mail to the following addresses:

DEVELOPER	CITY
Joel Cohen 418 E. B Street Moscow, ID 83843 Phone: (208) 310-6018	City of Moscow, Idaho City Engineer PO Box 9203 Moscow, ID 83843

DRAFT

Phone: (208) 883-7022

XX. UNDERSTANDING.

DEVELOPER has read and understood this Agreement and agrees with the contents and conditions thereof. DEVELOPER understands that the terms of this Agreement are contractually and legally binding and that no verbal statement to the contrary, by any person, can void or alter the terms of this Agreement. Specifically, DEVELOPER has had the opportunity to avail themself of legal counsel and of other counsel before entering into this Agreement and before signing it, and hereby enters into it knowingly, voluntarily, willingly, and without inducement.

IN WITNESS WHEREOF, the Parties have executed this Agreement to be effective the date first above written.

DEVELOPER:

Joel Cohen

_____

Joel Cohen, Property Owner

CITY:

City of Moscow, Idaho

_____

Arthur D. Bettge, Mayor

ATTEST:

_____

Laurie M. Hopkins, City Clerk

DRAFT

STATE OF_____)
) ss:
COUNTY OF_____)

On this _____ day of _____, 2024, before me, the undersigned, a Notary in and for said State, personally appeared Joel Cohen known to me to be the owner of the affected property.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year herein above written.

_____

(seal)

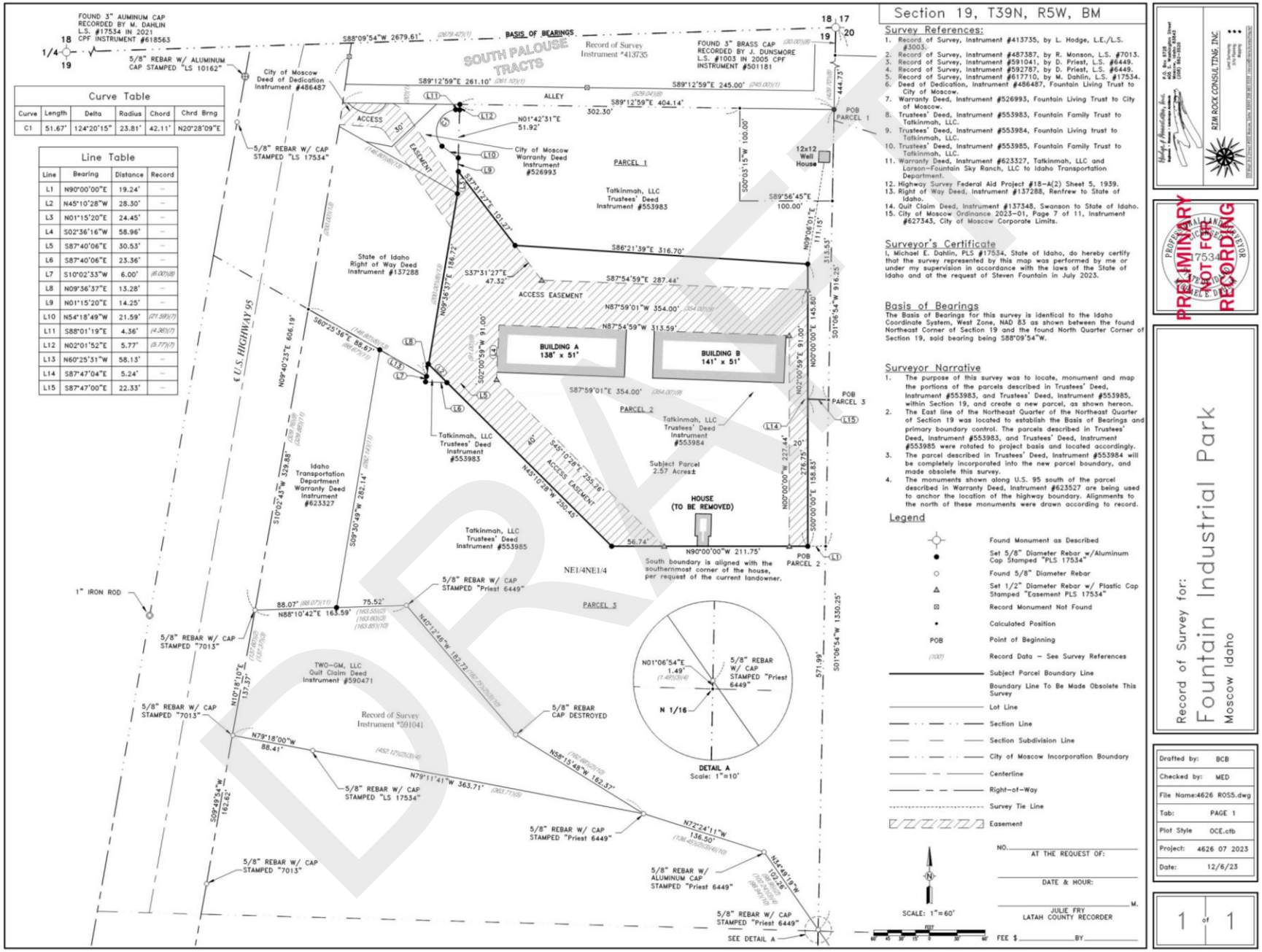
NOTARY PUBLIC_____

Residing at_____

My Commission _____

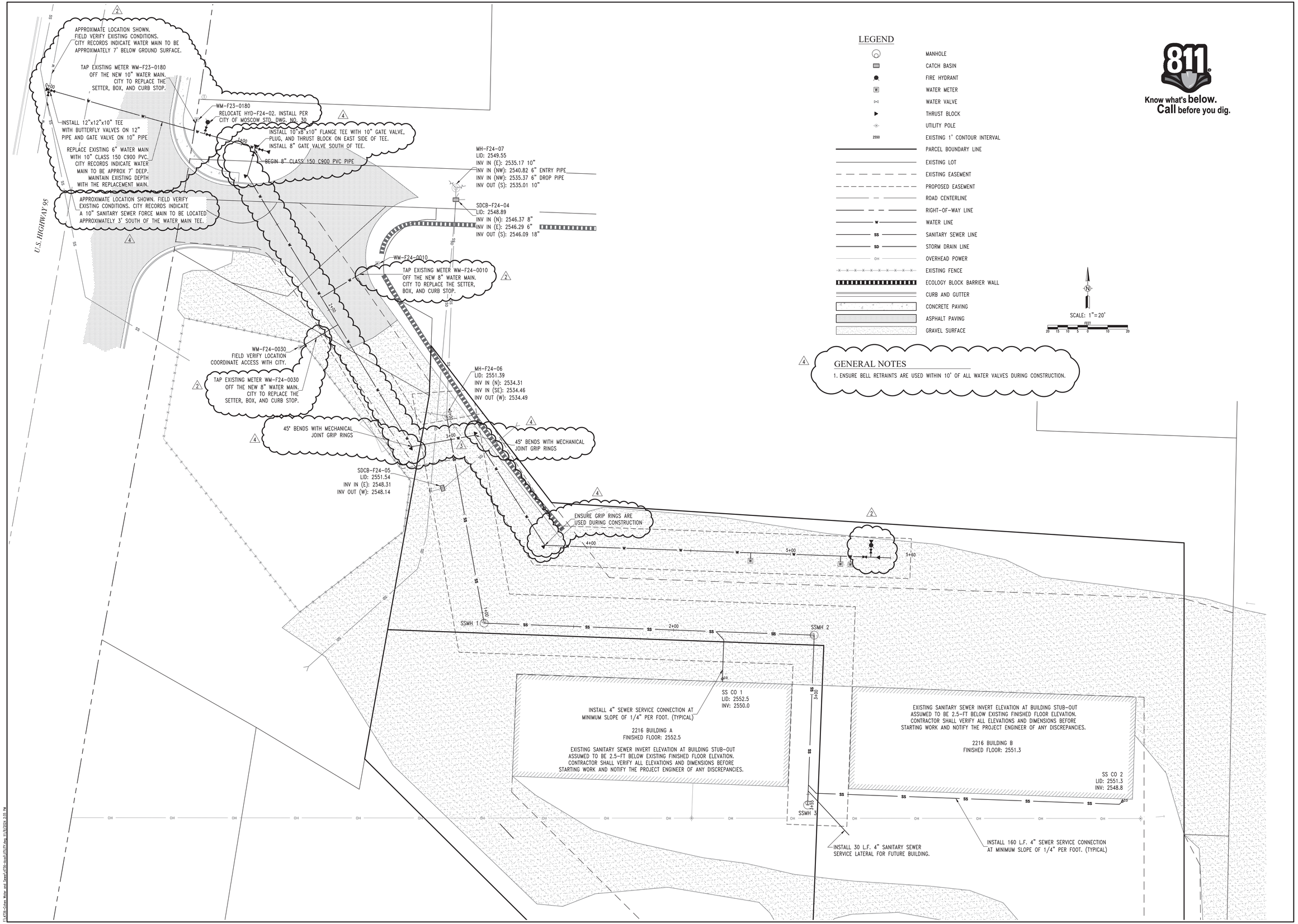
DRAFT

Attachment "A"



