

Public Works / Finance Committee



Regular Meeting ~Agenda~

Laurie M. Hopkins
City Clerk

www.ci.moscow.id.us

208.883.7015

**Monday
May 9, 2022**

3:00 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 Committee meetings are televised, videotaped and/or recorded. Links to view the Committee meeting live can be found on the City website, YouTube, Facebook and Spectrum Cable 1301. Thank you for your interest in City government.

REGULAR AGENDA

1. Approval of Public Works/Finance Committee April 25, 2022 Minutes (ACTION ITEM) - Laurie M. Hopkins

2. Disbursement Report for April 2022 (ACTION ITEM) - Sarah Banks

Staff will present the Accounts Payable Report for the month ending April 2022.

ACTION: Approve and authorize the use of digital signatures to sign the Disbursements Report for the month of April 2022.

3. Bird Rides License Agreement for Shared Mobility (ACTION ITEM) - Cody Riddle

Staff will present a proposed one-year license agreement between the City and Bird Rides for the operation of shared-use scooters within the City. The agreement will allow deployment of up to 200 devices (scooters) for shared use under the provisions of Title 11, Chapter 2 of Moscow City Code, amended earlier in 2022.

PROPOSED ACTIONS: Recommend approval of the license agreement with Bird Rides, or provide staff further direction.

4. Sanitation Rate Study Executive Summary Report (ACTION ITEM) - Tim Davis

The Sanitation Department procured the consulting services of FCS Group to conduct a rate study update on July 12, 2021. Rate studies are conducted by utilities periodically to assure that the costs of services are in alignment with the revenue needs of the utility, and that those costs are allocated in as equitable of manner as possible among the utility customer classes. A critical component to this rate study process was the assembling of a Citizen Rate Committee (CRC). The CRC provided a diverse perspective that represents the Moscow Community in evaluating and advising on the City's Sanitation rate structure. The rate study used the methodology and policies established in the 2012 and 2016 rate studies to inform this update. Much like previous Sanitation rate studies, the collection system and solid waste processing facility (SWPF) were evaluated independent of each other. Much of the Sanitation Department costs are driven by contractual obligations for solid waste and recycling collection with Inland North Waste, SWPF operations with Inland North Waste and long-haul transport and disposal of municipal solid waste with Finley Buttes Landfill, a subsidiary of Waste Connections. The City of Moscow also has individual disposal contracts with

Latah County and the cities of Bovill, Deary, Genesee, Juliaetta, Kendrick, Potlatch and Troy, which expire September 30, 2023. This rate study update establishes a disposal cost schedule for future years and will assist with negotiations and renewal of these disposal contracts.

PROPOSED ACTIONS: Recommend approval of the Sanitation Rate Study Update as presented, or provide staff further direction.

5. Well House No. 6 Rebid Award (ACTION ITEM) - Bob Buvel

The City published an advertisement for bids on April 16, 2022 and April 23, 2022 for the Well House No. 6 Rebid project. The project included the reconstruction of Well House No. 6, electrical improvements, and the coordination of the installation of a new generator. The Engineer's Estimate for the project was \$462,000.00 for base bid and \$206,118.00 for Add Alternate No. 1. Bid opening for the project took place on May 3rd, 2022, at which two (2) bids were received. The bids received were in the amount of \$724,512 for the base bid and \$200,000.00 for Add Alternate Number 1 submitted by Razz Construction, Inc. A second bid of \$636,915 for the base bid and \$197,000.00 for Add Alternate Number 1 submitted by TML Construction Inc. The lowest responsive bid was TML Construction Inc. A bid analysis performed by Welch Comer is included in the Committee packet.

PROPOSED ACTIONS: Recommend acceptance of the low bid from TML Construction, Inc., award the contract for both the base bid and bid Alternate Number 1 in the amount of \$833,915.00, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount, or provide staff further direction.

REPORTS

Staff Report (if needed)

ADJOURN

NOTICE: Moscow City Council and committee meetings are televised, videotaped and/or recorded. Individuals attending the meeting who require special assistance to accommodate physical, hearing, or other impairments, please contact the City Clerk, at (208) 883-7015 or TDD 883-7019, as soon as possible so that arrangements may be made.

Public Works / Finance Committee



Regular Meeting ~Minutes~

Laurie M. Hopkins
City Clerk

www.ci.moscow.id.us

208.883.7015

**Monday
April 25, 2022**

3:00 PM

**Council Chambers
206 E. Third St.**

The meeting was called to order at 3:00 p.m.

PRESENT: Maureen Laflin, Hailey Lewis, Gina Taruscio

OTHERS: Mayor Art Bettge, Council Member Sandra Kelly

STAFF: Bill Belknap, Cody Riddle, Megan Cherry, Amanda Argona, Laurie M. Hopkins

REGULAR AGENDA

1. Approval of Public Works/Finance Committee April 11, 2022 Minutes (ACTION ITEM) - Laurie M. Hopkins

The minutes were approved as presented.

2. Downtown Streetscape Professional Services Agreement (ACTION ITEM) - Cody Riddle

The Community Development Team will present the results of a recent Request for Qualifications (RFQ) for design, engineering, and community engagement services for the Downtown Streetscape Design Project. Staff will seek the Committee's recommendation to enter into a professional services agreement with the consultant team.

PROPOSED ACTIONS: Recommend approval of the Professional Services Agreement with Welch Comer; or provide staff further direction.

Riddle introduced the item as written above. Seven RFQ's were submitted and reviewed by a committee of seven members, with Welch Comer being recommended. Project would start after the contract was signed. The project would include a couple reports to Council and the final conceptional plan to Council for final approval with anticipation of construction in 2023. Belknap said this agreement is the starting stages of the project which is to understand cost, elements, phasing etc. Staff anticipates planning will take the rest of the year and possibly next year before an ultimate plan and actions would be ready. The Committee would like to have an overview of the project at the next City Council meeting so other council members and the public can be brought up to speed on how the project began. The Committee recommended approval and that it be placed on the Council regular agenda.

3. Booster Station Replacement Phase II - Bid Results (ACTION ITEM) - Scott Bontrager

The Booster Station Replacement - Phase II project includes the construction of two (2) new booster pump stations located near the Indian Hills and Ponderosa Sub-divisions. The work will include new Concrete Masonry Units (CMU) block buildings, site improvements, piping, pumps, electrical components, and controls. The City published an advertisement for bids on March 12, 2022 and the Engineer's Estimate for construction is \$2,909,100.00. Bids were opened on Friday, April 15, 2022. Two responsive bids were received, with bids ranging from \$4,248,950.00 to \$4,867,933.00. Of those, the lowest responsive bid was submitted by Razz Construction, Inc. with a bid of \$4,248,950. A bid analysis is included in the Committee packet.

PROPOSED ACTIONS: Recommend rejection of the low bid from Razz Construction, Inc. or provide staff with further direction.

Bontrager introduced the item as written above saying the bids were significantly higher than expected. Due to today's circumstances, materials are difficult to get and it is risky for contractors to bid. Staff feels

more time is needed to accumulate more funds and bid this fall. The first three booster stations in phase I were about \$2 million total, on average \$600,000 each. Staff has contingency for backup parts and other things should anything break in the meantime. Belkap said in 2014 the City sought judicial confirmation which allowed the City to incur debt from the State Revolving Fund for development of Well 10, reconstruction of five booster stations and water main work on Indian Hills Dr. The money received was \$4.3 million which at the time included all projects. One disbursement has been received at \$4.3 million and the additional \$4.3 million has been requested and approval. This is a total of \$8.6 million in loans from DEQ. Staff will be reaching out to DEQ because some of the monies that went through the State Revolving Fund were potentially being dispersed as grants. The Committee recommended rejection of the low bid from Razz Construction, Inc. and that it be placed on the Council consent agenda.

4. Sixth Street Crossing Over Paradise Creek - Bid Results (ACTION ITEM) - Scott Bontrager

The Sixth Street Crossing Over Paradise Creek project includes the demolition and removal of the existing culvert system, relocation of the water mains, and the construction of a new 24ft single-span multi-modal bridge that includes sidewalks, bike lanes, and will be elevated to reduce future flooding in the area. The City published an advertisement for bids on February 26, 2022 and the Engineer's Estimate for construction is \$1,189,538.50. Bid opening for the project took place on April 15, 2022, at which one (1) bid was received. The responsive bid received was submitted by Razz Construction with a bid of \$1,997,216.00. A bid analysis is included in the Committee packet.

PROPOSED ACTIONS: Recommend acceptance of the low bid from Razz Construction, Inc., award the contract for \$1,997,216.00, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount, or provide staff further direction.

Bontrager introduced the item as written above. The items that were over the engineer's estimate were water pipe items and concrete items. The precast concrete industry is at a major boom and not enough people doing the work which is causing inflation. With the opportunity to build the bridge while the Mountain View project is being construction so that the street is closed only once, not twice, staff is recommending acceptance of this bid and award the contract. The capital plan has \$1.3 million in street funds for this project. The water fund could absorb \$380,000 related to the water work which would drop the street fund contribution to \$1.6 million, \$300,000 more than anticipated. There is one project that could be delayed to accommodate the additional expense. Staff is comfortable that the project can be funded and is beneficial for the public. There is no guarantee prices will go down should the Council decide to rebid. The Committee recommended approval and that it be placed on the Council consent agenda. In response to Committee questions, staff said there is plenty of space for each contractor to house their equipment. The bridge work can work in conjunction with the Mountain View roundabout but the water lines must be completed first.

5. Artwalk Season Finale Alcohol Use Request in Entertainment District (ACTION ITEM) - Amanda Argona

The City of Moscow Arts Department is hosting the Artwalk Season Finale on Thursday, June 16th, from 4 pm to 8 pm on Main Street between 3rd and 6th Streets. This annual event concludes the 2021-2022 Artwalk Season in an artistic and festive manner. As a City-hosted event, the Arts Department has facilitated the registration of Main Street vendors and demonstrators, as well as business and non-profit host locations. No more than 5 (five) beer/wine vendors will be authorized for beer/wine sales, and a variety of activities will take place including live music, Kidwalk, food sales, art demonstrations, and more. The event has been reviewed and approved as of April 14, 2022. Following standard operating procedures for events with alcohol that are within the Entertainment District boundaries, Artwalk is requesting a temporary suspension of the open container law by resolution. Per Moscow City Code, Section 10-1-12; a draft resolution has been prepared for Council's consideration.

PROPOSED ACTIONS: Recommend approval of the resolution allowing for the temporary

suspension of the open container law within the event footprint of the Artwalk Season Finale for the duration of the event; or provide staff further direction.

Argona introduced the item as written above and there are currently two alcohol vendors out of five spaces and registration is still open. The boundary will be similar to the Farmer's Market footprint which is Third to Sixth Street and will include the first bay of the Jackson Street parking lot to include the restrooms. The Kidwalk area will be from Storm Cellar to One World, 5th Street to Friendship Square is food and beverage vendors, music will be at Friendship Square and sponsor booths north of that. Cherry said if you are a parent and attending with family, it should be a more fluid and social experience rather than adults being in the barricade of a beer garden. There is not a policy for dogs at Artwalk but if there is a desire by the Council to give direction, staff will handle it accordingly. The Committee recommended approval and that it be placed on the Council consent agenda.

6. Latah County Broadband Coalition Pledge (ACTION ITEM) - Bill Belknap

Latah County has recently executed an agreement for a Broadband Utility Assessment that will include regular check-ins during the data gathering and discovery phase, mapping of existing and proposed networks, and cost estimates for fiber construction, networking equipment, and data center upgrades to enable minimum speeds of 100/20 Mbps, scalable to 100 Mbps symmetrical (which are the benchmarks established by new legislation and grant programs). This Broadband Utility Assessment will be a foundational step in the process of developing a county-wide broadband plan and an indispensable asset in applying for the many, many millions of dollars in upcoming broadband funding. The County is working to form a coalition made up of stakeholders throughout the County who are pledging to participate in information sharing and gathering to identify opportunities for broadband projects in Latah County and has approached the City to participate in this process. The following is a list of current coalition members: City of Potlatch, City of Bovill, City of Genesee, City of Kendrick, City of Juliaetta, City of Deary, City of Troy, Latah County Library District, Moscow School District, Kendrick Joint School District, Genesee Joint School District, Potlatch School District, Troy School District, University of Idaho, Gritman Medical Center, Senator David Nelson. There is no financial obligation to participate in the coalition and instead, will serve to share information and coordinate efforts to expand broadband service within Latah County.

PROPOSED ACTIONS: Recommend approval of the Mayor's signature upon the Latah County Broadband Coalition Pledge; or provide staff further direction.

Belknap introduced Christina Mangiapani with Latah County. Mangiapani explained the project as written above adding the coalition would most likely have monthly meetings. As the rules are changing at the Federal and State levels, the coalition will launch a speed test campaign as there has to be proof the area is underserved. Lewis hopes there is some Federal reporting due to the information being critical infrastructure and would be in the public eye. She likes the collaboration that may make it easier to say yes for a shovel ready project because the information is already gathered. The deliverable from Port of Lewiston for example would be high level generic type of information. Belknap said the obligation for the City is to assign a designated representative and participation in information sharing and gathering. The Committee recommended approval and that it be placed on the Council consent agenda.

REPORTS

Staff Report (if needed)

No report.

ADJOURN

The meeting closed at 3:34 p.m.

COMMITTEE STAFF REPORT

DATE: Monday, May 9, 2022



RESPONSIBLE STAFF

Sarah Banks, Finance Director

ADDITIONAL PRESENTER(S)

OTHER RESOURCES

AGENDA ITEM TITLE

Disbursement Report for April 2022 (ACTION ITEM) - Sarah Banks

DESCRIPTION

Accounts Payable Report for the month ending April 30, 2022. A summary of the major expenditures has been approximated by category and represents 94% of the total expenditure of \$2,276,421.08

Payroll	\$1,145,330.00
Professional Services	\$68,663.00
Sanitation	\$305,394.00
Capital Outlay	\$129,761.00
Capital Outlay-Improvements	\$17,054.00
Supplies	\$101,533.00
Utilities	\$79,067.00
Contractual Payments	\$244,354.00
ACH Wells Fargo	\$48,606.00
Total	\$2,139,762.00

STAFF RECOMMENDATION

Approve the disbursement report and use of digital signatures to sign the Disbursements Report for the month of April 2022.

PROPOSED ACTIONS

ACTION: Approve and authorize the use of digital signatures to sign the Disbursements Report for the month of April 2022.