Curve Table					
Curve	Length	Delta	Radius	Chord	Chrd Brng
C1	51.67'	124°20'15"	23.81'	42.11'	N20°28'09"E

Line Table			
Line	Bearing	Distance	Record
L1	N90°00'00"E	19.24'	–
L2	N45°10'28"W	28.30'	–
L3	N01°15'20"E	24.45'	–
L4	S02°36'16"W	58.96'	–
L5	S87°40'06"E	30.53'	–
L6	S87°40'06"E	23.36'	–
L7	S10°02'33"W	6.00'	(6.00)(8)
L8	N09°36'37"E	13.28'	–
L9	N01°15'20"E	14.25'	–
L10	N54°18'49"W	21.59'	(21.59)(7)
L11	S88°01'19"E	4.36'	(4.36)(7)
L12	N02°01'52"E	5.77'	(5.77)(7)
L13	N60°25'31"W	58.13'	–
L14	S87°47'04"E	5.24'	–
L15	S87°47'00"E	22.33'	–



LEGEND

- MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- THRUST BLOCK
- UTILITY POLE
- 2550 EXISTING 1' CONTOUR INTERVAL
- PARCEL BOUNDARY LINE
- EXISTING LOT
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- W WATER LINE
- SS SANITARY SEWER LINE
- SD STORM DRAIN LINE
- OH OVERHEAD POWER
- EXISTING FENCE
- ECOLOGY BLOCK BARRIER WALL
- CURB AND GUTTER
- CONCRETE PAVING
- ASPHALT PAVING
- GRAVEL SURFACE

SCALE: 1"=20'

GENERAL NOTES

1. ENSURE BELL RETRAINTS ARE USED WITHIN 10' OF ALL WATER VALVES DURING CONSTRUCTION.

Know what's below. Call before you dig.

Hodge & Associates, Inc.
Engineers • Planners • Landscape Architects
P.O. Box 8728
405 S. Washington Street
Moscow Idaho 83843
(208) 882-3520

PROFESSIONAL ENGINEER LICENSED 17473 11-8-2024 STATE OF IDAHO Nuri W. Nimmer

MRK	DATE	DESCRIPTION
1	6/16/2024	Review #1
2	9/4/2024	Review #2
3	10/1/2024	ECO Review
4	11/4/2024	Review #4

FOUNTAINS INDUSTRIAL PARK WATER & SEWER PROJECT

UTILITY LAYOUT PLAN

JOEL COHEN
2216 SOUTH MAIN STREET
MOSCOW
(208) 301-6098

Designed By:	NN
Drafted by:	NN
Checked by:	NN
File Name:	4736 UTILITY.dwg
Tab:	UTILITY
Layer Style:	STANDARD
Plot Style	PRIMARY.CTB
Project:	4736-01-24
Date:	11/8/2024

C3

F:\4736-Cohen Water and Sewer\4736-Acad\UTILITY.dwg 11/8/2024 2:35 PM

COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

Leading Idaho Local Bridge Grant Application (ACTION ITEM) - Alisa Anderson

RESPONSIBLE STAFF

Alisa Anderson, Grants Manager, Scott Bontrager, City Engineer

ADDITIONAL PRESENTER(S)

DESCRIPTION

On March 16, 2022, Governor Little signed Senate Bill 1359, a landmark funding bill for local transportation in Idaho. The bill provided $200 million for local bridges and $10 million for the Children Pedestrian Safety program. The Local Highway Technical Assistance Council (LHTAC) administers the bridge funds through the Leading Idaho Local Bridge (LILB) Program. Additional allocations have brought program funding to $567 Million.

The LILB Program focused on local bridges in poor condition or posted with load restrictions. Eligible bridges are identified by LHTAC using bridge inspection reports as of December 12, 2024. LHTAC will administer projects in the LILB program. Local agencies, such as the City, do not need to provide local cash match and have no out-of-pocket expenses for the design and construction if approved for funding by LHTAC in this program. In limited circumstances, LHTAC may approve locally funded expanded scope, however if approved, any additional costs will be provided by the local agency upfront at the time of project agreement execution.

On November 18, 2024, engineering staff received notification that a recent bridge inspection identified a bridge in Moscow that qualifies for the last round of LILB funding. The bridge is located on Mountain View over Paradise Creek between 3rd Street and Hillcrest Drive. The attached Bridge Inspection Report identifies damage to the steel protective coating, corrosion, and rust as shown in the pictures on pages 7-12. The grant application requires an executed Memorandum of Understanding (Exhibit A) and the LILB Grant Application (Exhibit B) accompanied by a Resolution which is due by December 12, 2024. Due to the expedited process to present this item to the Administrative Committee, the attached grant application (Exhibit B) is not yet complete but will be finalized prior to the City Council on December 2, 2024.

REVIEWED BY

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval to submit a grant application for the Leading Idaho Local Bridge Program with the corresponding Memorandum of Understanding and Resolution; or provide staff with further direction.

STAFF RECOMMENDATION

Recommend approval to submit a grant application for the Leading Idaho Local Bridge Program with the corresponding Memorandum of Understanding and Resolution.

OTHER RESOURCES

FISCAL IMPACT

None.

PERSONNEL IMPACT

Grants and Engineering Divisions

ATTACHMENTS

1. 21715_0924_InspReport - Mountain View north of Third St (ACTION)
2. Resolution 2024-__ LHTAC_MOU_LLIB Program_final with attachments

Idaho Transportation Department
Bridge Inspection Report

Bridge Key:	21715	Structure Name:	97674A 100.95
(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

Elm/Env	Element Description	Total Qty	Units	State 1	State 2	State 3	State 4
240/3	**Steel Culvert**	105	ft	0	30	40	35

The (2) corrugated galvanized steel culverts are in poor condition with widespread moderate defects.
South barrel: 10.5-feet-wide x 7-feet-tall with 6-inch-on-center x 2-inch-tall x 1/8-inch-thick corrugation.
North barrel: 10-feet-7-inch-wide x 7-feet-2-inch-tall with 3-inch-on-center x 1-inch-tall x 1/8-inch-thick corrugation.

The asphalt over gravel wearing surface is in good condition with a rough aggregate finish. The wheel lines have very minor rutting; the northbound lane has popouts.

Both culverts have minor sediment and coble. Below the low-flow waterline, the culverts have heavy corrosion and (CS3 to CS4) laminar rust with intermittent 100% section loss.
South barrel, 3rd transverse joint from east end: up to 4.5-inch-wide separation
North barrel, middle transverse joint: up to 2.25-inch-wide separation at the upper half.

515/3	***Steel Protective Coating***	2800	*sq.ft*	0	2240	0	560

Above the waterline, he coating is in fair condition; below the waterline, the coating has failed.

1000/3	***Corrosion***	103	*ft*	0	28	40	35

Below the low-flow waterline, the culverts have heavy corrosion and (CS3 to CS4) laminar rust with intermittent 100% section loss.

1020/3	***Connection***	2	*ft*	0	2	0	0

South barrel, 3rd transverse joint from east end: up to 4.5-inch-wide separation
North barrel, middle transverse joint: up to 2.25-inch-wide separation at the upper half.

330/3	**Metal Bridge Railing**	207	ft	185	22	0	0

The galvanized w-rail and galvanized wide-flange posts are in good condition. The painted steel pipe pedestrian rails on both sides are in good condition.