FISCAL IMPACT

PERSONNEL IMPACT

ATTACHMENTS

1. Disbursement Report for April 2022
2. April 2022 Revenue Report
3. Cash & Investments April 2022
4. Major Expenditures Report for April 2022

DISBURSEMENTS REPORT FOR APRIL 2022											
DATE	FUND NAME	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	ACCOUNTS PAYABLE	WELLSFARGO CC ACH	ACCOUNTS PAYABLE ACH	VOID CHECKS	PAYROLL	PAYROLL	GRAND TOTALS
		4/7/2022	4/14/2022	4/21/2022	4/28/2022	4/11/2022	4/15/2022		4/8/2022	4/22/2022	
		AP 4.7.2022	AP 4.15.2022	AP 4.22.2022	AP 4.29.2022	4/25/2022 AP 4.7.2022 AP 4.25.2022	AP 4.15.2022		ID35	ID37	
BATCH #											
CHECK #'s		101233-101307	101308-101382	101383-101432	101433-101501	April's CC ACH's	April's ACH's		21527	21528	
Fund #											
101	GENERAL	26,062.61	191,235.39	2,361.60	56,781.12	20,466.02			353,896.47	342,078.23	992,881.44
105	STREETS	53,599.84	8,179.41	529.43	5,789.25	716.70			24,091.61	24,479.92	117,386.16
120	RECREATION AND CULTURE	13,761.66	3,056.03	6,890.95	3,160.66	14,651.94			57,022.13	56,926.33	155,469.70
121	MSD COMM. PLAY FIELDS	416.96		1,678.61					2,316.32	5,315.88	9,727.77
123	1912 CENTER	10,750.00									10,750.00
128	TRANSIT CENTER	443.35	105.00	69.37							617.72
220	WATER	39,068.34	75,142.13	14,798.19	25,307.40	1,776.26			46,515.79	49,300.61	251,908.72
230	SEWER	30,167.47	18,227.80	9,491.55	14,076.13	4,230.61	18,131.38		46,064.30	48,537.10	188,926.34
235	STORMWATER	620.40	2,034.80	19.96	200.96	847.75			8,517.26	8,691.90	20,933.03
240	SANITATION	109,678.54	300.64		4,098.12	132.37	178,946.77		7,524.86	7,684.41	308,365.71
290	FLEET	8,635.66	4,140.93		4,566.46	780.18			12,121.97	12,281.40	42,526.60
295	INFORMATION SYSTEMS	18.03	17,586.47		250.00	4,395.03			12,680.13	19,283.38	54,213.04
320	WATER CAPITAL PROJECTS		587.55	13,292.34							13,879.89
330	SEWER CAPITAL PROJECTS										0.00
335	STORMWATER CAPITAL PROJECTS	485.63				608.86					1,094.49
340	SANITATION CAPITAL PROJ										0.00
350	CAPITAL PROJECTS	60,746.55	33,811.93	12,472.07	710.00						107,740.55
355	LID CONSTRUCTION										0.00
380	HAMILTON - PARKS & REC										0.00
590	BONDS & INTEREST										0.00
	TOTAL	354,455.04	354,408.08	61,604.07	114,940.10	48,605.72	197,078.15	0.00	570,750.84	574,579.16	2,276,421.16

_____ Maureen Laflin

_____ Sarah L. Banks, Finance Director

_____ Gina Taruscio

_____ Hailey Lewis

RECEIPTS REPORT FOR APRIL 2022

Fund #	FUND NAME	Taxes	Franchise Fees	Licenses & Permits	Intergovernmental	Charges for Services	Fines & Penalties	Investment Income	Refunds & Reimbursements	Contributions & Donations	Other	Grand Total
101	GENERAL	53,520.89	128,840.74	76,695.23	709,254.37	141,251.57	7,895.17	33,054.89	17,660.57	1,500.00	4,549.70	1,174,223.13
105	STREETS	149,228.18	0.00	0.00	172,405.79	25,133.29	0.00	0.00	1,293.30	0.00	0.00	348,060.56
120	RECREATION AND CULTURE	0.00	0.00	0.00	0.00	81,234.95	0.00	0.00	0.00	1,662.00	0.00	82,896.95
121	MSD COMMUNITY PLAY FIELDS	0.00	0.00	0.00	5,721.92	0.00	0.00	0.00	0.00	0.00	0.00	5,721.92
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	1,510.82	0.00	0.00	0.00	0.00	137.48	1,648.30
220	WATER	0.00	0.00	0.00	0.00	475,666.88	0.00	976.47	0.00	0.00	0.00	476,643.35
230	SEWER	0.00	0.00	0.00	0.00	914,367.11	0.00	451.84	375.24	0.00	0.00	915,194.19
235	STORMWATER	0.00	0.00	0.00	0.00	84,153.98	0.00	0.00	0.00	0.00	0.00	84,153.98
240	SANITATION	0.00	0.00	0.00	0.00	481,757.28	0.00	0.00	0.00	0.00	0.00	481,757.28
290	FLEET	0.00	0.00	0.00	0.00	75,323.87	0.00	0.00	0.00	0.00	0.00	75,323.87
295	INFORMATION SYSTEMS	0.00	0.00	0.00	0.00	118,153.00	0.00	0.00	0.00	0.00	0.00	118,153.00
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
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	1,262.38	90.00	0.00	0.00	1,352.38
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	336.13	0.00	0.00	0.00	336.13
590	BOND & INTEREST	8,512.24	0.00	0.00	0.00	0.00	0.00	97.49	0.00	0.00	0.00	8,609.73
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		211,261.31	128,840.74	76,695.23	887,382.08	2,398,552.75	7,895.17	36,179.20	19,419.11	3,162.00	4,687.18	3,774,074.77

City of Moscow
Cash and Investments
Balances as of 4/30/2022

Fund		Year to Date Balance
General Fund	\$	8,294,202.42
Street Fund	\$	2,848,212.81
Culture & Recreation	\$	1,466,175.47
MSDCPF	\$	217,595.82
1912 Fund	\$	59,219.84
Transit Center	\$	109,964.08
Water Fund	\$	2,722,108.98
Sewer / WRRF	\$	3,991,229.51
Stormwater	\$	(20,551.59)
Sanitation Fund	\$	3,255,732.93
Fleet Fund	\$	5,827,825.96
Information Systems	\$	5,016,066.40
Water Capital	\$	7,235,319.93
Sewer Capital	\$	16,229,990.41
Stormwater Capital	\$	423,487.49
Capital Projects	\$	6,703,305.35
Sanitation Capital	\$	6,992,974.20
LID construction	\$	26,661.99
Hamilton	\$	1,794,692.79
Bond & Interest	\$	897,646.12
LID Funds	\$	35,611.11
Payroll Service	\$	1,168,946.53
Total Cash & Investments	\$	75,296,418.55

Major Expenditures for April 2022

[illegible]

COMMITTEE STAFF REPORT

DATE: Monday, May 9, 2022



RESPONSIBLE STAFF

Cody Riddle, Deputy City Supervisor - Community Development

ADDITIONAL PRESENTER(S)

OTHER RESOURCES

AGENDA ITEM TITLE

Bird Rides License Agreement for Shared Mobility (ACTION ITEM) - Cody Riddle

DESCRIPTION

Staff will present a proposed one-year license agreement between the City and Bird Rides for the operation of shared-use scooters within the City. If approved, the agreement will allow deployment of up to 200 shared devices (scooters). The shared mobility program was established through an amendment to Title 11, Chapter 2, of Moscow City Code earlier in 2022.

As specified by the adopted ordinance, the license agreement includes a dismount zone, where riding electric assist devices is prohibited on the sidewalk. Devices can be operated safely on the streets in this area. The mobility provider will geo-fence the designated area to ensure compliance, and the City will install signage to clearly communicate the standard. This will be especially important for private users whose devices are not regulated by a shared provider. The agreement also includes a no parking zone around Friendship Square, and another adjacent to the Student Union Building on the University of Idaho Campus. Finally, the document includes a provision for impounding devices not operated, stored, or maintained in compliance with the ordinance or other agreement standards.

If approved, the agreement will be in effect for one year. This will allow for an annual review of the effectiveness of the shared mobility program and inform changes to future agreements if necessary.

STAFF RECOMMENDATION

Recommend approval of the License Agreement with Bird Rides.

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval of the license agreement with Bird Rides, or provide staff further direction.

FISCAL IMPACT

PERSONNEL IMPACT

The deployment of shared mobility devices will impact the Police Department staff, who are responsible for enforcement of the agreement and associated ordinance provisions.

ATTACHMENTS

1. Birds License Agreement_final

**LICENSING AGREEMENT FOR SHARED MOBILITY PROGRAM
BETWEEN CITY OF MOSCOW, IDAHO AND
BIRD RIDES, INC.**

THIS LICENSING AGREEMENT FOR SHARED MOBILITY PROGRAM (hereinafter “Agreement”) is made this ____ day of _____, 2022, between the City of Moscow, a municipal corporation of the State of Idaho, 206 East Third Street, Moscow, Idaho, 83843 (hereinafter "CITY"), and Bird Rides, Inc., whose business address is 406 Broadway, #369, Santa Monica, California, 90401 (hereinafter “COMPANY”).

INTRODUCTION

WHEREAS, CITY has enacted an ordinance regarding shared mobility programs for bicycles, E-bikes, E-scooters and E-boards, Moscow City Code Title 11, Chapter 2, included as Attachment A; and

WHEREAS, shared mobility programs provide a multimodal transportation option to the residents and visitors of the City of Moscow, reduces traffic and parking congestion, and maximizes carbon-free mobility; and

WHEREAS, COMPANY is willing to adhere to the ordinance regarding shared mobility programs for bicycles, E-bikes, E-scooters and E-boards;

NOW, THEREFORE, in consideration of the mutual promises, covenants, terms and conditions hereinafter contained, the Parties agree as follows:

TERMS AND CONDITIONS

- 1. Scope:** This Agreement and its terms apply to any proposed deployment of bicycles, E-bikes, E-scooters and E-boards sharing systems within the City of Moscow’s jurisdictional boundaries. No person shall deploy a shared mobility program in the City of Moscow in violation of this Agreement. Violation of any terms of this agreement or of the Moscow City Code is grounds for immediate termination of this Agreement and require immediate removal of deployed devices.
- 2. Duties:** COMPANY’s Shared Mobility Program shall be governed by Moscow City Code, Idaho Code and the approved documents attached to the application and herein made a part of this Agreement, which includes the following:

Attachment A. Moscow City Code Title 11, Chapter 2
Attachment B. Dismount Zone map
Attachment C. No Parking Zone
Attachment D. Share Mobility Program Application

- 2.1 COMPANY shall have a local agent who will manage the repairs and relocation of the devices.
- 2.2 COMPANY shall provide easily visible contact information, including toll-free phone number and/or email address on each bicycle, E-bike, E-scooter or E-board for members of the public to make relocation requests or to report other issues with devices.
- 2.3 COMPANY shall maintain a 24-hour hotline to field complaints and requests for immediate removal of devices.
- 2.4 COMPANY shall provide materials, videos, signage and other appropriate communication methods to promote safe riding and educate riders on rider responsibilities and encourage safe and courteous riding and parking.
- 2.5 All devices in COMPANY's fleet shall be maintained and demonstrate minimum utilization rate of two (2) rides per day to remain in service. If a device fails to meet the minimum utilization requirement, CITY may require such device to be relocated or removed from COMPANY's fleet. COMPANY shall provide utilization reports to CITY of its fleet on the 1st and 15th day of every month.
- 2.6 All of COMPANY's devices shall be maintained, cleaned and repaired to function in a safe manner in accordance with specific manufacturer and customary industry standards.
- 2.7 All devices shall be safe for operation and each device type may be inspected by the Moscow Police Department prior to operational deployment. Any device deemed unsafe for operation by the Moscow Police Department may be removed from CITY public property and impounded pursuant to Section 2.31 of this Agreement.
- 2.8 COMPANY shall remove any device not safe for operation from the public right-of-way within twenty-four (24) hours of notice and such device shall be fully repaired before being returned to service, failure to comply with this duty may result in the device being impounded pursuant to Section 2.31 of this Agreement.
- 2.9 COMPANY's devices shall be able to stand upright when parked and shall only be parked in the upright position. COMPANY shall ensure the devices are parked in a legal manner and in a manner to not obstruct the public right of way. COMPANY shall ensure devices are not parked on private property absent permission from the private property owner. City may designate specific parking areas as delineated on the attached map in Attachment "C".
- 2.10 COMPANY shall not allow devices to be relocated by remote control and must manage relocation by its local operator/agent.
- 2.11 COMPANY shall exercise its own due diligence in reviewing the safety of CITY's public right of ways to determine its sufficiency for customer use of the COMPANY's devices.
- 2.12 COMPANY's devices shall be available at rates (based on duration of time, distance or combination thereof) that are clearly and understandably communicated to the customer prior to device use.
- 2.13 COMPANY's devices shall not be operated on sidewalks within the "Dismount Zone" identified in Attachment "B".
- 2.14 COMPANY's devices shall not allow users to disengage from the mobile app or park devices in designated geo-fenced areas identified in Attachment "C". In addition, COMPANY agrees to geo-fence specific areas (within which operation of the devices would be prohibited) that are requested by CITY during special events and programs to protect the community engaged in the special events or programs. CITY will provide

COMPANY forty-eight (48) hours' notice of the special events and programs that require additional geo-fencing which shall include the date, time, duration and a map of the special event device prohibition area.

- 2.15 All devices shall be labeled with a unique identification number, that is clearly visible and readable from a distance of at least thirty (30) feet, which shall be regularly updated with the Moscow Police Department. Additionally, pursuant to MCC 11-2-10.D. all devices are required to have a label that contains the classification number, top assisted speed, motor wattage, and shall be printed in at least 9-point type.
- 2.16 Daily Rebalancing of Fleet. COMPANY shall remove all of its deployed devices from the public right-of-way every twenty-four (24) hour period prior to six o'clock (6:00) A.M. to ensure its fleet is properly rebalanced and deployed. Any failure of COMPANY to remove deployed devices from the public right-of-way in a timely manner may be removed by CITY and impounded pursuant to Section 2.31 of this Agreement.
- 2.17 COMPANY shall maintain an electronic payment system that is compliant with the payment card industry data security standards (PCI). Each transaction shall include the bicycle, E-bike, E-scooter or E-boards identification number that corresponds to the make and model of the device registered.
- 2.18 COMPANY shall provide a copy of its Privacy Policy for customer information. Such policy must not conflict with City Code and to the extent there are any conflicts between Moscow City Code and COMPANY's Privacy Policy (including, but not limited to, terms and conditions of use, terms of service, etc.) the City Code and this License Agreement control. COMPANY understands it must notify CITY of all changes to its Privacy Policy immediately upon adoption.
- 2.19 COMPANY shall inform its customers of local traffic laws.
- 2.20 COMPANY shall educate its customers on how to safely ride and operate the rented device in the City, including the use of helmets.
- 2.21 COMPANY shall have each rider agree to a waiver of liability, including indemnifying CITY prior to use.
- 2.22 COMPANY shall allow customers without a smart phone to use the shared mobile devices.
- 2.23 COMPANY shall allow customers without a credit card to use the shared mobile devices.
- 2.24 COMPANY shall provide CITY anonymized data in real time regarding the number of customers and trips. This shall be provided via an API including, daily and weekly rides, daily and weekly unique riders, hourly rides, daily and weekly app users, and trip information in MDS format.
- 2.25 COMPANY shall provide device availability data for oversight of parking compliance and device distribution by minutes. This information must include GPS coordinates, availability duration, availability start date and availability start time.
- 2.26 COMPANY shall provide a detailed report of all devices including unique ID number, trip record number, trip duration, trip distance, trip date, start time, start location, and end location.
- 2.27 COMPANY shall submit maintenance activities, including but not limited to, device identification number and maintenance performed within forty-eight (48) hours of request by CITY.

- 2.28 COMPANY shall submit upon request by CITY, a record of all reported collisions involving COMPANY's devices. The report shall include the following information: date/time of the incident; the unique identifying number for the device(s) involved in the collision; information describing the nature of the collision; whether a customer was using the device at the time of the collision; what maintenance, if any, was performed on the device as a result of the collision; and corrective measures COMPANY has made to avoid future such incidents.
- 2.29 COMPANY must seek CITY's written approval before adding any additional devices to its fleet. Upon written approval of additions to applicant's fleet, but before deploying these devices, applicant shall provide CITY the following information: the unique identifying number for each device being added to the fleet; and information regarding the make model and year of the device being added.
- 2.30 COMPANY shall not deploy any additional devices if COMPANY's devices have been impounded and have not been retrieved by COMPANY.
- 2.31 COMPANY's failure to adhere to COMPANY'S duties as provided in Section 2 of this Agreement, may result in the impoundment of COMPANY's devices if not corrected within the permitted time frame. A fee of twenty-five (\$25) dollars per device, for each day of impoundment will be assessed. If COMPANY fails to retrieve the devices from impoundment and pay the impound fee, the devices will be disposed of at the CITY's discretion after thirty (30) days of storage.
3. **Consideration:** COMPANY agrees to pay the annual operator fee, annual device charge, and maintain the required security deposit as listed on the Shared Mobility Program Application, herein made a part of this Agreement (see Attachment "D"), each year COMPANY engages in a shared mobility program within the CITY's jurisdiction.
4. **Time of Performance:** This Agreement shall become effective upon execution by both Parties, and shall be effective for one (1) year.
5. **Independent Contractor:** In all matters pertaining to this Agreement, COMPANY shall be acting as an independent entity, and neither COMPANY nor any officer, employee or agent of COMPANY will be deemed an employee of CITY. COMPANY has no authority or responsibility to exercise any rights or power vested in CITY. The selection and designation of the personnel of CITY in the performance of this Agreement shall be made by CITY.
6. **No Joint Venture:** Nothing herein contained shall be in any way construed as expressing or implying that the parties hereto have joined together in any joint venture or liability company or in any manner have agreed to or are contemplating the sharing of profits or losses among themselves in relation to any matter relating to this Agreement.
7. **Indemnification and Insurance:**
- COMPANY agrees to defend, hold harmless, and indemnify CITY, and its officers, agents and employees against any and all losses, claims, actions, judgments for damages, or injury to persons or property and losses and expenses and other costs, including litigation costs and

attorney's fees, to the extent caused by the negligent acts and/or errors or omissions by COMPANY, its servants, agents, officers, employees, guests, and business invitees.

CITY shall defend, hold harmless, and indemnify COMPANY from and for any and all losses, claims, actions, judgments for damages, or injury to persons or property, and losses and expenses and other costs, including litigation costs and attorney's fees, to the extent Article VIII, § 4 of the Idaho Constitution and the Idaho Tort Claims Act will allow, caused by the negligent acts and/or errors or omissions by CITY, its agents, officers, and employees.

COMPANY shall provide CITY with proof of insurance coverage exclusively for the operation of shared mobility programs including (a) Commercial General Liability insurance coverage with a limit of no less than One Million Dollars (\$1,000,000) each occurrence and Five Million Dollars (\$5,000,000) aggregate; (b) Automobile Insurance coverage with a limit of no less than One Million Dollars (\$1,000,000) each occurrence and One Million Dollars (\$1,000,000) aggregate; (c) Workers' Compensation coverage of no less than the statutory requirement, and (d) Cyber Insurance.

8. **Notices:** Any and all notices required to be given by either of the Parties hereto, unless otherwise stated in this Agreement, shall be in writing and be deemed communicated when mailed in the United States mail, certified, return receipt requested, addressed as follows:

CITY

City of Moscow
Attn: City Clerk
206 East Third Street
P O Box 9203
Moscow, ID 83843
(208) 883-7015

COMPANY

Bird Rides, Inc.
Attn: Legal Department
406 Broadway, #369
Santa Monica, CA 90401
(866) 441-8538
birdlegal@bird.com

Either Party may change their address for the purpose of this paragraph by giving written notice of such change to the other in the manner herein provided.

9. **Assignment:** It is expressly agreed and understood by the Parties hereto, that COMPANY shall not have the right to assign, transfer, hypothecate or sell any of its rights under this Agreement except upon the prior express written consent of CITY.
10. **Discrimination Prohibited:** In performing the Services appurtenant to a shared mobility program, COMPANY shall not unlawfully discriminate in violation of any Federal, State or local law, rule or regulation against any person on the basis of race, color, religion, gender, pregnancy, national origin, ancestry, age, familial status, veteran status, disability, sexual orientation, and/or gender expression/identity, or any other basis prohibited by Federal, State or local law.

11. Data Collection:

At such times and in such forms as CITY may require, there shall be furnished to CITY such statements, records, reports, data and information as CITY may request pertaining to matters covered by this Agreement.

COMPANY shall maintain all writings, documents and records prepared or compiled in connection with the performance of this Agreement for a minimum of five (5) years from the termination or completion of this Agreement. This includes any handwriting, typewriting, printing, photo static, photographic and every other means of recording upon any tangible thing, any form of communication or representation including letters, words, pictures, sounds or symbols or any combination thereof.

- 12. Audits and Inspections:** At any time during normal business hours and as often as CITY may deem necessary, there shall be made available to CITY for examination, all of COMPANY's records with respect to all matters covered by this Agreement. COMPANY shall permit CITY to audit, examine, and make excerpts or transcripts from such records, and to make audits of all data relating to all matters covered by this Agreement.

- 13. Compliance with Laws:** In performing the Scope of Services required hereunder, COMPANY shall comply with all applicable laws, ordinances, and codes of Federal, State, and local governments.

- 14. Public Information:** Pursuant to Idaho Code Section 74-124, *et seq.*, information or documents received from COMPANY may be open to public inspection and copying unless exempt from disclosure. COMPANY shall clearly designate individual documents as "exempt" on each page of such documents and shall indicate the basis for such exemption. CITY will not accept the marking of an entire document as exempt. In addition, CITY will not accept a legend or statement on one (1) page that all, or substantially all, of the document is exempt from disclosure. COMPANY shall indemnify and defend the CITY against all liability, claims, damages, losses, expenses, actions, attorney fees and suits whatsoever for honoring such a designation or for COMPANY's failure to designate individual documents as exempt. COMPANY's failure to designate as exempt any document or portion of a document that is released by CITY, shall constitute a complete waiver of any and all claims for damages caused by any such release.

- 15. Changes:** CITY may, from time to time, enact changes in the Shared Mobility Program License Policies and/or City Code pertaining to bicycles, E-bikes, E-scooters and E-boards. Such changes shall be incorporated in written amendments to this Agreement.

16. Termination:

If, through any cause, COMPANY, its officers, employees, or agents fails to fulfill in a timely and proper manner its obligations under this Agreement, violates any of the covenants, agreements, or stipulations of this Agreement, falsifies any record or document required to be prepared under this Agreement, engages in fraud, dishonesty, or any other act of

misconduct in the performance of this Agreement, or if the City Council determines that termination of this Agreement is in the best interest of CITY, CITY shall thereupon have the right to terminate this Agreement by giving written notice to COMPANY of such termination and specifying the effective date thereof. COMPANY may terminate this Agreement at any time by giving at least sixty (30) days' notice to CITY.

In the event of any termination of this Agreement, all finished or unfinished documents, data, and reports prepared by COMPANY under this Agreement shall, at the option of CITY, become CITY's property.

Notwithstanding the above, COMPANY shall not be relieved of liability to CITY for damages sustained by CITY by virtue of any breach of this Agreement by COMPANY. This provision shall survive the termination of this Agreement and shall not relieve COMPANY of its liability to CITY for damages.

17. **Construction and Severability:** If any part of this Agreement is held to be invalid or unenforceable, such holding will not affect the validity or enforceability of any other part of this Agreement so long as the remainder of the Agreement is reasonably capable of completion.
18. **Advice of Attorney:** Each Party warrants and represents that in executing this Agreement, it has received independent legal advice from its attorneys or the opportunity to seek such advice.
19. **Entire Agreement:** This Agreement contains the entire agreement of the Parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.
20. **Jurisdiction, Venue, and Non-Waiver.** 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 not exercise any of its 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. Should any litigation be commenced between the Parties hereto concerning this Agreement, the prevailing Party shall be entitled, in addition to any other relief as may be granted, to court costs and attorneys' fees as determined by a Court.
21. **Approval Required:** This Agreement shall not become effective or binding until approved by the City of Moscow.
22. **Authority to Execute.** The persons executing this Agreement on behalf of their respective Parties, represent and warrant that they have the authority to do so under law and from their respective Parties.

BIRD RIDES, INC.

CITY OF MOSCOW, IDAHO

Arthur D. Bettge, Mayor

Dated: _____

Dated: _____

ATTEST:

Laurie M. Hopkins, City Clerk

Approved as to form

Mia Bautista, City Attorney

ACKNOWLEDGMENT

STATE OF IDAHO)
 : ss.
County of _____)

On the ____ day of _____, 2022, before me, the undersigned Notary Public, personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have set my hand and seal the day and year as above written.

Notary Public for Idaho
Residing at _____
Commission Expires: _____

ATTACHMENT A-MOSCOW CITY CODE

Chapter 2

BICYCLES, E-BIKES, E-SCOOTERS, AND E-BOARDS

Sec. 2-1:	Purpose
Sec. 2-2:	Definitions
Sec. 2-3:	General Standards
Sec. 2-4:	Riding on Roadways
Sec. 2-5:	Riding on Sidewalks
Sec. 2-6:	Riding on Non-Motorized Pathways
Sec. 2-7:	Bicycle, E-Bike, E-Scooter, and E-Board Parking
Sec. 2-8:	Tampering Prohibited
Sec. 2-9:	Abandonment
Sec. 2-10:	Shared Mobility Programs
Sec. 2-11:	Enforcement Agency
Sec. 2-12:	Penalties

Sec. 2-1. Purpose.

The purpose of this Chapter is to promote public safety by regulating the use of motorized vehicles, bicycles, E-bikes, E-scooters, and E-boards on roadways, bike lanes, sidewalks and non-motorized pathways within the City.
(Ord. 2022-04, 02/07/2022)

Sec. 2-2. Definitions.

For the purposes of this chapter, the following terms, phrases, words, and derivations shall have the meaning given herein.

- A. *Abandonment*: A bicycle, E-bike, E-scooter, E-board, or any part thereof, that is left or remains unattended or unused in a public place for seventy-two (72) consecutive hours or longer after it is tagged with a notice of intention to abate.
- B. *Bicycle*: Every vehicle having two (2) tandem wheels, or two (2) parallel wheels and one forward wheel, any two (2) of which are not less than twelve inches (12") in diameter, that is designed to be operated from a seated position, propelled exclusively by human power upon which any person may ride, except scooters and similar devices.

- C. *Bike Lane*: A portion of a roadway designated for preferential or exclusive use by bicycles, E-bikes, E-scooters, or E-boards that is distinguished from that portion of the roadway to be used by motor vehicles by a painted strip and other pavement markings.
- D. *Non-Motorized Pathway*: A completely separate right-of-way posted and designated primarily for use by bicycles, E-bikes, E-scooters, E-boards, or pedestrians, including but not limited to the Paradise Path, Latah Trail, and Chipman Trail, University of Idaho Pedestrian Walkways and similar non-motorized pathways.
- E. *Electric Power-Assisted Bicycle (E-bike)*: A vehicle having two (2) tandem wheels or two (2) parallel wheels and one forward wheel, any two (2) of which are not less than twelve inches (12") in diameter, that is designed to be operated from a seated position, by human power with the assistance of an electric motor. The device may be designed to also be powered by human propulsion. An E-bike is not a motor vehicle for purposes of this chapter.
- F. *Electric Power-Assisted Boards (E-board)*: A wheeled device that has a floorboard, that is designed to be stood upon when riding, and is powered by an electric motor. The device may be designed to also be powered by human propulsion. An E-board is not a motor vehicle for purposes of this chapter.
- G. *Electric Power-Assisted Scooter (E-scooter)*: A wheeled device that has handlebars, has a floorboard that is designed to be stood upon when riding, and is powered by an electric motor. The device may be designed to also be powered by human propulsion. An E-scooter is not a motor vehicle for purposes of this chapter.
- H. *Obstructive Bicycle, E-bike, E-scooter, or E-board*: Any bicycle, E-bike, E-scooter, E-board, or any part thereof, left in a public place that obstructs or impedes vehicular or pedestrian traffic.

- I. *Operator*: A person in exclusive control of a bicycle, E-bike, E-scooter or E-board and using the device.
- J. *Station-based Shared Mobility Program*: A system of self-service bicycles, E-bikes, E-scooters, E-boards or any combination thereof, for hire, operated by a station-based shared mobility program operator, which requires a bicycle rack and/or a bicycle, E-bike, E-scooter, or E-board sharing station.
- K. *Stationless Shared Mobility Program*: A system of self-service bicycles, E-bikes, E-scooters, E-boards, or any combination thereof, for hire, operated by a stationless shared mobility program operator, which does not require a bicycle rack or a bicycle, E-bike, E-scooter, or E-board sharing station.
(Ord. 2022-04, 02/07/2022)

Sec. 2-3. General Standards.

- A. Every person, regardless of age, who operates a bicycle, E-bike, E-scooter, or E-board upon a roadway, public parking lot, sidewalk, bike path, bike lane or other public vehicular right-of-way in the City of Moscow ("City") shall be granted the same rights and shall be subject to the same responsibilities applicable to a motor vehicle operator by the laws of the State of Idaho, and the provisions of this title not in conflict with and as authorized under title 49 of the Idaho Code.
- B. All operators of bicycles, E-bikes, E-scooters and E-boards are expected to operate the devices in a safe manner as approved by the manufacturer.
- C. *Exemption*: Any peace officer as defined in Idaho Code, operating a bicycle, E-bike, E-scooter, or E-board in the course and scope of his/her official duties is exempt from the requirements of this chapter.
(Ord. 2022-04, 02/07/2022)

Sec. 2-4. Riding on Roadways.

- A. No person shall operate a bicycle, E-

bike, E-scooter, or E-board on a roadway against the flow of motorized vehicular traffic, except where permitted by official signs or pavement markings.

- B. Every person operating a bicycle, E-bike, E-scooter, or E-board upon a two-way roadway is entitled to use the lane appropriate for the intended destination, including the right-hand lane. The bicycle, E-bike, E-scooter, or E-board rider shall proceed in the same direction of travel as other vehicles authorized to use that lane. On one-way roadways a bicycle, E-bike, E-scooter, or E-board may be operated in any existing lane.
- C. Wherever a bike lane is present upon a roadway, the operator of a bicycle, E-bike, E-scooter, or E-board shall use that lane and shall not use the roadway; except that the operator shall not be required to use or remain in a bike lane:
 1. When the lane is of insufficient width to permit safe bicycle, E-bike, E-scooter, or E-board operation; or
 2. When the condition of the pavement, or the presence of water, dirt, glass or other foreign objects upon the pavement prevents safe bicycle, E-bike, E-scooter, or E-board operation in the lane; or
 3. When moving into position to make a right or left turn; or
 4. When an opening car door or other obstruction in an adjacent parking lane requires movement out of the lane.
- D. The operator of a bicycle, E-bike, E-scooter, or E-board traveling at a rate of speed that delays a vehicle or vehicles following in the same lane shall be required, when it is unlawful or unsafe for the following vehicle to pass, to move as far to the right of the traveled roadway, or to the left where the bicycle, E-bike, E-scooter, or E-board is in the left lane of a one-way roadway, as is safe under the conditions then existing; provided, however, that when the operator is within fifty feet (50') of an intersection, the operator shall not be

required to move to the right or left until he/she has moved through the intersection.