The galvanized coating is in good condition with no failure. The pedestrian rails have random areas of surface corrosion; there is no section loss.

515/3	***Steel Protective Coating***	145	*sq.ft*	117	20	5	3

The galvanized coating is in good condition with no failure.
The pedestrian rail paint is in fair condition with random areas of paint failure.

1000/3	***Corrosion***	22	*ft*	0	22	0	0

The pedestrian rails have random areas of surface corrosion; there is no section loss.

Idaho Transportation Department
Bridge Inspection Report

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(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

Additional Information

FILL: At the north barrel, the fill is 18-inch over the crown. At the south barrel, the fill is 22-inch over the crown. The asphalt over the grave is 4-inch.

ROADWAY APPROACHES: The asphalt paved approaches are in good condition and were repaved in 2006. The south approach has a 2-inch-wide x full-width transverse above the abutment; the crack has been sealed but the seal is beginning to fail.

EMBANKMENT: The 1:4 sloped embankments is stable with heavy vegetation.

CHANNEL: Channel material near the abutments consists of silty clay; heavy grass vegetation is crowding the channel. The NE wingwall has 24-inch steel culvert; the NW wingwall has 48-inch plastic culvert. The creek has east-to-west flow.

HEADWALLS: The concrete headwalls are in good condition.

WINGWALLS: The concrete wingwalls are in good condition.

SIDEWALKS/CURBS: The concrete curbs and sidewalks are in good condition. The east sidewalk has a diagonal crack at the south end.

SIGNS: A 35 MPH sign is posted nearby.

GUARDRAIL: The SW, SE, and NE corners have the galvanized steel w-rail, treated timber posts, and breakaway cable terminals; the guardrail is in good condition. The NW corner is private property, the front lawn of a house, and has no safety features.

UTILITIES: Overhead lines runs west of the bridge.

NOTES: The culvert rating (Item 62) changed from a 5 to 4 due to the extent of the laminar rust with section loss. Channel Rating changed from an 8 to 6 (widespread minor defect) due to the vegetation in the channel.

SCOUR REVIEW: N/A

INSPECTION INTERVAL: The interval changed from 24-month to 12-month due to the change in culvert rating of 5 to 4.

WORK ACCOMPLISHED: N/A

LOAD RATING: Request re-analysis, the culvert condition rating changed from a 5 to a 4.

Maintenance Recommendations

Recommendation	Priority	Suggested Work Assignment
Remove vegetation in upstream and downstream channel.	Medium	Local Agency

PROFESSIONAL ENGINEER LICENSED 13006 Exp 2/28/25 STATE OF IDAHO ANTHONY SCOTT HIBBS

Inspector's Signature: _____ 09/05/2024

Inspector Number and Name: 160146 - Scott Hibbs, Extreme Access

Original Signed By: Anthony Scott Hibbs
Date Original Signed: 10/31/2024

Original is stored on an Idaho Transportation Department server, in care of the Bridge Section Database

Idaho Transportation Department
Bridge Inspection Report

Bridge Key:	21715	Structure Name:	97674A 100.95
(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

IDENTIFICATION

(1)State:	16 Idaho
(2)District:	District 2
(3)County:	057 Latah
(4)Place Code:	Moscow
(5)Inventory Route:	151076740
(7)Facility Carried:	SMA 7674;MTN VIEW
(11)Milepoint: 13.074261	Agency Milepost: 001.230
(12)Base Hwy Network:	Not on Base Network
(13a)LRS Inventory Route:	
(13b)LRS Sub Route:	
(16)Latitude:	46° 44' 00.6"
(17)Longitude:	116° 58' 49.1"
(98)Border Bridge Code:	
(99)Border Bridge ID:	
Segment Code:	006310
Segment Under Rte:	
Segment Other Rte:	
Drawing Number:	17706
Project Key Number:	
Inspection Area:	921
MPO:	N/A

STRUCTURE TYPE AND MATERIALS

(43a/b)Main Span Material/Design:
3 Steel 19 Culvert

(44a/b)Approach Span Material/Design:

(45)No. of Spans Main Unit:	2
(46)No. of Approach Spans:	0
(107)Deck Type:	N N/A (NBI)
(108a)Wearing Surface:	N N/A (no deck (NBI))
(108b)Membrane:	N N/A (no deck (NBI))
(108c)Deck Protection:	N N/A (no deck (NBI))

Deck Applications

CLASSIFICATION

(112)NBIS Length:	Long Enough
(104)Highway System:	0 Not on NHS
(26)Functional Class:	16 Urban Minor Arterial
(100)Defense Highway:	0 Not a STRAHNET hwy
(101)Parallel Structure:	No || bridge exists
(102)Direction of Traffic:	2 2-way traffic
(103)Temporary Structure:	
(105)Federal Lands Highway:	0 N/A (NBI)
(110)Design Natl Network:	0 Not part of natl netwo
(20)Toll Facility:	3 On free road
(21)Custodian:	City/Municipal Hwy Agenc
(22)Owner:	City/Municipal Hwy Agenc
(37)Historical Significance:	4 Hist sign not determin

GEOMETRIC DATA

(48)Maximum Span Length:	11.0 ft
(49)Structure Length:	29 ft
Total Length:	29 ft
(50a)Curb/Sidewalk Width Lt:	6.2 ft
(50b)Curb/Sidewalk Width Rt:	6.5 ft
(51)Width Curb to Curb:	33.9 ft
(52)Width Out to Out:	50.8 ft
(32)App Roadway Width:	27 ft
(33)Median:	0 No median
(34)Skew:	15°
(35)Structure Flared:	0 No flare
(10)Vertical Clearance:	99.99 ft
(47)Total Horiz Clearance:	33.9 ft
(53)Min Vert Clr Over Deck:	99.99 ft
(54a)Min Vert Underclr Ref:	N Feature not hwy or RR
(54b)Min Vert Underclr:	0.00 ft
(55a)Min Lat Underclr Ref Rt:	N Feature not hwy or RR
(55b)Min Lat Underclr Rt:	0.0 ft
(56)Min Lat Underclr Lt:	0.0 ft

LRS

Route ID:	06440AOH000
Measure:	13.07426127
Route ID Under Rte:	
Measure Under Rte:	
Route ID 2nd Rte Under:	
Measure 2nd Rte Under:	

Idaho Transportation Department
Bridge Inspection Report

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Xref Structure Name:		District:	02

LOAD RATING

(31)Design Load:	5 MS 18 (HS 20)
(64)Operating Rating:	53 tons / HS29.4
(66)Inventory Rating:	46 tons / HS25.6
(70)Posting:	5 At/Above Legal Loads
(41)Posting Status:	A Open, no restriction

CONDITION

(58)Deck:	N N/A (NBI)
(59)Superstructure:	N N/A (NBI)
(60)Substructure:	N N/A (NBI)
(61)Channel/Protection:	6 Bank Slumping
(62)Culvert:	4 Considerable Damage

AGE AND SERVICE

(27)Year Built:	1992		
(106)Year Reconstructed:			
(42a)Type of Service On:	1 Highway		
(42b)Type of Service Under:	5 Waterway		
(28a)Lanes On:	2	(28b)Lanes Under:	0
(29)ADT:	6400		
(30)Year of ADT:	2023		
(109)Truck ADT:	1%		
(19)Detour Length:	1 miles		
Speed Limit:	35 MPH		

APPRAISAL

(67)Structure Condition:	4 Minimum Tolerable
(68)Deck Geometry:	4 Tolerable
(69)Undrclear,Vert and Horiz:	N Not applicable (NBI)
(71)Waterway Adequacy:	5 Above Tolerable
(72)Approach Alignment:	8 Equal Desirable Crit
(36)Traffic Safety Features:	
(a)Bridge Rail:	0 Substandard
(b)Transition:	0 Substandard
(c)Approach Rail:	0 Substandard
(d)Approach Rail Ends:	0 Substandard
(113)Scour Critical:	8 Stable Above Footing

PROPOSED IMPROVEMENTS

(75a)Type of Work:	
(75b)Work Done By:	
(76)Length of Improvement:	
(94)Bridge Improvement Cost:	
(95)Rdwy Improvement Cost:	
(96)Total Project Cost:	
(97)Year of Cost Estimate:	
(114)Future ADT:	9600
(115)Year of Future ADT:	2042
YEAR PROGRAMMED:	