- E. No person operating a bicycle, E-bike, E-scooter, or E-board may attach themselves or such bicycle or device to a moving motorized vehicle.
- F. Reckless or Inattentive Operation. A person who operates a bicycle, E-bike, E-scooter, or E-board on any public property or private property open to public use in an inattentive, reckless or careless manner, in light of the circumstances then existing, or without due caution and circumspection, or at such speed or in any other manner as to endanger or be likely to endanger any person or property shall be guilty of reckless or inattentive operation, which shall be a misdemeanor.
(Ord. 2022-04, 02/07/2022)

Sec. 2-5. Riding on Sidewalks.

- A. A bicycle, E-bike, E-scooter, or E-board may be operated upon a sidewalk and upon and within a crosswalk, except where prohibited by official traffic control devices, or when the number of pedestrians using the sidewalk renders riding on the sidewalk unsafe because of the risk of colliding with pedestrians, in which case the operator of a bicycle, E-bike, E-scooter, or E-board must dismount and walk the bicycle or device to an area where safe riding may resume.
- B. Any operator of a bicycle, E-bike, E-scooter, or E-board riding upon a sidewalk, or across a roadway upon and within a crosswalk, shall not exceed a speed of ten miles per hour (10 MPH) and shall yield the right-of-way to any pedestrian.
- C. Any operator of a bicycle, E-bike, E-scooter, or E-board riding on the sidewalk shall not suddenly leave a curb or other place of safety and move into the path of a vehicle that is so close as to constitute an immediate hazard.
- D. E-bikes, E-scooters, and E-boards are prohibited from operating on sidewalks

within the downtown area, which is delineated on the “Dismount Zone” map as adopted by City Council by resolution, effective June 1, 2022. Copies of this map are available for viewing at the office of the City Clerk. The Council may, from time to time, adopt revisions of the Dismount Zone map by resolution.
(Ord. 2022-04, 02/07/2022)

Sec. 2-6. Riding on Non-Motorized Pathways.

- A. It is hereby declared to be unlawful for any person to operate or permit to be present a motorized vehicle upon any posted non-motorized pathway. A person is exempt from this restriction where the operator of a motorized vehicle has displayed in the vehicle a permit to allow such person to operate a motorized vehicle on the restricted bike path or pedestrian walkway, has written permission from the City, or has written permission from the owner of the property if the restricted bike path or pedestrian walkway is on property not owned by the City. Emergency police, fire, and EMS vehicles are exempted from restrictions in this Chapter. Motorized wheelchairs or similar conveyances operated by a disabled person shall also be exempted from this prohibition.
- B. Any operator of a bicycle, E-bike, E-scooter, or E-board riding upon a non-motorized pathway shall not exceed a speed of fifteen miles per hour (15 MPH) unless otherwise posted.
- C. Any operator of a bicycle, E-bike, E-scooter, or E-board riding upon a non-motorized pathway shall yield the right-of-way to any pedestrian.
(Ord. 2022-04, 02/07/2022)

Sec. 2-7. Bicycle, E-bike, E-scooter, and E-board Parking.

Bicycles, E-bikes, E-scooters, or E-boards shall not be parked in such a manner as to obstruct or impede the movement of pedestrians, motor vehicles or other

bicycles, E-bikes, E-scooters, or E-boards or to cause damage to trees, shrubs or other living plants.

(Ord. 2022-04, 02/07/2022)

Sec. 2-8. Tampering Prohibited.

It shall be unlawful for any person to tamper with, destroy, mutilate or alter any license receipt or license issued under the provisions of this Chapter. It shall be unlawful for any person to remove, destroy, mutilate or in any way alter or tamper with any license plate, sticker, or marking issued under the provisions of this Chapter.

(Ord. 2022-04, 02/07/2022)

Sec. 2-9. Abandonment and Right to Impound.

It shall be unlawful for any person to abandon a bicycle, E-bike, E-scooter, or E-board. The City shall have the right to impound and retain possession of any bicycle, E-bike, E-scooter, or E-board found to have been abandoned and dispose of the property pursuant to Idaho Code 55-403 and pursuant to the City's surplus policy. The City shall have the right to impound any bicycle, E-bike, E-scooter, or E-board that is found to be in violation of the provisions of this Chapter and may retain possession of such bicycle, E-bike, E-scooter or E-board until the provisions of this Chapter are complied with. A fee for impoundment and storage may be charged to the bicycle, E-bike, E-scooter, or E-board owner. The fee shall be set from time to time by resolution of the Council.

(Ord. 2022-04, 02/07/2022)

Sec. 2-10. Shared Mobility Programs.

A. Application and License Agreement Required. Businesses, corporations, organizations, or individuals that provide stationless and station-based shared mobility programs are required to have a business license, insurance, and submit an application with the City, which includes the execution of a license agreement prior to deployment of any devices. Any deployment of bicycles, E-bikes, E-scooters, or E-

boards prior to following the application, permitting and licensing process and receiving approval by the City to deploy such devices may result in misdemeanor charges and impoundment of devices deployed.

- B. Manufacturers and distributors of E-bikes, E-scooters and E-boards shall apply a label in legible type, that is permanently affixed in a prominent location, to each E-bike, E-scooter and E-board. The label shall contain the classification number, top assisted speed, motor wattage, and shall be printed in arial font in at least 9-point type.
- C. Every shared mobility program wishing to do business in the City shall obtain and retain a Shared Mobility business license prior to such program's operation in the City. Such license shall be issued annually. Failure to hold a current shared mobility program business license, or to renew an expired license within ten (10) days after its expiration, shall result in the immediate impounding of all shared mobility bicycles, E-bikes, E-scooters and E-boards until such license deficiency is remedied. The shared mobility program shall be liable for the daily expense of impounding the bicycles and devices until the license is renewed or the sale of the impounded bicycles and devices by the City.
- D. City may limit the maximum number of bicycles, E-bikes, E-scooters and E-boards that are deployed within City limits by a shared mobility program through a resolution.

(Ord. 2022-04, 02/07/2022)

Sec. 2-11. Enforcement Agency.

The Chief of Police or the Chief's designee shall be granted the authority to enforce and carry out the provisions of this Chapter.

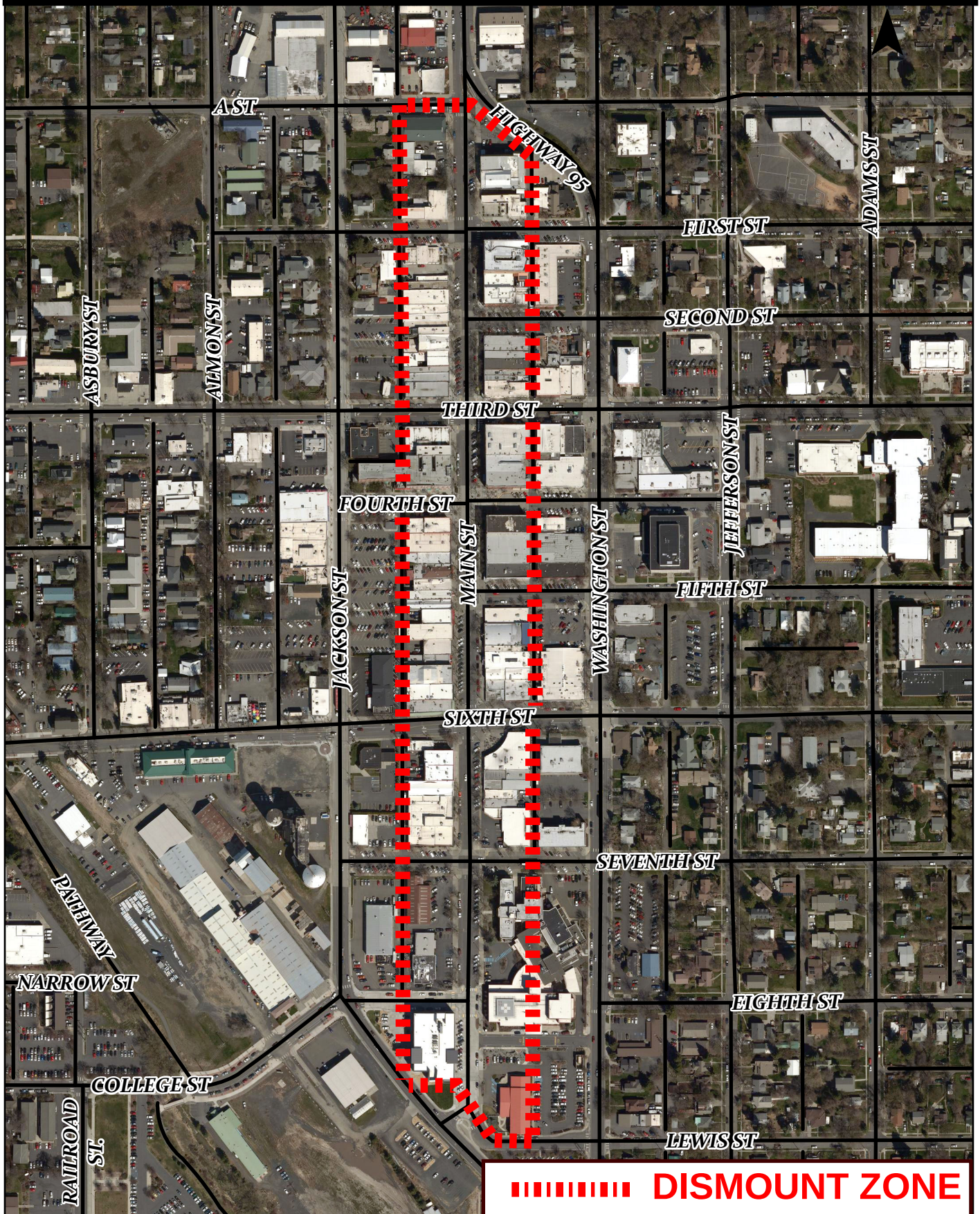
(Ord. 2022-04, 02/07/2022)

Sec. 2-12. Penalties.

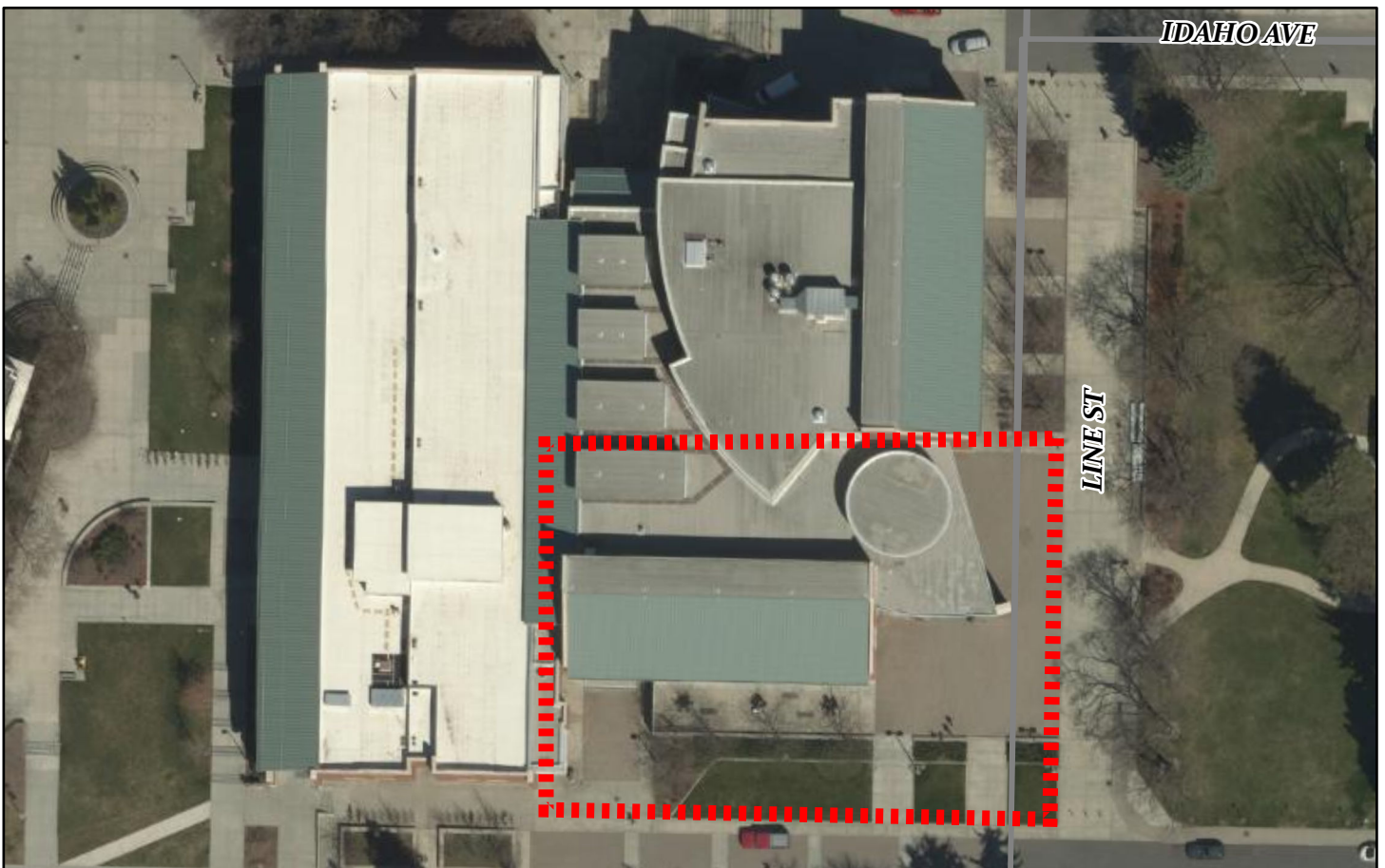
Any person violating any of the provisions of this Chapter, unless a specific penalty is proscribed, shall be guilty of an infraction and, upon conviction thereof in a court of competent jurisdiction, shall be punished pursuant to this Code and the Idaho Code.

(Ord. 2022-04, 02/07/2022)

ATTACHMENT B-DISMOUNT ZONE



ATTACHMENT C- NO PARKING ZONES





ATTACHMENT-D

SHARED MOBILITY PROGRAM APPLICATION

FEES

ANNUAL OPERATOR FEE \$2,500.00
ANNUAL DEVICE CHARGE (PER DEVICE) \$100.00 x (200) # of Devices \$20,000
SECURITY DEPOSIT FEE (PER DEVICE)* \$20.00 x (200) # of Devices \$4,000
TOTAL FEES DUE \$ 26,500

*Security Deposit Fee per device is a one-time fee, if security deposit fee balance is maintained.

BUSINESS DETAILS

Applicant shall have a minimum of fifty (50) devices that may contain any combination of bicycles, E-bikes, E-scooters or E-boards and a maximum of two hundred (200) devices. Number of devices deployed will be in accordance with Moscow City Code.

 NUMBER OF BIKES

 NUMBER OF E-BIKES

200 NUMBER OF E-SCOOTERS

 NUMBER OF E-BOARDS

200 TOTAL NUMBER OF DEVICES (FROM ABOVE)

Each device shall be labeled with current contact information of the licensee, including the make, model and unique identifying number of each device. Please refer to the License Agreement and Moscow City Code for all requirements.

BUSINESS INFORMATION

Business Name: Bird Rides, Inc. DBA Bird

Business Address: 406 Broadway Ave. #369, Santa Monica, CA 90401

 Street City State Zip

Mailing Address: 120 S. Central Ave., Ste. 350, Clayton, MO 63105

Business Phone (866-441-8538) Website Address www.bird.co

Business Contact (must be different than onsite/local contact) Taylor Kenney

Business Contact Address: 406 Broadway Ave. #369, Santa Monica, CA 90401

Business Contact Phone (213) 328-0165

Email taylor.kenney@bird.co



SHARED MOBILITY PROGRAM APPLICATION

ONSITE/LOCAL CONTACT

Name: To be supplied

Residence Address: To be supplied

Mailing Address: To be supplied

Street	City	State	Zip

Preferred Method of Contact: ☒ Phone ☐ Email ☐ Mail

Primary Phone () N/A Mobile Phone () N/A

Email Address: N/A

Note: If the onsite/local contact changes, the Moscow Police Department must be notified in writing within one business day.

ADDITIONAL DOCUMENTATION REQUIRED

The application will not be approved until all supporting documents have been submitted and approved by the Moscow Police Department.

Please attach the following with this application:

- Photo of each type of device (cannot be a rendering or stock photo)
- List of all devices, including make, model and identifying number of each device
- Copy of unique labels with unique identifying number
- Company's privacy policy
- A map of the proposed service area
- A map of the proposed placement plan and redistribution plan
- Proposed plan for relocation requests
- Certificate of insurance
- Maintenance, cleaning and repair schedule
- Proof of payment card industry data security standards compliance

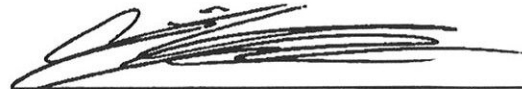
The applicant hereby certifies that they have received, reviewed and agree to comply with all terms contained in the License Agreement, attached to this application as well as the requirements outlined in Moscow City Code.

Austin Marshburn

Print Name

Head of City and University Partnerships

Title


Signature

4/11/2022
Date

Notary Certificate Attached

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)

County of Sonoma)

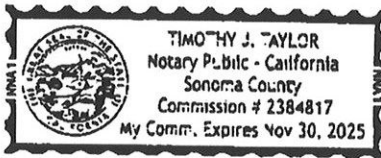
On April 1st, 2022 before me, Timothy T Taylor Notary Public
Date Here Insert Name and Title of the Officer

personally appeared Austin Marchburn
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal:



Signature [Signature]
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: Shared Mobility Program Application

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____

☐ Corporate Officer — Title(s): _____

☐ Partner — ☐ Limited ☐ General

☐ Individual ☐ Attorney in Fact

☐ Trustee ☐ Guardian or Conservator

☐ Other: _____

Signer Is Representing: _____

Signer's Name: _____

☐ Corporate Officer — Title(s): _____

☐ Partner — ☐ Limited ☐ General

☐ Individual ☐ Attorney in Fact

☐ Trustee ☐ Guardian or Conservator

☐ Other: _____

Signer Is Representing: _____



SHARED MOBILITY PROGRAM APPLICATION

ACKNOWLEDGMENT

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, _____, before me, a Notary Public in and for said State, appeared _____, known to me to be the person named above and acknowledged that he/she executed the foregoing document as the duly authorized representative of _____.

Notary Public for the State of _____
Residing at _____
My commission expires _____

Dear Moscow Team

Below is a written proposal for Bird Rides Inc. (Bird) to provide shared mobility options to the City of Moscow. Bird is excited for the opportunity to partner with the City of Moscow to develop a program that provides residents and visitors with reliable, convenient, affordable, and safe alternative transportation options to navigate the community.

Bird is committed to ensuring a smooth launch of our fleet and providing continued support for a long and successful future operating in Moscow. As the industry leader, Bird has the experience of being active in over 400 global markets to bring into a partnership with the city.

Through community feedback and ongoing relationships with key city officials, Bird is able to create and customize our services to meet the unique needs of Moscow. With multiple pre-launch meetings with the city team to configure specifics and ensure we address any areas of concern, as well as ongoing check-ins from our dedicated team members at Bird, we are equipped with all of the necessary tools to enable a sustainable shared mobility program.

If you have any questions or require any additional information, please contact me at the email below.

Best,

Michael Covato

Michael Covato
Revenue and Partnerships
michael.covato@bird.co

BIRD

Device Type

Electric Scooter - Bird Zero Bird's shared mobility devices all have a headlight, tail light and reflector. All Bird scooters are governed at a maximum speed of 15 mph. Each scooter in Brentwood, Maplewood, Richmond Heights and Clayton will have identifying and contact information permanently affixed to each shared mobility device. Please see scooter details below:



Electric Scooter - Bird Three



Bird scooters are equipped with state-of-the-art battery and advanced diagnostic technology that increases safety, durability and lifespan, reduces damage and carbon emissions, and deters theft and misuse.

All Bird scooter are equipped with an on-board GPS device capable of providing real-time location and a device that allows the system operator to render by remote means a scooter inoperable if it has been reported to the system operator as being damaged, defective or stolen:

Device List

A full list of devices will be supplied by the City of Moscow's dedicated Account Manager, Taylor Kenney, prior to launch. In order to ensure the most accuracy through of logistics and allocation processes, this list of unique identifiers can only be supplied following approval of the license application.

Privacy Policy

Bird's complete privacy policy can be located at this link: <https://www.bird.co/privacy/>

Bird takes user privacy and data security very seriously. As stated explicitly in our Terms & Conditions, we never sell our rider data, and we implement a holistic data responsibility framework into our operational model that is based on the following principles:

Less Is More: Only collect what's necessary.

Privacy First: If it's collected, it's protected. Safe and Secure: Use the highest encryption standards to protect data.

City Centric: Focus on using data to improve infrastructure.

Purpose Driven: Promote compliance, inform policy, and improve planning.

Collaborate and Share: Build best practices together with cities. We openly collect and share real-time ride data with city partners in GBFS and MDS formats so as to promote compliance, improve operations, and complement transit planning.

Compliance: Our Privacy Policy complies with the California Online Privacy Protection Act (CalOPPA) and any data protection laws applicable to minors, and further, expressly limits the collection, storage, or usage of any personally identifiable information to the extent absolutely required to successfully accomplish the provision of this program.

In addition to the principles above, our global data handling practices are guided by the California Consumer Privacy Act (CCPA) and the European General Data Protection Regulation (GDPR).

Bird requires access to location services and camera for the abilities to track a user's location in combination with the accessed device, as well as to allow for scanning of the device's QR code to enable unlocking. No additional device requests are made.

Methods of Deploying, Redistributing and Charging Shared Devices

Storage of units not actively in use will occur on private property, outside of the public eye. Our locally based Fleet Manager will be prequalified based on criteria, such as ownership/control over existing commercial space appropriate for the logistics services being provided. Bird scooters possess over 200 sensors that allow for extremely nuanced digital control and active notification of various conditions.

Our local Fleet Manager(s) will be engaging in the deployment, rebalancing, and recharging of all units daily. When a device requires collection, an automatic trigger is sent to a mobile and web-based backend management system indicating to the Fleet Manager to collect and store the unit.

The sensors within Bird scooters indicate when a scooter is not likely to be used based on an ongoing lack of activity and historic user heatmapping, as well as when it is coming low on battery. If there is a lack of use or other conditions present, the sensors trigger additional notifications to the Fleet Manager, providing updated rebalancing locations or indicating that a scooter must be collected for recharging.

In order to determine the best means of deploying shared mobility devices within a new partner city, Bird uses the data from 100 million+ trips and the over 400 active cities in which we operate to create the ideal launch plan. With Bird's extreme focus on community engagement, we also leverage existing Fleet Managers (local logistics providers assisting with operations) and city officials to create a collaborative map that includes initial operating zones. Prior to any launch, city officials will have the opportunity to provide guidance and feedback on the proposed operating zone in order to work toward the best possible initial outcome.

Bird's sophisticated machine-learning algorithm utilizes city trip data to further refine deployment zones and dynamically suggest the best locations to stage shared mobility vehicles in order to deliver the maximum possible benefit to the community.

With ongoing communication between city officials and Moscow's Bird Relationship Manager, we can create an environment that allows for consistent input from the community and quick action from Bird to adjust boundaries and staging areas as appropriate.

Maintenance

Vehicle maintenance is closely ingrained in Bird's daily operational practices. We generally learn that a Bird may require maintenance through one of the following channels, which collectively enable multiple touch points per vehicle per day.

Channel	Detail	Frequency
Rider Feedback	A Bird rider flags a particular issue in their in-app post-ride feedback.	Every time a user interacts with a Bird.
In-Field Diagnosis	During field operations, a Fleet Manager notices a maintenance or cleaning issue.	Birds are generally seen by a Fleet Manager every day they are active.
A Service Center Inspection	Upon arrival at a service center, a Bird is found to have a maintenance issue during our regular multi-point inspection.	Birds generally reach a service center every two to four days.
Community Mode and Other Feedback Channels	Community Mode enables riders and non-riders to report issues directly from the Bird app. Bird also collects feedback via email, phone, social media and our website.	Ongoing

In-field inspection and Service Center Maintenance

Inspection and maintenance is performed in the field and at our Fleet Manager's service centers. Every action is logged in the Bird app, giving us a complete snapshot of the history of every vehicle in our fleet.

In-Field Inspection

Our local partner's operations team conducts an in-field diagnosis of the vehicle. If a Bird is in need of repair, they perform basic maintenance on the spot or flag the Bird for further attention and pickup for repair.

In-Field Diagnosis	Actions
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Local team scans Bird and puts it in “test ride” mode, allowing them to quickly validate key vehicle functions, including: • “Brain” communication • QR code / Bird ID legibility • Throttle function • Brake function • Head and tail light function • Neck tightness and turning range • Motor function • Overall vehicle hygiene and markings	If in good working order: Local Fleet Manager sanitizes the vehicle and parks the Bird out of the public right-of-way. If the Bird has a minor issue: Local Fleet Manager can quickly tighten a part if required. They will also sanitize the vehicle thoroughly and park it out of the public right-of-way. If the Bird requires more substantial repairs: Local Fleet Manager marks the vehicle as damaged, which removes it from the rider app and automatically flags the vehicle for pickup by the operations team.
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Service Center Maintenance

Every Bird that arrives at a Fleet Manager’s service center undergoes a full inspection, even if it is just visiting for charging. On average, vehicles visit a service center at least once a week, and all vehicles undergo this same rigorous process before being redeployed into the field.

Service Center Inspection	Service Center Maintenance Actions
Mechanic scans Bird and puts it through a multi-point checklist, covering all parts of the vehicle, organized by: • Handlebar • Chassis - External components • Chassis - Internal components • Functional Inspection • Other Individual Parts	If in good working order: The Bird proceeds through the service center charging flow. Our local team then cleans and sanitizes the vehicle before it is redeployed. If the Bird has a repair need: The mechanic marks the specific issue and places the Bird in the repair queue. Birds are repaired by trained mechanics, with each service logged in detail in the mechanic’s app. After service, the mechanic tests the Bird again using a multi-point checklist. Staff give all vehicles a “Bird Bath” at the exit station to ensure they are clean and sanitized before returning to the field.

Enhanced COVID-19 Sanitization Protocol

During this time of increased public concern, Bird continues to maintain the highest-standards of vehicle cleanliness. Traditionally, we have used two classes of device cleaning: daily field cleanings and more in-depth, weekly ‘Bird Baths’ at our local service centers. In response to

COVID-19, Bird has updated both of these processes to incorporate the thorough sanitization of our vehicles.

Our new multi-point sanitization protocol ensures the entire e-scooter is disinfected using only Center for Disease Control and Prevention (CDC) approved disinfectants. The new process is based on CDC guidelines and features a number of best practices designed to protect the safety of both our team and our riders, including disinfecting all workstation surfaces before and after sanitizing each vehicle, and the use of safety glasses, masks and nitrile gloves.

Moscow, ID

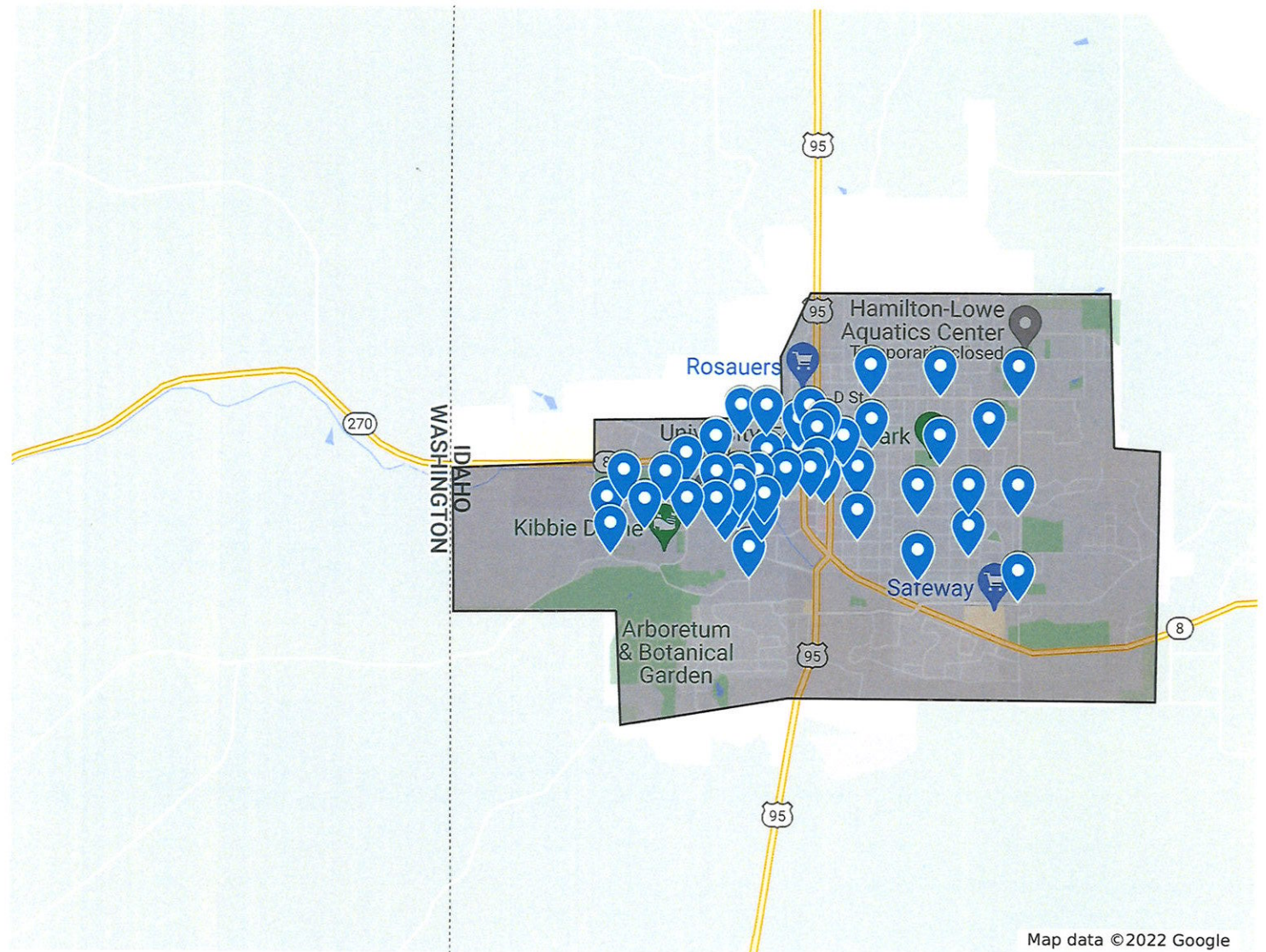
Operating zone



Operating zone

Suggested nest locations

-  Point 1
-  Point 2
-  Point 3
-  Point 4
-  Point 5
-  Point 6
-  Point 7
-  Point 8
-  Point 9
-  Point 10
-  Point 11
-  Point 12
-  Point 13
-  Point 14
-  Point 15
-  Point 16
-  Point 17
-  Point 18
-  Point 19
-  Point 20
-  Point 21
-  Point 22





CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
04/12/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER MARSH RISK & INSURANCE SERVICES FOUR EMBARCADERO CENTER, SUITE 1100 CALIFORNIA LICENSE NO. 0437153 SAN FRANCISCO, CA 94111	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS:
CN120046401--GAWU-20-22	INSURER(S) AFFORDING COVERAGE INSURER A: Apollo Syndicate Management Ltd INSURER B: Scottsdale Indemnity Ins Co INSURER C: National Casualty Company INSURER D: INSURER E: INSURER F:
INSURED Bird Rides, Inc. 406 Broadway #369 Santa Monica, CA 90401-2314	NAIC # 15580 11991

COVERAGES

CERTIFICATE NUMBER:

SEA-003825802-01

REVISION NUMBER: 2

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR ☒ SIR: \$250,000 GEN'L AGGREGATE LIMIT APPLIES PER: ☒ POLICY ☐ PRO-JECT ☐ LOC OTHER:			BOWCN2150765	06/01/2021	06/01/2022	EACH OCCURRENCE \$ 5,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ N/A PERSONAL & ADV INJURY \$ 5,000,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COMP/OP AGG \$ 5,000,000 SIR \$ 250,000
B	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ HIRED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ NON-OWNED AUTOS ONLY			NGI0000017	09/01/2021	09/01/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB ☐ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) ☒ N If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WCC600025A	08/25/2021	09/01/2022	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Certificate holder is included as additional insured (except workers compensation) where required by written contract.

CERTIFICATE HOLDER

CANCELLATION

City of Moscow 206 E Third Street Moscow, ID 83843	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Marsh Risk & Insurance Services</i>
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AGENCY CUSTOMER ID: CN120046401

LOC #: San Francisco

**ADDITIONAL REMARKS SCHEDULE**

Page 2 of 2

AGENCY MARSH RISK & INSURANCE SERVICES		NAMED INSURED Bird Rides, Inc. 406 Broadway #369 Santa Monica, CA 90401-2314
POLICY NUMBER		
CARRIER	NAIC CODE	
EFFECTIVE DATE:		

ADDITIONAL REMARKS**THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,****FORM NUMBER:** 25 **FORM TITLE:** Certificate of Liability Insurance

The General Liability policy evidenced above is subject to a self-insured retention for various perils insured.

C. LIABILITY COVERAGE EXTENSIONS—SUPPLEMENTARY PAYMENTS

Under subsection **A. Coverage**, paragraph **2. Coverage Extensions**, subparagraph **a. Supplementary Payments**, paragraphs **(2)** and **(4)** are replaced by:

- (2)** Up to \$2,500 for cost of bail bonds (including bonds for related traffic law violations) required because of an "accident" we cover. We do not have to furnish these bonds.
- (4)** All reasonable expenses incurred by the "insured" at our request, including actual loss of earnings, up to five hundred dollars (\$500) a day because of time off from work.

D. PREJUDGMENT INTEREST COVERAGE

The following is added to subsection **A. Coverage**, paragraph **2. Coverage Extensions**, subparagraph **a. Supplementary Payments**:

We will pay for the "insured" prejudgment interest awarded against the "insured" on that part of the judgment we pay. If we make an offer to pay the applicable limit of insurance, we will not pay any prejudgment interest based on that period of time after the offer.

E. AMENDMENT OF FELLOW EMPLOYEE LIABILITY EXCLUSION

Under subsection **B. Exclusions**, paragraph **5. Fellow Employee** does not apply if the "bodily injury" results from the use of a covered "auto" you own or hire. The insurance provided under this provision is excess over any other collectible insurance.

F. ADDITIONAL INSURED BY CONTRACT, PERMIT OR AGREEMENT

The following is added to Section **A. Coverage**, paragraph **1. Who Is An Insured**:

Any person or organization whom you are required to add as an additional insured under a written contract, written agreement or written permit currently in effect or becomes effective during the term of the policy and executed prior to the "bodily injury" or "property damage" occurrence is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under paragraph **1. Who Is An Insured**, of subsection **A. Coverage**, **SECTION II—COVERED AUTOS LIABILITY COVERAGE**.

II. SECTION III—PHYSICAL DAMAGE COVERAGE is amended as follows:

A. HIRED CAR PHYSICAL DAMAGE

The following is added to subsection **A. Coverage**:

If hired "autos" are covered "autos" for Liability Coverage and if Comprehensive, Specified Causes of Loss or Collision Coverages are provided under this Coverage Form for any "auto" you own, then the Physical Damage Coverages provided are extended to "autos" you hire, subject to the following limit and applicable deductible:

The most we will pay for any one "accident" or "loss" to any hired "auto" is the lesser of:

- 1.** The actual cash value of the hired "auto." An adjustment for depreciation and physical condition will be made in determining actual cash value in the event of a total "loss";
- 2.** The cost to restore the hired "auto" to its "pre-accident physical condition"; or
- 3.** \$50,000.

If a repair or replacement part restores the hired "auto" to better than its "pre-accident physical condition," we will not pay for the amount of the "betterment."

**BLANKET ADDITIONAL INSURED WITH PRIMARY
AND NON-CONTRIBUTORY WORDING**

This endorsement modifies insurance under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SECTION II - WHO IS AN INSURED is amended to include as an Insured any person or organization described in paragraphs A. through K. below whom a Named Insured is required to add as an additional insured on this Coverage Part under a written contract or written agreement, provided such contract or agreement:

- (1) is currently in effect or becomes effective during the term of this Coverage Part; and
- (2) was executed prior to:

- (a) the "bodily injury" or "property damage"; or
- (b) the offense that caused the "personal and advertising injury",

for which such additional insured seeks coverage.

However, subject always to the terms and conditions of this policy, including the limits of insurance, the Insurer will not provide such additional insured with:

- (1) a higher limit of insurance than required by such contract or agreement; or
- (2) coverage broader than required by such contract or agreement, and in no event broader than that described by the applicable paragraph A. through K. below.

Any coverage granted by this endorsement shall apply only to the extent permissible by law.

A. Controlling Interest

Any person or organization with a controlling interest in a Named Insured, but only with respect to such person or organization's liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of:

- 1. such person or organization's financial control of a Named Insured; or
- 2. premises such person or organization owns, maintains or controls while a Named Insured leases or occupies such premises;

provided that the coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

B. Co-owner of Insured Premises

A co-owner of a premises co-owned by a Named Insured and covered under this insurance but only with respect to such co-owner's liability for "bodily injury", "property damage" or "personal and advertising injury" as co-owner of such premises.

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Marsh Limited

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C. Grantor of Franchise

Any person or organization that has granted a franchise to a Named Insured, but only with respect to such person or organization's liability for "bodily injury", "property damage" or "personal and advertising injury" as grantor of a franchise to the Named Insured.

D. Lessor of Equipment

Any person or organization from whom a Named Insured leases equipment, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by the Named Insured's maintenance, operation or use of such equipment, provided that the "occurrence" giving rise to such "bodily injury", "property damage" or the offense giving rise to such "personal and advertising injury" takes place prior to the termination of such lease.

E. Lessor of Land

Any person or organization from whom a Named Insured leases land but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of the ownership, maintenance or use of such land, provided that the "occurrence" giving rise to such "bodily injury", "property damage" or the offense giving rise to such "personal and advertising injury" takes place prior to the termination of such lease. The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

F. Lessor of Premises

An owner or lessor of premises leased to the Named Insured, or such owner or lessor's real estate manager, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of the ownership, maintenance or use of such part of the premises leased to the Named Insured, and provided that the "occurrence" giving rise to such "bodily injury" or "property damage", or the offense giving rise to such "personal and advertising injury", takes place prior to the termination of such lease. The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

G. Mortgagee, Assignee or Receiver

A mortgagee, assignee or receiver of premises but only with respect to such mortgagee, assignee or receiver's liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of the Named Insured's ownership, maintenance, or use of a premises by a Named Insured.

The coverage granted by this paragraph does not apply to structural alterations, new construction or demolition operations performed by, on behalf of, or for such additional insured.

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H. State or Governmental Agency or Subdivision or Political Subdivisions – Permits

A state or governmental agency or subdivision or political subdivision that has issued a permit or authorization but only with respect to such state or governmental agency or subdivision or political subdivision's liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of:

1. the following hazards in connection with premises a Named Insured owns, rents, or controls and to which this insurance applies:
 - a. the existence, maintenance, repair, construction, erection, or removal of advertising signs, awnings, canopies, cellar entrances, coal holes, driveways, manholes, marquees, hoist away openings, sidewalk vaults, street banners, or decorations and similar exposures; or
 - b. the construction, erection, or removal of elevators; or
 - c. the ownership, maintenance or use of any elevators covered by this insurance; or
2. the permitted or authorized operations performed by a Named Insured or on a Named Insured's behalf.

The coverage granted by this paragraph does not apply to:

- a. "Bodily injury", "property damage" or "personal and advertising injury" arising out of operations performed for the state or governmental agency or subdivision or political subdivision; or
- b. "Bodily injury" or "property damage" included within the "products-completed operations hazard".

With respect to this provision's requirement that additional insured status must be requested under a written contract or agreement, the Insurer will treat as a written contract any governmental permit that requires the Named Insured to add the governmental entity as an additional insured.

I. Trade Show Event Lessor

1. With respect to a Named Insured's participation in a trade show event as an exhibitor, presenter or displayer, any person or organization whom the Named Insured is required to include as an additional insured, but only with respect to such person or organization's liability for "bodily injury", "property damage" or "personal and advertising injury" caused by:

- a. the Named Insured's acts or omissions; or
- b. the acts or omissions of those acting on the Named Insured's behalf,

in the performance of the Named Insured's ongoing operations at the trade show event premises during the trade show event.

2. The coverage granted by this paragraph does not apply to "bodily injury" or "property damage" included within the "products-completed operations hazard".

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Marsh Limited

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J. Vendor

Any person or organization but only with respect to such person or organization's liability for "bodily injury" or "property damage" arising out of "your products" which are distributed or sold in the regular course of such person or organization's business, provided that:

1. The coverage granted by this paragraph does not apply to:
 - a. "bodily injury" or "property damage" for which such person or organization is obligated to pay damages by reason of the assumption of liability in a contract or agreement unless such liability exists in the absence of the contract or agreement;
 - b. any express warranty unauthorized by the Named Insured;
 - c. any physical or chemical change in any product made intentionally by such person or organization;
 - d. repackaging, except when unpacked solely for the purpose of inspection, demonstration, testing, or the substitution of parts under instructions from the manufacturer, and then repackaged in the original container;
 - e. any failure to make any inspections, adjustments, tests or servicing that such person or organization has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products;
 - f. demonstration, installation, servicing or repair operations, except such operations performed at such person or organization's premises in connection with the sale of a product;
 - g. products which, after distribution or sale by the Named Insured, have been labelled or relabelled or used as a container, part or ingredient of any other thing or substance by or for such person or organization; or
 - h. "bodily injury" or "property damage" arising out of the sole negligence of such person or organization for its own acts or omissions or those of its employees or anyone else acting on its behalf. However, this exclusion does not apply to:
 - (1) the exceptions contained in Subparagraphs d. or f. above; or
 - (2) such inspections, adjustments, tests or servicing as such person or organization has agreed with the Named Insured to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products.
2. This Paragraph J. does not apply to any insured person or organization, from whom the Named Insured has acquired such products, nor to any ingredient, part or container, entering into, accompanying or containing such products.
3. This Paragraph J. also does not apply:
 - a. to any vendor specifically scheduled as an additional insured by endorsement to this Coverage Part;
 - b. to any of "your products" for which coverage is excluded by endorsement to this Coverage Part; nor
 - c. if "bodily injury" or "property damage" included within the "products-completed operations hazard" is excluded by endorsement to this Coverage Part.

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Marsh Limited

6409



K. Other Person Or Organization / Your Work

Any person or organization who is not an additional insured under Paragraphs A. through J. above. Such additional insured is an Insured solely for "bodily injury", "property damage" or "personal and advertising injury" for which such additional insured is liable because of the Named Insured's acts or omissions.

The coverage granted by this paragraph does not apply to any person or organization:

1. who is specifically scheduled as an additional insured on another endorsement to this Coverage Part; nor

2. for "bodily injury" or "property damage" included within the "products-completed operations hazard" except to the extent all of the following apply:

- a. this Coverage Part provides such coverage;
- b. the written contract or agreement described in the opening paragraph of this Additional Insureds Endorsement requires the Named Insured to provide the additional insured such coverage; and
- c. the "bodily injury" or "property damage" results from "your work" that is the subject of the written contract or agreement, and such work has not been excluded by endorsement to this Coverage Part.

ADDITIONAL INSURED — PRIMARY AND NON-CONTRIBUTORY TO ADDITIONAL INSURED'S INSURANCE

- A. The following paragraph is added to SECTION IV, COMMERCIAL GENERAL LIABILITY CONDITIONS, item 4 Other Insurance:

If the Named Insured has agreed in writing in a contract or agreement that this insurance is primary and non-contributory relative to an additional insured's own insurance, then this insurance is primary, and the Insurer will not seek contribution from that other insurance. For the purpose of this provision, the additional insured's own insurance means insurance on which the additional insured is a Named Insured.

- B. With respect to persons or organizations that qualify as additional insureds pursuant to paragraph 1.K of this endorsement, the following sentence is added to the paragraph above:

Otherwise, and notwithstanding anything to the contrary elsewhere in this Condition, the insurance provided to such person or organization is excess of any other insurance available to such person or organization.