NAVIGATION DATA

(38)Navigation Control:	Permit Not Required
(39)Vertical Clearance:	
(40)Horizontal Clearance:	
(111)Pier Protection:	
(116)Lift Bridge Vert Clr:	

ENVIRONMENTAL

Environmental Concerns: No

INSPECTION

(90)Inspection Date: 9/5/2024 (91)Inspection Interval: 12 months

(92)Supplemental Inspections Interval:		(93)Date of Inspections:
(a)NSTM Inspection:	NA	(a)NSTM Inspection Date:
(b)Underwater Inspection:	NA	(b)UW Inspection Date:
(c)Fatigue Detail (OS) Inspection:	NA	(c)Fatigue Detail (OS) Date:
(d)In-Depth Inspection:	NA	(d)In-Depth Date:
(e)Confined Space Inspection:	NA	(e)Confined Space Date:

Channel Cross Section: 96 months Cross Section Completed: 2024 Cross Section Next Due: 2028

Equipment Needed: None

Idaho Transportation Department
Bridge Inspection Report

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Xref Structure Name:		District:	02

WEARING SURFACE and DEAD LOAD INFORMATION

Asphalt:	4.0 *inches*	**Concrete:**	0.0 *inches*
Granular:	14.0 *inches*	**Timber:**	0.0 *inches*

POSTING INFORMATION

WEIGHT

Load Analysis Date:	10/16/2018	Bridge Factor:	727
Load Analysis Required:	A Re-Analysis Req	Route Color:	Blue

	Load Rating Analysis IR (tons)	OR (tons)		Recommended Posting(tons)	Actual Posting(tons)
H Truck					
HS Truck	46	53			
Type3	34	40	**Type3**		
Type 3S2	50	58	**Type 3S2**		
Type 3-3	50	58	**Type 3-3**		
			Axle Limit		

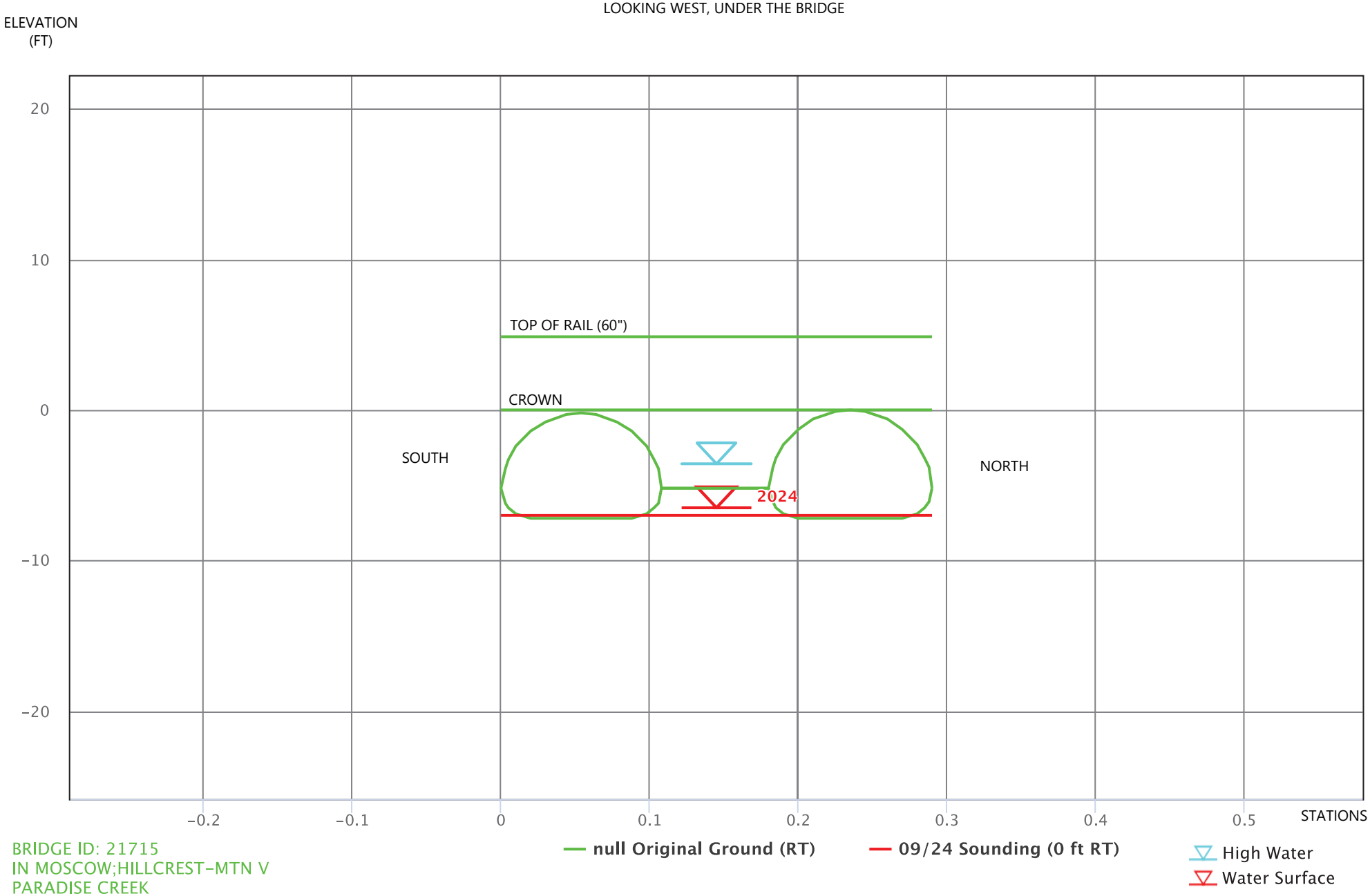
HEIGHT

	Recommended	Actual
Height Posting:		

ACTUAL WIDTH POSTING

Single Lane All Vehicles:	N
Single Lane Trucks/Buses:	N

EAST / RIGHT / UPSTREAM ELEVATION
LOOKING WEST, UNDER THE BRIDGE



BRIDGE ID: 21715
IN MOSCOW;HILLCREST-MTN V
PARADISE CREEK
LATAH COUNTY
RIGHT SIDE OF THE BRIDGE - UPSTREAM
DATA SOURCE: Field Measurements
DRAW STATIONS FROM: 0 ft TO: 29 ft
STATION SCALE 10 ft:1 in ELEVATION SCALE 10 ft:1 in

Idaho Transportation Department
Bridge Inspection Report

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South approach.

West elevation.

Idaho Transportation Department
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East / upstream channel.

West / downstream channel.

Idaho Transportation Department
Bridge Inspection Report

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Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

Upstream channel: heavy grass growth is crowding the creek. [Maintenance Recommendation]

North barrel interior: the base has 100% section loss; the upper coating is in good condition.

Idaho Transportation Department
Bridge Inspection Report

Bridge Key:	21715	Structure Name:	97674A 100.95
(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

(240-Culvert CS4) North barrel, west end: laminar rust with 100% section loss.

(240-Culvert CS4) North barrel: laminar rust with 100% section loss.

Idaho Transportation Department
Bridge Inspection Report

Bridge Key:	21715	Structure Name:	97674A 100.95
(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

(240-Culvert CS4) South barrel: laminar rust with 100% section loss.

(240-Culvert CS4) South barrel: laminar rust with 100% section loss.

Idaho Transportation Department
Bridge Inspection Report

Bridge Key:	21715	Structure Name:	97674A 100.95
(6)Features Intersected:	PARADISE CREEK	(9)Location:	IN MOSCOW;HILLCREST-MTN V
Facility Carried(Route):	SMA 7674;MTN VIEW	Admin Jurisdiction:	5725 City of Moscow
Xref Structure Name:		District:	02

(240-Culvert CS4) South barrel, west end: laminar rust with 100% section loss.

RESOLUTION NO. 2024 – ____

A RESOLUTION OF THE CITY OF MOSCOW, IDAHO, A MUNICIPAL CORPORATION OF THE STATE OF IDAHO, TO ENTER INTO A MEMORANDUM OF UNDERSTANDING – LEADING IDAHO LOCAL BRIDGE PROGRAM BETWEEN THE LOCAL HIGHWAY TECHNICAL ASSISTANCE COUNCIL AND THE CITY OF MOSCOW, IDAHO; AND PROVIDING THAT THIS RESOLUTION SHALL BE IN EFFECT UPON ITS PASSAGE AND APPROVAL.

WHEREAS, the Local Technical Assistance Council (LHTAC) is assisting local agencies with bridges in poor or posted condition to apply for and be awarded funding under the Leading Idaho Local Bridge (LILB) Program. The LILB program is intended to fully fund bridge projects; and

WHEREAS, Senate Bill 1359 (2022) became law on March 16, 2022, appropriating funding under the Strategic Initiatives Program (Idaho Code § 40-179) with up to $200 million intended for bridge maintenance and LHTAC created the LILB from this legislation; and

WHEREAS, applications for local agencies with eligible bridges are to be submitted to LHTAC by December 12, 2024; and

WHEREAS, if the City of Moscow were awarded funding, the City would be expected to sign a project agreement within thirty (30) days of receiving the award by the LHTAC;

WHEREAS, the City of Moscow has presented the LILB program Memorandum of Understanding and all attachments (see Exhibit "A") at an open meeting before its responsible elected officials on November 25, 2024, and December 2, 2024, in accordance with the Idaho Open Meeting requirements (Idaho Code § 74-204); and

WHEREAS, the City of Moscow has prepared and presented the listed application in Exhibit "B" at an open meeting before its responsible elected officials on November 25, 2024, and December 2, 2024, in accordance with the Idaho Open Meeting requirements (Idaho Code § 74-204);

NOW, THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Moscow that all matters stated above are found to be true and correct and are incorporated herein by reference as if copied in their entirety with the following:

1. That the Mayor and City Clerk be granted authority to execute and enter in the Leading Idaho Local Bridge Program Memorandum of Understanding with the Local Highway Technical Assistance Council, on behalf of the City of Moscow, attached as Exhibit "A"; and

2. That the Mayor and City Clerk be granted authority to execute the Application for the Leading Idaho Local Bridge Program, on behalf of the City of Moscow, attached as Exhibit "B"; and

3. That the Mayor and City Clerk be granted authority to execute any project agreement required by LHTAC on behalf of the City of Moscow in order to receive the LILB program funding.

4. That duly certified copies of this Resolution shall be furnished to the Local Highway Technical Assistance Council.

5. That this Resolution shall become effective upon its passage and approval.

PASSED on Motion by the Following Vote:

	Aye	Nay	Abstain	Absent
Hailey Lewis	_____	_____	_____	_____
Drew Davis	_____	_____	_____	_____
Sandra Kelly	_____	_____	_____	_____
Gina Taruscio	_____	_____	_____	_____
Julia Parker	_____	_____	_____	_____
Bryce Blankenship	_____	_____	_____	_____

ADOPTED by the City Council of the City of Moscow, Idaho and **APPROVED** by the Mayor of the City of Moscow, Idaho this _____ day of December, 2024.

_____
Arthur D. Bettge, Mayor

CERTIFICATION and ATTESTATION. I hereby certify that the above is a true copy of a Resolution passed at a regular meeting of the City Council, City of Moscow, held on December _____, 2024, and attest to the Mayor's signature.

_____
Laurie M. Hopkins, City Clerk

DRAFT

Exhibit "A"

Memorandum of Understanding - Leading Idaho Local Bridge Program

Between

LOCAL HIGHWAY TECHNICAL ASSITANCE COUNCIL

And

City of Moscow, hereinafter referred to as **LOCAL AGENCY**

Purpose:

The purpose of this memorandum is for the Local Highway Technical Assistance Council (LHTAC) and local agencies with bridges in poor or posted condition to apply for award, manage and track projects in the Leading Idaho Local Bridge (LILB) Program. This program is intended to economically and efficiently fully fund local bridges and not serve for local match or supplemental funding on any federally funded projects.

Legal Authority:

Senate Bill 1359 (2022), an appropriations bill, was signed by the Governor on March 16, 2022 funding the Strategic Initiatives Program (Idaho Code 40-719) with $200 Million intended for local bridge maintenance. LHTAC has created a Leading Idaho Local Bridge Program from this legislation.

Procedures:

LHTAC will conduct a two month call for applications through December 12, 2024. Local agencies with eligible bridges may apply for a maximum of two (2) eligible bridges. Applications will be scored on technical information (75%) and local knowledge (25%). The technical information is extracted from bridge inspection reports and bridge locations and the right of way status is reported by the **LOCAL AGENCY**. The **LOCAL AGENCY** will also provide four additional points of information on the importance of the bridge. LHTAC staff and Council will score the applications after the application period closes with LHTAC staff presenting the scores and recommendations to Council in an open meeting.

LHTAC Council will award funding to projects as funds become available.

As applications are awarded funding, the responsible **LOCAL AGENCY** will be expected to sign an individual project agreement within thirty (30) days of award by the LHTAC Council. This project agreement will have the details of funding, project roles/responsibilities and reporting milestones used for the project.

Responsibilities:

Under this program LHTAC shall:

Administer the LILB program within the constraints of Idaho Code which includes soliciting for projects, reviewing the merits of applications (scoring), recommending projects and reporting progress at regular intervals.

Specific duties LHTAC will exercise for this program are:

- Overall Administration of projects from advancement of funding to completion of construction;

- Advance projects through a bundling process to increase the number of bridges awarded with the fixed funding level while considering need and use of each bridge;
- Develop a process and select engineering firms for the development of the projects awarded through the LILB program;
- Advertise and award projects through a low-bid process to construction contracting firms.

Specific duties **LOCAL AGENCY** will exercise for this program are:

- Prioritize eligible bridges within jurisdiction and apply for funding;
- Present this memorandum and all attachments to the responsible elected officials at an open meeting in compliance with the Idaho Open Meetings requirements (Idaho Code 74-204);
- Provide a list of all applications under this program (Attachment A to this MOU);
- Provide a resolution from the responsible elected officials (Attachment B to this MOU);
- Enter into project agreements with LHTAC within thirty (30) of award;
- Notify LHTAC in writing, via First Class Mail, Electronic Mail or hand delivered mail, the removal of any application from consideration for program funding or termination of this MOU.

Financial Obligations

LOCAL AGENCY will have no financial obligation or commitment on any project until the project is advanced for funding. The details of financial obligations will be contained in the individual project agreement related to future maintenance, additional scope and project termination.

No advance funds, deposits or local match is required for this program. However, if a local sponsor would like to increase the scope of an individual project, this will be addressed during project agreement execution and the **LOCAL AGENCY** will be responsible for any scope beyond the proposed LHTAC scope. Any additional scope that could encroach on delivery schedules may negatively impact the advancement of the project. LHTAC reserves the authority to accept or deny any additional scope proposed by the local agencies. Funds for additional scope will be collected at the execution of the project agreement.

Limitations

Nothing in the Memorandum of Understanding between LHTAC and **LOCAL AGENCY** shall be construed as limiting or expanding the statutory or regulatory responsibilities or authorities of any involved individual in performing functions granted to them by law; or as requiring either entity to expand any sum in excess of its appropriation. Each and every provision of this memorandum is subject to the laws and regulations of the State of Idaho and the United States.

Nothing in this Memorandum of Understanding shall be construed as expanding liability of either party. In the event of a liability claim, each party shall defend their own interests. Neither party shall be required to provide indemnification of the other party.

Effective Date

This Memorandum shall become effective upon signature of the LHTAC Administrator or delegate and will remain in effect until the termination of this MOU.

Method of Termination

This memorandum may be terminated by **LOCAL AGENCY** at any time prior to the awarding of any project. After awarding of at least one (1) project, this MOU will remain in effect until completion of funded projects.

After awards, **LOCAL AGENCY** may terminate funded projects as outlined in future project agreements and may terminate this MOU if there are no active funded projects listed in Attachment A.

LHTAC may terminate this MOU in the event that all funding has been awarded and no additional funding is authorized by the Idaho Legislature.

This MOU will terminate upon the completion of the LILB program.