All other terms and conditions of this policy remain unchanged.

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Payment Card Industry (PCI) Data Security Standard

Attestation of Compliance for Onsite Assessments – Merchants

Version 3.2.1

June 2018



Section 1: Assessment Information

Instructions for Submission

This Attestation of Compliance must be completed as a declaration of the results of the merchant's assessment with the *Payment Card Industry Data Security Standard Requirements and Security Assessment Procedures (PCI DSS)*. Complete all sections: The merchant is responsible for ensuring that each section is completed by the relevant parties, as applicable. Contact your acquirer (merchant bank) or the payment brands for reporting and submission procedures.

Part 1. Merchant and Qualified Security Assessor Information

Part 1a. Merchant Organization Information

Company Name:	Bird Rides, Inc.	DBA (doing business as):	Bird
Contact Name:	Craig Smith	Title:	Director of Security
Telephone:	+1 (513) 275-1989	E-mail:	craig.smith@bird.co
Business Address:	#369-406 Broadway	City:	Santa Monica
State/Province:	CA	Country:	USA
		Zip:	90401
URL:	https://www.bird.co/		

Part 1b. Qualified Security Assessor Company Information (if applicable)

Company Name:	Securisea, Inc.		
Lead QSA Contact Name:	Abhimanyu Dev	Title:	Senior Security Consultant
Telephone:	+1 (877) 563-4230	E-mail:	qsa@securisea.com
Business Address:	Suite 1100 – 201 Spear St	City:	San Francisco
State/Province:	CA	Country:	USA
		Zip:	94105
URL:	https://securisea.com/		

Part 2. Executive Summary

Part 2a. Type of Merchant Business (check all that apply)

☐ Retailer	☐ Telecommunication	☐ Grocery and Supermarkets
☐ Petroleum	☒ E-Commerce	☐ Mail order/telephone order (MOTO)
☐ Others (please specify):		

What types of payment channels does your business serve?

- ☐ Mail order/telephone order (MOTO)
☒ E-Commerce
☐ Card-present (face-to-face)

Which payment channels are covered by this assessment?

- ☐ Mail order/telephone order (MOTO)
☒ E-Commerce
☐ Card-present (face-to-face)

Note: If your organization has a payment channel or process that is not covered by this assessment, consult your acquirer or payment brand about validation for the other channels.



Part 2b. Description of Payment Card Business

How and in what capacity does your business store, process and/or transmit cardholder data?

Bird does not directly store, process, or transmit cardholder data.

Bird outsources all handling of cardholder data to Stripe and Adyen, both of which are approved PCI Level 1 validated service providers. Payment transactions are sent directly from users to Stripe or Adyen, and no cardholder data flows through any Bird systems.

Part 2c. Locations

List types of facilities (for example, retail outlets, corporate offices, data centers, call centers, etc.) and a summary of locations included in the PCI DSS review.

Type of facility	Number of facilities of this type	Location(s) of facility (city, country)
Example: Retail outlets	3	Boston, MA, USA
Corporate Office	1	Santa Monica, CA, USA

Part 2d. Payment Application

Does the organization use one or more Payment Applications? ☐ Yes ☒ No

Provide the following information regarding the Payment Applications your organization uses:

Payment Application Name	Version Number	Application Vendor	Is application PA-DSS Listed?	PA-DSS Listing Expiry date (if applicable)
			☐ Yes ☐ No	
			☐ Yes ☐ No	
			☐ Yes ☐ No	
			☐ Yes ☐ No	
			☐ Yes ☐ No	

Part 2e. Description of Environment

Provide a **high-level** description of the environment covered by this assessment.

For example:

The CDE includes Bird's people, processes and procedures associated with using a fully outsourced tokenized payment solution, provided by PCI Level 1 validated service providers.



- *Connections into and out of the cardholder data environment (CDE).*
- *Critical system components within the CDE, such as POS devices, databases, web servers, etc., and any other necessary payment components, as applicable.*

Does your business use network segmentation to affect the scope of your PCI DSS environment?
(Refer to "Network Segmentation" section of PCI DSS for guidance on network segmentation)

☒ Yes ☐ No

Part 2f. Third-Party Service Providers

Does your company use a Qualified Integrator & Reseller (QIR)?

☐ Yes ☒ No

If Yes:

Name of QIR Company:

QIR Individual Name:

Description of services provided by QIR:

Does your company share cardholder data with any third-party service providers (for example, Qualified Integrator & Resellers (QIR), gateways, payment processors, payment service providers (PSP), web-hosting companies, airline booking agents, loyalty program agents, etc.)?

☒ Yes ☐ No

If Yes:

Name of service provider:

Description of services provided:

Stripe, Inc.

Payment processing

Adyen

Payment processing

Note: Requirement 12.8 applies to all entities in this list.



Section 2: Report on Compliance

This Attestation of Compliance reflects the results of an onsite assessment, which is documented in an accompanying Report on Compliance (ROC).

The assessment documented in this attestation and in the ROC was completed on:	September 17, 2021	
Have compensating controls been used to meet any requirement in the ROC?	☐ Yes	☒ No
Were any requirements in the ROC identified as being not applicable (N/A)?	☒ Yes	☐ No
Were any requirements not tested?	☐ Yes	☒ No
Were any requirements in the ROC unable to be met due to a legal constraint?	☐ Yes	☒ No



Section 3: Validation and Attestation Details

Part 3. PCI DSS Validation

This AOC is based on results noted in the ROC dated September 17, 2021.

Based on the results documented in the ROC noted above, the signatories identified in Parts 3b-3d, as applicable, assert(s) the following compliance status for the entity identified in Part 2 of this document (**check one**):

☒ **Compliant:** All sections of the PCI DSS ROC are complete, all questions answered affirmatively, resulting in an overall **COMPLIANT** rating; thereby Bird Rides, Inc. (dba "Bird") has demonstrated full compliance with the PCI DSS.

☐ **Non-Compliant:** Not all sections of the PCI DSS ROC are complete, or not all questions are answered affirmatively, resulting in an overall **NON-COMPLIANT** rating, thereby (Merchant Company Name) has not demonstrated full compliance with the PCI DSS.

Target Date for Compliance:

An entity submitting this form with a status of Non-Compliant may be required to complete the Action Plan in Part 4 of this document. *Check with your acquirer or the payment brand(s) before completing Part 4.*

☐ **Compliant but with Legal exception:** One or more requirements are marked "Not in Place" due to a legal restriction that prevents the requirement from being met. This option requires additional review from acquirer or payment brand.

If checked, complete the following:

Affected Requirement	Details of how legal constraint prevents requirement being met

Part 3a. Acknowledgement of Status

Signatory(s) confirms:

(Check all that apply)

- ☒ The ROC was completed according to the *PCI DSS Requirements and Security Assessment Procedures*, Version 3.2.1, and was completed according to the instructions therein.
- ☒ All information within the above-referenced ROC and in this attestation fairly represents the results of my assessment in all material respects.
- ☐ I have confirmed with my payment application vendor that my payment system does not store sensitive authentication data after authorization.
- ☒ I have read the PCI DSS and I recognize that I must maintain PCI DSS compliance, as applicable to my environment, at all times.
- ☒ If my environment changes, I recognize I must reassess my environment and implement any additional PCI DSS requirements that apply.


Part 3a. Acknowledgement of Status (continued)

- ☒ No evidence of full track data¹, CAV2, CVC2, CID, or CVV2 data², or PIN data³ storage after transaction authorization was found on ANY system reviewed during this assessment.
- ☐ ASV scans are being completed by the PCI SSC Approved Scanning Vendor N/A (not required)

Part 3b. Merchant Attestation

DocuSigned by:

7BDF475D38E141C...

Signature of Merchant Executive Officer ↑

Date: 9/17/2021

Merchant Executive Officer Name: Craig Smith

Title:

Part 3c. Qualified Security Assessor (QSA) Acknowledgement (if applicable)

If a QSA was involved or assisted with this assessment, describe the role performed:

Full PCI-DSS Assessment and preparation of Report on Compliance

DocuSigned by:

CF838494882345C...

Signature of Duly Authorized Officer of QSA Company ↑

Date: September 17, 2021

Duly Authorized Officer Name: Joshua Daymont

QSA Company: Securisea, Inc.

Part 3d. Internal Security Assessor (ISA) Involvement (if applicable)

If an ISA(s) was involved or assisted with this assessment, identify the ISA personnel and describe the role performed:

¹ Data encoded in the magnetic stripe or equivalent data on a chip used for authorization during a card-present transaction. Entities may not retain full track data after transaction authorization. The only elements of track data that may be retained are primary account number (PAN), expiration date, and cardholder name.

² The three- or four-digit value printed by the signature panel or on the face of a payment card used to verify card-not-present transactions.

³ Personal identification number entered by cardholder during a card-present transaction, and/or encrypted PIN block present within the transaction message.



Part 4. Action Plan for Non-Compliant Requirements

Select the appropriate response for "Compliant to PCI DSS Requirements" for each requirement. If you answer "No" to any of the requirements, you may be required to provide the date your Company expects to be compliant with the requirement and a brief description of the actions being taken to meet the requirement.

Check with your acquirer or the payment brand(s) before completing Part 4.

PCI DSS Requirement	Description of Requirement	Compliant to PCI DSS Requirements (Select One)		Remediation Date and Actions (If "NO" selected for any Requirement)
		YES	NO	
1	Install and maintain a firewall configuration to protect cardholder data	☒	☐	
2	Do not use vendor-supplied defaults for system passwords and other security parameters	☒	☐	
3	Protect stored cardholder data	☒	☐	
4	Encrypt transmission of cardholder data across open, public networks	☒	☐	
5	Protect all systems against malware and regularly update anti-virus software or programs	☒	☐	
6	Develop and maintain secure systems and applications	☒	☐	
7	Restrict access to cardholder data by business need to know	☒	☐	
8	Identify and authenticate access to system components	☒	☐	
9	Restrict physical access to cardholder data	☒	☐	
10	Track and monitor all access to network resources and cardholder data	☒	☐	
11	Regularly test security systems and processes	☒	☐	
12	Maintain a policy that addresses information security for all personnel	☒	☐	
Appendix A2	Additional PCI DSS Requirements for Entities using SSL/early TLS for Card-Present POS POI Terminal Connections	☒	☐	



COMMITTEE STAFF REPORT

DATE: Monday, May 9, 2022



RESPONSIBLE STAFF

Tim Davis, Sanitation Operations Manager, Tyler Palmer, Deputy Director - Operations

ADDITIONAL PRESENTER(S)

OTHER RESOURCES

AGENDA ITEM TITLE

Sanitation Rate Study Executive Summary Report (ACTION ITEM) - Tim Davis

DESCRIPTION

The Sanitation Department procured the consulting services of FCS Group to conduct a rate study update July 12, 2021. Rate studies are conducted by utilities periodically to assure that the costs of services are in alignment with the revenue needs of the utility, and that those costs are allocated in as equitable of manner as possible among the utility customer classes. A critical component to this rate study process was the assembling of a Citizen Rate Committee (CRC). The CRC provided a diverse perspective that represents the Moscow Community in evaluating and advising on the City's Sanitation rate structure. The rate study used the methodology and policies established in the 2012 and 2016 rate studies to inform this update. Much like previous Sanitation rate studies, the collection system and solid waste processing facility (SWPF) were evaluated independent of each other. Much of the Sanitation Department costs are driven by contractual obligations for solid waste and recycling collection with Inland North Waste, SWPF operations with Inland North Waste and long-haul transport and disposal of municipal solid waste with Finley Buttes Landfill, a subsidiary of Waste Connections. The City of Moscow also has individual disposal contracts with Latah County and the cities of Bovill, Deary, Genesee, Juliaetta, Kendrick, Potlatch and Troy, which expire September 30, 2023. This rate study update establishes a disposal cost schedule for future years and will assist with negotiations and renewal of these disposal contracts.

STAFF RECOMMENDATION

Recommend approval of the Sanitation Rate Study Update as presented.

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend approval of the Sanitation Rate Study Update as presented, or provide staff further direction.

FISCAL IMPACT

PERSONNEL IMPACT

ATTACHMENTS

1. Sanitation Utility Rate Study CRC Executive Summary final
2. FCS Sanitation Rate Study Report Final



2021 Sanitation Utility Rate Study Citizen Rate Committee Report

In support of the 2021 Sanitation Rate Study; a report on the process and outcomes of the Citizen Rate Committee review of the proposed rate and structure adjustments.

***Developed by: Tyler Palmer, Deputy City Supervisor-Public Works and Services
May 1, 2022***

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Executive Summary

In July of 2021, the City of Moscow contracted with FCS Group to assist in a Sanitation Utility rate study update. Rate studies are conducted periodically to assure that the costs of services are in alignment with the revenue to the utilities, and that said costs are allocated in as equitable a manner as possible among the users of the system. A critical component to the rate study process is a Citizen Rate Committee review.

The City of Moscow (City) formally convened the Citizen Rate Committee (CRC or the Committee) on December 2, 2021. The mission of the CRC is to assemble diverse perspectives that represent Moscow community to evaluate and advise on the City's sanitation rate structure. The CRC has three overarching purposes:

1. To represent and communicate the views of the community;
2. To provide input on rate structure options and associated customer impacts; and
3. To formulate a recommendation for Moscow City Council.

The CRC represents the constituency of the City's customers and stakeholders including residents, the business community, environmental interests, the University of Idaho, and Moscow City Council. All Committee members are either ratepayers in Moscow, or represent an entity that is a ratepayer in Moscow. The meetings minutes, along with provided materials will be accessible to the public on the City's website. Members of the CRC include:

Amanda Bashaw Latah County Solid Waste Coordinator Moscow Resident	Rusty Vineyard University of Idaho Moscow Resident
Aleta Maki Property Management Moscow Resident	Mike O'Brien Hospitality President, Moscow Chamber of Commerce
Erich Hanisch Grocery Moscow Resident	Dan Schoenberg Property Management Latah County Resident
Jeannie Culver Medical/Hospital Nez Perce County Resident	Sandra Kelly City Council Member Moscow Resident

The Committee was supported by City staff from Administration, Sanitation, PW and Services, and Finance along with representatives from FCS Group.

CRC Activities

The first meeting of the CRC was held in a large room where social distancing could be accommodated. The room was equipped to accommodate online participants along with those able to participate in-person.

City staff provided background and historical information regarding the Sanitation Fund and operations and FCS Group provided a presentation which analyzed revenue requirements, cost of service analysis and rate structure options were later discussed in greater detail. Committee members then submitted questions in-person and via email. A question and answer sheet (included) was generated and distributed to members in advance of the second meeting.

The second meeting of the CRC was held online where all questions and answers were discussed. Additional information was requested and provided to the CRC .

The third meeting of the CRC was held online with a brief overview of the process to this point and review of the proposed alterations between rate classes. A consensus vote of support was also conducted with 5 members voting in support and 1-member voting in conditional support.