Amendments

Amendments to this memorandum shall effective upon mutual agreement and written approval by the LHTAC Administrator or Delegate and the signing authority of **LOCAL AGENCY**

Signatures

LOCAL HIGHWAY TECHNICAL ASSITANCE COUNCIL

By_____ Date _____

Administrator or Delegate

Local Agency

By_____ Date _____

Title Arthur D. Bettge, Mayor

Attachment A – List of Applications for the Leading Idaho Local Bridge Program

LOCAL AGENCY to provide a list of intended applications including the bridge ID, highway name/number and if applicable bridge name

Bridge Key Number	Carries	Crosses
21715	SMA7674; MTN VIEW	IN MOSCOW-HILLCREST-MTN VIEW

Exhibit "B"

Leading Idaho Local Bridge Program

2025 Application - Max Two Applications per Eligible Jurisdiction

Idaho Local Highway Jurisdictions Submittal Deadline: December 12, 2024 5:00 PM Mountain Time

Local Highway Technical Assistance Council
3330 Grace Street
Boise, Idaho 83703
www.LHTAC.com

Advocate | Support
Train

Leading Idaho Local Bridge Program Application

Fiscal Year 2025

Program Background

On March 16, 2022, Governor Little signed Senate Bill 1359, a landmark funding bill for local transportation in Idaho. The bill provides $200 million for local bridges and $10 million for the Children Pedestrian Safety program. The Local Highway Technical Assistance Council (LHTAC) will administer the bridge funds through the Leading Idaho Local Bridge (LILB) Program. Additional allocations have brought program funding to $567 Million.

Eligible Projects

The LILB Program will focus on local bridges in poor condition or posted with load restrictions. Eligible bridges are identified by LHTAC using bridge inspection reports as of December 12, 2024. LHTAC has provided a map of the eligible bridges at http://gis.lhtac.org/eligible_bridges/. A list of the eligible bridges can be downloaded from the interactive mapping tool. A local agency may apply for up to two bridges.

Application

All applications for the Leading Idaho Local Bridge (LILB) Program are due **Thursday, December 12, at 5:00 MST.** Applications can be completed online at www.lhtac.org/programs/LILB. Applications via phone with LHTAC staff can be scheduled by calling (208) 344-0565 or emailing bridge@lhtac.org. Paper applications can also be made available. Paper applications can be returned via mail to LHTAC at 3330 W. Grace St, Boise ID 83703 and must be post marked by December 12, 2024.

The applications will be scored by LHTAC Council and staff. The applications will be scored by a combination of technical analysis completed by LHTAC staff and information provided by the local agencies.

Technical Analysis – Seventy-five percent (75%) of score

Bridge Condition (deck, superstructure, substructure, age)	25%
Scour	6%
Posted/Load Restriction	10%
Length	10%
Highway information (detour length and AADT)	9%
Constructability (replacement cost and environmental risk)	15%

Local Highway Jurisdiction Information - Twenty five percent (25%) of score

Short Answer (safety, mobility, economic benefit, uncategorized)	5% each
Right of Way	5%

Funding and Project Administration

LHTAC will administer projects in the LILB program. Local agencies do not need to provide local cash match and have no out-of-pocket expenses for the design and construction of approved for funding by LHTAC in this program. In limited circumstances, LHTAC may approve locally funded expanded scope, however if approved, any additional costs will be provided by the local agency upfront at the time of project agreement execution.

Leading Idaho Local Bridge Program Application – Fiscal Year 2025

1. Contact Information

Name of Local Highway Jurisdiction	Primary Contact Person
City of Moscow `	Scott Bontrager, City Engineer Engineering Manager
Email Address	**Phone Number**
sbontrager@ci.moscow.id.us	208-883-7030
Mailing Address	**City, State, ZIP**
504 South Washington PO Box 9203	Moscow, ID 83843

2. Bridge Information

How to find bridge information

You can search for LILB-eligible bridges at gis.lhtac.org/eligible_bridges/.

Click the "Click to Pan" button at the top left of the map. Zoom and pan to any bridge. When you have isolated the correct bridge, click the "Click to Select" tool. Click and drag over the triangle symbol to select the bridge. When selected, the relevant bridge information will appear at the bottom of the screen.

Bridge Key Number
21715

Route (Carrying)	Route, river or railroad bridge crosses
SMA7674; MTN VIEW	IN MOSCOW - HILLCREST - MTN VIEW - PARADISE CREEK

3. Right of Way

This is worth 5% of the application score. Significant ROW acquisition may impact prioritization for funding.

Does your jurisdiction own or control all right of way for this bridge?

Yes	✔	No		Unsure	

4. Short Answer

Please provide four short answers that demonstrate the importance of this bridge. There are three specific areas of focus: safety, mobility, and economic benefit. A fourth short answer section may include additional information not captured in the first three answers. Each answer is limited to 100 words.

Examples: Specific business, services, annual events, seasonal access, neighborhood connectivity, safety benefits, fiscal impact, or other activity that is vital to your jurisdiction.

Each answer is worth up to 5% of the total application score:

0-1%: Blank, irrelevant, or non-impactful information
2-3%: Demonstrates minor importance of the bridge
4-5%: Demonstrates the significant importance of the bridge

Short Answer #1: Safety

To be completed

Short Answer #2: Mobility

To be completed

Short Answer #3 Economic Opportunity

To be completed

Short Answer #4: Additional information you would like to include

To be completed

LHTAC must enter into a Memorandum of Understanding (one per agency) with the Local Highway Jurisdiction to execute an agreement for the LILB Program. The MOU is attached to this application packet. Please complete the MOU and submit to LHTAC via e-mail by December 12 or mail (post marked by December 12, 2024). Previous applicants do not need to submit a new MOU.

Mailing Address: Local Highway Technical Assistance Council
3330 W Grace Street
Boise, ID 83703

Signature: _____ Date: _____
Arthur D. Bettge, Mayor

COMMITTEE / CITY COUNCIL STAFF REPORT

DATE: Monday, November 25, 2024

AGENDA ITEM TITLE

2025 WHITCOM Emergency Dispatch Agreement (ACTION ITEM) - Bill Belknap

RESPONSIBLE STAFF

Bill Belknap, City Administrator

ADDITIONAL PRESENTER(S)

DESCRIPTION

The City currently contracts with the WHITCOM joint dispatch center for E911 emergency and non-emergency dispatch services. The attached agreement would continue those services through the 2025 calendar year. The proposed fee for the dispatch services is the same as in the 2024 agreement, with a total annual cost of $776,874. Staff has prepared the agreement for the Council's review and approval.

REVIEWED BY

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval of the Emergency Dispatch Services Agreement, or provide staff further direction.

STAFF RECOMMENDATION

Recommend approval of the Emergency Dispatch Services Agreement.

OTHER RESOURCES

FISCAL IMPACT

PERSONNEL IMPACT

ATTACHMENTS

1. Whitcom911_Emergency_DispatchServicesAgreeement_2025_Final

AGREEMENT FOR 911
EMERGENCY COMMUNICATIONS AND DISPATCH SERVICES

THIS AGREEMENT for 911 emergency communications and dispatch services (hereinafter referred to as "Agreement"), is made and entered into by and between WHITCOM, an agency established through the cooperation of Washington State political entities consisting of County of Whitman, City of Pullman, Washington, and Washington State University, acting through Enhanced 911 Interlocal Agreement pursuant to the Interlocal Cooperation Act, Chapter 39.34 Revised Code of Washington, 2325 NE Hopkins Court, Pullman, Washington, 99163 (hereinafter referred to as "WHITCOM") and the City of Moscow, Idaho, a municipal corporation of the State of Idaho, 206 East Third Street, Moscow, Idaho, 83843 (hereinafter referred to as "CITY") (together the PARTIES to this Agreement).

WITNESSETH:

WHEREAS, CITY has received 911 Emergency Communications and Dispatch Services from WHITCOM since 2004 and wishes to continue receiving such services; and

WHEREAS, WHITCOM agrees to provide CITY 911 Emergency Communications and Dispatch Services throughout the term of this Agreement, based on the terms and conditions set forth in this Agreement;

NOW, THEREFORE, PARTIES agree as follows:

1. INTENT AND PURPOSES

The purpose of this Agreement is to provide for the continuation of WHITCOM's provision of Emergency Communication and Dispatch Services to CITY. It is specifically the intention of both Parties not to create an interlocal cooperation agreement or a joint powers agreement with this Agreement.

2. EMERGENCY COMMUNICATION AND DISPATCH SERVICES TO BE PROVIDED BY WHITCOM TO CITY

(a) Service Area
The service area shall be defined as the current legal boundaries of the City of Moscow and any lands that may be annexed into the City of Moscow during the term of this Agreement, and the legal boundary of the Moscow Rural Fire District for fire and emergency medical services only.

(b) Emergency Communication Services
WHITCOM shall furnish all personnel, supervision, administration, equipment, and supplies necessary to provide emergency communications services, defined herein as "Emergency Communication and Dispatch Services," to CITY, such Emergency Communication and Dispatch Services shall include the following:

i. Provide trained emergency response telephone operators to answer business and 911 emergency telephone lines for fire, police, and emergency medical services requests

originating within the Service Area on a 24-hour per day basis; and

ii. Provide emergency and routine radio communications with police, fire, and EMS emergency providers, and emergency management personnel within the Service Area on a 24-hour per day basis; and

iii. Provide communications between emergency service providers and other resources available within the Service Area relating to their function; and

iv. Relay after-hour emergency public works requests within the Service Area; and

v. Any other services provided to other entities receiving WHITCOM Emergency Dispatch Services not identified herein.

(c) Administrative Support for Emergency Communication and Dispatch Services
WHITCOM shall provide the following administrative support for the operation of the Emergency Communication and Dispatch Services system:

i. Facilitate connectivity from WHITCOM to CITY Public Safety Agencies to include routine upgrades and support;

ii. Provide Spillman Records Management System administration for server, backups, security, and user management (does not include user support);

iii. House GIS mapping database and provide administration for use with emergency service boundaries and Wireless 911 calls;

iv. Provide limited technical training, troubleshooting, and support to CITY Information System personnel as it applies to devices accessing WHITCOM applications and services; and

v. If WHITCOM Information Technology personnel are requested to provide assistance to CITY Information System personnel beyond the assistance described within Section 2(c)iv herein, CITY shall make all reasonable efforts to be prepared to receive any necessary upgrades to CITY Information Systems to allow such assistance. Any unforeseen or extraordinary costs related to such assistance or upgrades shall be negotiated, in good faith, by the PARTIES.

3. WHITCOM EXECUTIVE BOARD

The WHITCOM Executive Board shall be responsible for the administration and oversight of dispatch services, hiring an Executive Director, setting standards of performance and disciplining its employees, as well as any other matters incident to the control of personnel and performance of Emergency Communication and Dispatch Services for CITY under this Agreement. CITY shall have one (1) voting member position on the WHITCOM Executive Board.

4. PAYMENT FOR EMERGENCY COMMUNICATION AND DISPATCH SERVICES.

(a) Compensation

For services provided herein, CITY shall pay to WHITCOM the total annual compensation as follows:

Calendar Year	Total Annual Compensation
2025	$776,874

(b) Timing of Payment

CITY shall make such payments in four (4) quarterly installments and shall remit payment to WHITCOM no later than thirty (30) days from receipt of invoice from WHITCOM.

(c) Compensation Renegotiation

WHITCOM reserves the right to request to renegotiate the compensation amount in the event of material changes to the cost of the provision of services provided under this Agreement including, but not limited to, a reduction of WHITCOM participating entities, labor negotiations with the Guild, unanticipated legislative or regulatory actions, significant reductions to state or federal grants, or changes to State of Washington tax revenues currently received by WHITCOM for equipment and/or operating expenses. PARTIES agree to negotiate any such requests in good faith.

(d) Payment in the Event of Termination

If this Agreement is terminated prior to the expiration of the term of this Agreement, payment shall be pro-rated as of the last date of services by WHITCOM, with such payment due from CITY within thirty (30) days from the last services performed by WHITCOM.

5. EQUIPMENT FOR THE PROVISION OF EMERGENCY COMMUNICATION AND DISPATCH SERVICES

(a) Provision of Equipment by WHITCOM

i. WHITCOM agrees to furnish and maintain all equipment necessary to receive and initiate communication with CITY's CAD (computer aided dispatch) system for police facilities, fire stations, public works departments, and citizens requesting assistance using their own communication devices in order to provide the emergency communication and dispatch services provided under this Agreement.

ii. WHITCOM agrees to pay for recurring 911 telephone line and database charges.

(b) Provision of Equipment by CITY

i. CITY agrees to furnish, install, and maintain within the state of Idaho the equipment necessary for WHITCOM to communicate with police facilities, fire stations, Public Works departments, and citizens requesting assistance within the Service Area including the Spillman State Link and Spillman connectivity consistent with the purposes of this Agreement.

ii. CITY shall be responsible for maintaining and replacing its emergency radio system including radio repeaters and mobile and portable radios. Modification or replacement of CITY emergency radio equipment will be made in cooperation with WHITCOM.

iii. CITY shall be responsible for maintaining the ILETS System for use by WHITCOM in providing services contemplated by this Agreement including, but not limited to, any payments, licenses, and permissions.

(c) Use of CITY Radio Frequencies by WHITCOM
WHITCOM agrees to operate on CITY's radio frequencies to enhance the Emergency Communication and Dispatch Services to be provided to CITY under this Agreement. Any addition of radio frequencies by CITY to be monitored by WHITCOM must be approved by WHITCOM.

6. TERM OF AGREEMENT FOR EMERGENCY COMMUNICATIONS AND DISPATCH SERVICES

(a) Term of Agreement
This agreement for WHITCOM to provide Emergency Communication and Dispatch Services to CITY is from January 1, 2025, to December 31, 2025.

(b) Renewal of Agreement
Any renewal or continuation of this Agreement, after the term, shall be subject to negotiation between and mutual written agreement by CITY and WHITCOM.

7. INDEMNIFICATION AND HOLD HARMLESS

(a) Neither CITY nor WHITCOM is responsible for the independent acts and/or omissions of the other PARTY, or their officers, employees, or agents nor, in the case of WHITCOM, are the member public agencies responsible for the independent acts and/or omissions of the PARTIES to the Agreement, CITY and WHITCOM.

(b) Further, it is the intent of the PARTIES that each PARTY (including in the case of WHITCOM, its member public agencies) shall be responsible for the negligent, willful, or intentional acts or omissions of their respective public safety personnel.

(c) WHITCOM agrees to defend indemnify and hold CITY, its officers, officials, employees and volunteers harmless from any and all liability, claims, injuries, damages, losses or suits including attorney fees, arising out of WHITCOM's negligent acts, errors or omissions in connection with this Agreement.

(d) The CITY agrees to defend indemnify and hold WHITCOM, its officers, officials, employees and volunteers harmless from any and all liability, claims, injuries, damages, losses or suits including attorney fees, arising out of the CITY's negligent acts, errors or omissions in connection with this Agreement.

(e) It is further specifically and expressly understood that the indemnification provided herein constitutes WHITCOM's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the Parties. The provisions of this section shall survive the expiration or termination of this Agreement.

(f) Each Party warrants that it shall obtain and will maintain at its expense for the duration of this Agreement, statutory worker's compensation coverage, employer's liability and comprehensive general liability insurance coverage for its principals and employees for the services to be performed hereunder. The amounts of such insurance shall not be deemed a limitation of the indemnity and hold free and harmless covenant contained herein.

(g) Both WHITCOM AND CITY shall obtain and carry Commercial General Liability insurance at least as broad as ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, stop-gap independent contractors and personal injury and advertising injury with minimum limits of $3,000,000 per occurrence and $5,000,000 aggregate: Professional Liability insurance with limits no less than $3,000,000 per claim and $5,000,000 policy aggregate limit. Participation in a self-insured, governmental risk pool shall satisfy the conditions set forth in this section.

(h) There shall be no cancellation, material change, reduction of limits or intent not to renew any insurance coverage required under this Agreement without thirty (30) days written notice from one PARTY to the other PARTY.

8. ESSENTIAL INFORMATION TO BE PROVIDED BY CITY TO WHITCOM

(a) CITY Shall Provide Current Map and Emergency Contact Data
CITY shall provide WHITCOM with:

i. current and accurate map of the City of Moscow with addresses;

ii. twenty-four (24) hour emergency telephone number list for on-call personnel;

iii. a list of any known apartment and business emergency contact numbers, and current building and development site information within the Service Area;

iv. a list of fire hydrant locations; and

iv. emergency contact information on all user agency employees, including volunteer fire personnel, and any other pertinent information deemed necessary by WHITCOM or CITY to permit WHITCOM to effectively perform emergency communication and dispatch services for CITY.

(b) CITY Shall Update Emergency Contact Data
Whenever CITY is made aware of additional information or of a change in current information, CITY shall forthwith reduce this information to writing and submit to WHITCOM by hand delivery, email, regular mail, or any other reasonable means of delivery.

9. RECORDS OF PUBLIC AGENCIES IN WHITCOM

(a) Maintenance of Public Records
Records generated and/or related to Emergency Communication and Dispatch Services provided by WHITCOM to CITY under this Agreement shall comply with relevant requirements of the Revised Code of Washington and, to the extent applicable, the Idaho Code. WHITCOM and CITY shall retain such records in accordance with applicable law and shall produce such records pursuant to court orders and requests for records in accordance with applicable law. WHITCOM and CITY shall make records (except for those protected by privilege or otherwise under applicable law including Court Orders) available to the other PARTY upon reasonable notice during business hours.

(b) CITY access to ILETS and Spillman Data
CITY shall have unlimited, around-the-clock, twenty-four (24) hour access to ILETS System records and Spillman data at all times during the term of this Agreement, with the exception of any scheduled or unexpected Spillman or network maintenance down times. All users of the Spillman System will adhere to WHITCOM security policy and procedures concerning records maintained on the Spillman server.

10. NO WAIVER OF 911 SERVICE AREA JURISDICTION

It is specifically the intention of CITY and WHITCOM that CITY retains all rights, privileges, authority, jurisdiction and entitlement to CITY's established 911 service area as defined by applicable law. In addition, nothing in this Agreement shall be construed by either party or by others to in any way alter CITY's 1990 decision in Ordinance No. 90-16 to provide E911 services and dispatch services to citizens of Moscow, Idaho pursuant to Idaho Code Title 31, Chapter 48.

11. EXPENDITURES OF FUNDS UNDER THIS AGREEMENT

WHITCOM agrees to utilize any and all payments made to WHITCOM by CITY pursuant to this Agreement only for the provision of emergency communication and dispatch services in a manner consistent with Washington law and Idaho Code Title 31, Chapter 48. CITY shall provide WHITCOM, on an annual basis by September 1 of each year this Agreement is in effect, with the amount of the Emergency Communications Fee CITY receives pursuant to I.C. § 31-4804 to ensure the amount of the Emergency Communications Fee received by CITY and transmitted to WHITCOM is being used pursuant to the restrictions listed in I.C. § 31-4804(5). Said fee is included in the total amount CITY pays to WHITCOM for the services being provided pursuant to this Agreement.

12. NON-APPROPRIATION CLAUSE

In recognizing that each PARTY can only receive budget approval for one (1) fiscal year at a time, non-appropriation will be an approved reason for release from this Agreement provided:

(a) Thirty (30) days' written notice is given to the other PARTY; and

(b) No other funds are appropriated for the same fiscal period that would provide essentially the same or similar services (emergency communications, emergency and routine dispatch, and related services set forth herein) as outlined in this Agreement.

13. INDEPENDENT CONTRACTOR

The Parties warrant by their signature that no employer-employee relationship is established between WHITCOM and CITY by the terms of this Agreement. It is understood by the Parties hereto that WHITCOM is an independent contractor and as such neither it nor its employees, if any, are employees of CITY for purposes of tax, retirement system, or social security (FICA) withholding.

14. INTERPRETATION OF AGREEMENT, VENUE STIPULATION, AND CERTIFICATIONS

(a) Interpretation of Agreement
This Agreement shall be governed by laws of the State of Washington, both as to interpretation and performance. The PARTIES acknowledge that this Agreement shall be deemed and construed to have been prepared mutually be each PARTY and it shall be expressly agreed that any uncertainty or ambiguity existing therein shall not be construed against either PARTY.

(b) Stipulation of Venue
Any action at law, suit in equity, or judicial proceeding for the enforcement of this Agreement or any provisions thereof shall be instituted and maintained only in a court of competent jurisdiction in Whitman County, Washington.

(c) No Creation of New Entity
It is specifically the intention of both CITY and WHITCOM not to create any new entity with this current Agreement.

(d) Certifications

i. Anti-Boycott Against Israel Act. WHITCOM certifies it is not currently engaged in, and will not for the duration of the Agreement engage in, a boycott of goods and services from Israel or territories under its control. Failure to comply with Idaho Code § 67-2346 will result in this Agreement being void as against public policy.

ii. Ownership or Operation by China. Pursuant to Idaho Code § 67-2359, WHITCOM certifies that it is not currently owned or operated by the government of China and will not for the duration of this Agreement be owned or operated by the government of China. The terms in this section defined in Idaho Code § 67-2359 shall have the meaning defined therein.

iii. No Public Funds for Abortion Act. Pursuant to Idaho Code Title 18 Chapter 87, WHITCOM certifies that it is not an abortion provider or an affiliate of any abortion providers and does not, and will not for the duration of the Agreement, authorize the use of state facilities or public funds for abortion-related activity.

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15. TERMINATION OF AGREEMENT

This Agreement may be terminated by either CITY or WHITCOM upon one (1) year's prior written notice.

16. RIGHTS NOT ASSIGNABLE

Parties shall not assign any rights or duties under this Agreement to any other person or entity, governmental or otherwise, without the prior written approval of the other Party.

17. SEVERABILITY

In the event any provision of this Agreement or any part thereof shall be determined by any court of competent jurisdiction to be invalid, void or otherwise unenforceable, the remaining provisions, or parts thereof, shall remain in full force and effect, being in no way affected, impaired or invalidated. The remaining provisions shall be construed in a manner most closely approximating the intention of the Parties with respect to the invalid, void, or unenforceable provision or part thereof.

18. COMPLETE AGREEMENT

This Agreement constitutes the entire expression of intent and agreement of the Parties and supersedes all prior agreements or understandings, written or oral, with respect thereto.

19. AMENDMENT OF EMERGENCY COMMUNICATION AND DISPATCH SERVICES AGREEMENT

The terms of this Agreement may be amended by mutual agreement of CITY and WHITCOM. The PARTY seeking an amendment shall submit a written request for amendment to the other PARTY. The request shall clearly describe the proposed change and why the change is necessary. The responding PARTY shall schedule a review of the request within thirty (30) days from receipt of the request and shall respond within forty-five (45) days from receipt of the request. The responding PARTY may approve, deny, or suggest modifications to the amendment. Any amendment shall be in writing, shall refer specifically to this Agreement, and shall be executed by both PARTIES.

20. NOTICE

Any notice under this Agreement shall be in writing and shall be effective when delivered or when deposited in the mail addressed to the parties as follows:

WHITCOM: WHITCOM Executive Director
WHITCOM Regional 911 Communications Center
2325 NE Hopkins Ct
Pullman, WA 99163

CITY: City Clerk
City of Moscow
PO Box 9203
Moscow, ID 83843

21. DISPUTE RESOLUTION

In the event dispute(s) arise under this Agreement or the parties are otherwise unable to reach agreement after negotiation of a matter as set forth herein, either party may send the other party written notice of submission of the matter to the following dispute resolution process. The Parties agree to first submit the matter to mediation by a mutually agreed upon mediator. Each Party shall pay its own costs for mediation and the Parties shall split the cost of the Mediator's fees and costs equally. If such mediation is unsuccessful in resolving the matter, the dispute(s) shall be resolved through arbitration pursuant to Washington State law. Rules for arbitration shall be those prescribed by the American Association of Arbitration.

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals as of the date and year herein below written.

WHITCOM

This _____ day of _____, 2024

_____

Tom Handy, Chair

_____

Jake Opgenorth, Vice-Chair

CITY OF MOSCOW, IDAHO

This _____ day of _____ 2024

_____

Arthur D. Bettge, Mayor

ATTEST:

_____

Laurie M. Hopkins, City Clerk

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