The following table lists the activities of the CRC:

CRC Activities		
Meeting	Date	Agenda
1	December 2, 2021	1 st CRC meeting University Best Western Washington room. Introductions, Staff presented background and FCS Group presented in depth rate review analysis. Discussion and question development.
2	February 7, 2022	Distributed CRC questions. Staff generation of comprehensive question and answer sheet.
3	February 15, 2022	2 nd CRC meeting (video conference). Reviewing comprehensive question and answer sheet.
4	April 5, 2022	3 rd CRC meeting (video conference). Staff overview of the process to this point and rate impacts. CRC consensus vote.

CRC Recommendation

The CRC was unanimously in support of the structure and rates as proposed after a review of the utilities' capital, operations, rate structure, and projected needs. It was noted in the process of the vote that there is a need for the formation of a work group to generate recommendations for updates to recycling for multi-family customers. With the completion of this rate study, staff will form said work group.

The recommendations generated by the Committee about how to best implement the structural

CRC First Meeting

<https://ci-moscow-id-us.zoom.us/j/86147310248>

Question and Answer Form

CITIZEN RATE COMMITTEE QUESTIONS

1. **Question:** *What would the average collection increase be if it were to begin in FY2023 rather than FY2026?*
 - a. **Answer:**
The increase would be 1% if it were to begin in FY2023 as opposed to 2.25% if it were to begin in FY2026
2. **Question:** *Should the committee consider a lower collection rate increase by beginning collection rate increases in FY2023 rather than FY2026?*
 - a. **Answer:**
This would certainly be a point for the committee to consider. Following further discussion on this point, the committee reached a consensus that future collection rate increases would be more acceptable if started earlier and in smaller increments.
3. **Question:** *Would future collection and disposal increases affect Latah County cities?*
 - a. **Answer:** *Collection increases would not affect Latah County or the cities within the county. Each city and the county have individual collection contracts with LSI that are separate from the City of Moscow. However, disposal increases of that collected material would be affected. Latah County and the cities of Bovill, Deary, Juliaetta, Kendrick, Genesee, Potlatch and Troy have individual disposal contracts with the City of Moscow.*
4. **Question:** *What data was considered when developing the growth projections?*
 - a. **Answer:** FCS Group looked at historical tonnage counts and customer counts for the past 10 years. There has been very little fluctuation to either. If growth does happen to occur within the Sanitation Utility, it will pay for itself. Rather than over project growth, it was decided to take a conservative approach to growth projections.
5. **Question:** *Can the analysis and documentation related to volumes of solid waste, compost and recycling trends be provided to the committee?*
 - a. **Answer:** Yes. At the December 2, 2021 committee presentation, staff presented recycling graphs showing 11.7% to 13.5% of the waste stream was being recycled and 29.2% to 31.6% of the waste stream including yard waste, clean wood waste and

biosolids are being composted. Through recycling and composting, this results in a diversion rate of over 40% of the entire waste stream.

6. **Question:** *How much recycling is being diverted from the solid waste stream, on an annual basis, by commodity type?*
 - a. **Answer:** Staff has attached spread sheets illustrating the breakdown of recycling commodities from years 2016 – 2020.
7. **Question:** *What is the utilization of single stream recycling by multi-family units in Moscow?*
 - a. **Answer:** The number of multi-family units participating in single stream recycling is not tracked in the City of Moscow billing software. All multi-family units and commercial customers pay a separate recycling base fee that is tracked in the City billing database. All residential customers pay a recycling base fee that is included in their garbage rate. All recycling cart assignments are tracked in LSI's operating system database. Staff is committed to extract these cart numbers and participation levels, but it will be a manual and time-consuming effort that likely will not be completed prior to the conclusion of this rate study.
8. **Question:** *How viable is recycling at this time with the restrictions on what items can be recycled?*
 - a. **Answer:** The recycling commodity markets have rebounded considerably from the down turn resulting from China Sword, in 2017, much quicker than anyone had anticipated. Ultimately, recycling has been determined to be viable by the City Council as a policy issue.
9. **Question:** *How might we parse out perceived inequities of single stream recycling rates within the multi-family class of customers?*
 - a. **Answer:** There is not an easy remedy. FCS Group has seen these multi-family recycling rates allocated with a minimum level of service requirement, based on the number of units, that provides an adequate level of service. Contractually, the City pays LSI on a per unit basis, regardless of size (bedrooms), and whether the multi-family units receive service or not.
10. **Question:** *When are the next contract negotiations with LSI?*
 - a. **Answer:** The current Franchise Agreement expires in 2035.
11. **Question:** *What project is the \$381,000 transfer to Sanitation Capital in FY2021 allocated to?*
 - a. **Answer:** All Capital Fund transfers have been allocated for the Recycling Center upgrade, potential land acquisition and/or relocation of the MR processing building. With the 2017 China Sword issues and the resulting down turn of the recycling commodity markets, these plans have been paused. It is anticipated that a portion of the accumulated Capital Fund be transferred to the Landfill Closure/Post Closure line item. It is also anticipated that if these future capital projects do not happen, that these accumulations will be used to absorb future rate increases.
12. **Question:** *Why is the single stream recycling cost of service at residential units less than the multi-family units? And what factors contribute to this?*

- a. **Answer:** The cost-of-service results reviewed with the committee in November indicated that single-family recycling collection and processing costs were equivalent to \$6.38 per account per month in FY 2023. By comparison, the cost-of-service for multi-family recycling collection and processing was approximately \$7.38 per apartment unit per month in FY 2023. These cost estimates are generally based on individual service contract rates charged by LSI to the City for recycling collection. The estimate for multi-family recycling costs is based on an apartment recycling service charge assessed by LSI on each apartment unit. The estimate for single-family recycling costs is based on a monthly recycling roll cart charge assessed by LSI on each roll-cart as well as a fixed monthly maintenance and operation charge for recycling service. Following the committee presentation and after further review, it was identified that a portion of the monthly residential base fee that LSI charges the City includes an embedded recycling cost component. Working with City staff, FCS GROUP identified the proportional share of the residential base fee that supports recycling collection. The analysis was recalibrated to assign the appropriate cost share to residential recycling. Due to this adjustment, the revised cost-of-service for single-family recycling collection increased from \$6.38 to \$11.84 per account per month. By comparison, the revised cost-of-service for multi-family recycling from \$7.38 to \$7.18. The slight decrease to the multi-family recycling unit cost is attributed to the re-allocation of administrative overhead costs related to the recycling.

13. Question: *Can the committee see a history of the Capital Reserve Fund for the past 10 years to see how it has grown and how it has been allocated?*

- a. **Answer:** Yes. Staff will provide the Sanitation Capital Fund budget for FY2014 through FY2021. Contribution amounts to this Fund were scheduled in the FY2014 budget through present, based on the 2012 Sanitation Rate Study and the following 2016 Rate Study update.

CRC First Meeting Minutes



City of Moscow 2021 Sanitation Citizen Rate Committee

Thursday December 2, 2020

5:00pm – 7:00pm

First Meeting

University Inn Best Western Washington Room

<https://ci-moscow-id-us.zoom.us/j/86147310248>

Agenda Items:

1. Welcome and Introductions

Tyler briefed the group on the services the Sanitation Utility offers. This include garbage pick-up, curbside recycling, recycling center, and the composting programs. The sanitation budget is under the enterprise fund, which means it is to be run like a business, but without profit. Rate studies are generally preformed every 5 years, where as in this study they looked at maintenance/operations and capital expenses.

Introductions were then made.

Committee Members Present: Amanda Bashaw, Latah County Solid Waste; Aleta Maki, Welcome Home Property Mgt; Dan Schoenberg, Palouse Properties; Erich Hanisch, Safeway Mgr.; Jeannie Culver, Gritman Hospital Engineering; Rusty Vineyard, U of I Facilities; Mike O' Brien, Best Western.

Also in Attendance: Tim Davis, City of Moscow Sanitation Manager; Tyler Palmer, City of Moscow Deputy Supervisor; Angie Sanchez, FCS Group; Matt Hobson, FCS Group; Amanda Levine, FCS Group

Tim gave a brief history of EPA regulations for landfills, named Subtitle D, that were enacted starting in the 1990's. Due to these new regulations many existing landfills would either become compliant with the new regulations or would stop accepting municipal solid waste (MSW), and close off the existing landfill. At this time, it was decided from local communities that Latah Sanitation would stop collecting MSW and start shipping the waste to a mega-landfill in Oregon. Tim says the City shipped out over 811 truckloads this past year.

This year's sanitation fund is a 6.4 million budget, which includes 1.5 million for collection, 1.2 for shipping, half a million for solid waste processing facility, \$300,000 for composting costs, and \$200,000 for recycling center costs. The sanitation fund also contributes funds for capital projects such as, future non MSW landfill closure, recycling center and yard waste disposal facility improvements, and potential new location for recycling center.

Fist rate study was performed in 2012. It was updated in 2016 after adding single stream recycling. Latah Sanitation also has contracts with surrounding communities for waste disposal. Tim says our current disposal contracts will expire in 2023 and this rate study will help with future disposal rates and contracts.

1. Rate overview and review

Please refer to the full power point presentation attached.

There are capitol funds available for the new recycling center facility. This move was put on hold due to new legislation in China stating they were not going to take anymore recycling, this in turn, uprooted the whole recycling chain in the US. (Slide 15)

Tyler clarified the collection financial forecast, saying that any leftover funds at the end of the year, get moved to capital funds. This helps to offset future rate increases. Tyler does not anticipate any further capital accumulation until FY2026 when inflation in the contracts and cost of service catch up with the revenue side. (Slide 16)

Another question came up in regards to what would happen if we started the rate increase in 2023? Matt stated that instead of the 2.25% starring in FY2026, it would stay at 1% starting FY2023. (Slide 16)

2. General discussion

Member asked if the 4.6% increase would affect Latah County towns, Tim says it would on the transport and disposal, but not collection.

Matt was asked about how population growth affects these figures. He says they looked at both tons and customer counts from the past 10 years.

Tim: Addressed questions posed by Dan prior to meeting; What is the utilization of recycling by multi-family units in Moscow? How many have roll carts, mechanical containers and how many do not utilize recycling.

Tim: As explained earlier to Dan, the City does not track recycling roll carts in BS&A. We have not been able to extract this data from CORE data base used by LSI. We will continue to try to extract the data, but it will be time consuming and done manually. We have no mechanical containers being used for single stream recycling as LSI has moved to automated side loaders that are not capable of servicing dumpsters. We are experimenting with the 200-gallon totes that can be serviced by the automated trucks.

Dan's other question had to do with the viability of recycling.

Tyler: City Council determines the viability of recycling and that is what staff implemented. Markets are recovering from the China sword issue and domestic infrastructure is being increased to deal with much of the recycling tonnage that was previously shipped to China. Also showed slides indicating how much recycling is diverted from the waste stream.

Dan: Spoke about the different demographics within multi-family class and viability of recycling within that customer class. Spoke about equity within the multi-family class referring to different size apartments (one bedroom compared to five-bedroom units).

Matthew (FCS): spoke about the fact that the costs to the City are the same, contractually, per unit, between residential, multi-family and commercial.

Dan: Mentioned this inequity is the same with sewer rates. Mentioned that 820 units that he manages cannot use the recycling service because of space and contamination issues. Mentioned that the City recycling system does not work for a % of the public. Compared the costs and rates to the affordable housing arena. Rates adversely affect cost of housing for certain customer classes.

Group: Discussed the possibility of dispersing rates within the multi-family class by size and # of bedrooms rather than by the unit.

Matthew: The rate study analysis was conducted by tying rates to how the City incurs these costs contractually.

Dan: Spoke about changing the ordinance regarding theft of service as this issue is especially bad during move-in and move out periods at the beginning and ending of school year.

Dan asked if the \$9 million in capital funds were invested, and if so, do those gains come back to that capital account. Tyler says yes, they do.

Dan referenced slide 16 with rates going up in sanitation, he has concerns about what the future rates will be in water and sewer. Tyler says water will be 4-5% annually and sewer is 2.25% for the next several years. The majority of the group agreed that starting in 2023 with smaller increase would be better.

Dan proposed from slide 34 line 2, that we make amounts due an even number. It was suggested to leave it at the \$10 and change the weight.

3. Adjourn

Next Meeting (if needed): via Zoom

CRC Second Meeting

<https://ci-moscow-id-us.zoom.us/j/85786440243>

CRC Second Meeting Minutes



City of Moscow Sanitation Citizen Rate Committee

**Tuesday February 15, 2022
5:00pm - 6:30pm**

Second Meeting

<https://ci-moscow-id-us.zoom.us/j/85786440243>

Agenda Items:

1. Welcome and Introductions

Tyler Palmer, City of Moscow Deputy City Supervisor; Tim Davis, City of Moscow Sanitation Manager; Angie Sanchez, FCS Group; Matt Hobson, FCS Group; Rusty Vineyard, University of Idaho Director of Facilities; Dan Schoenberg, Palouse Properties; Erich Hannisch, Safeway Manager

2. Review of Question and Answer sheet

Q. What would the rate change be if it started in 2023 compared to 2026?

a. 2.25% increase in 2026 and 1% in 2023.

Q. Should the committee start the change in 2023 or 2026?

a. Consensus was to start the increase in 2023 to minimize the increase to the customer base.

Q. Will the future increases impact Latah County cities?

a. Collection would not. Disposal increases would impact them.

Q. What data was used to develop the growth projection?

a. Customer data from the late 1990's

Q. Can the analysis and documentation related to the volumes of recycling trends be provided to the committee?

a. Yes. Tim and Tyler have documentation.

Q. What is the utilization of single stream recycling for multi-family units in Moscow?

a. Tim says that will be on-going

Q. How viable is recycling at this time?

a. Recycling has rebound since the China National Sword.

Q. How will perceived inequities be parsed out in single stream recycling rates with multifamily customer base?

a. The City pays LSI on a per unit basis regardless the size of bedrooms

Q. When will the contract agreement with LSI expire?

a. Agreement expires 2035.

Q. What project was the \$381,000 transfer to sanitation capital in FY2021?

a. all capital fund transfers are directed at updating or moving the current recycling center.

Tim also mentioned that they are planning on taking \$1.6 million from the Capital Fund and transferring those monies to the Landfill Post Closure Fund.

Q. Why is single stream recycling cost of service less for residential than multi-family units, and what are the contributing factors for this?

a. Please see FCS presentation attached below (Slide 6)

Q. Can the committee see a history of the capital reserve fund from the past 10 years to see how it has grown and how it is allocated?

a. Yes.

Dan asked if there are any plans for capital improvement to the recycling center? Tyler says there are no concrete plans as of now.

3. FCS Presentation

These figures and charts in this presentation have been updated in response to the Q and A from November. The numbers are revised. Full presentation attached below.

There is roughly \$9 million in the reserve as of FY2021. (Slide 1).

The revised collections revenue increases are 1% per year beginning in 2023 and bumped up to 1.5% in 2026. (Slide 2).

This will be just to maintain the fund balance. (Slide 3)

Solid Waste Processing Facility (SWPF) will see a 1.5% increase in 2024, this will be above and

beyond the already approved increases. (Slide 4)

SWPF Fund balance will also be maintaining their position. (Slide 5)

Rates for small garbage cans are generally lower than the cost of service. Rates for larger garbage cans are above the cost of service. (Slide 7)

4. Additional questions and discussion

Dan says there is a class of services that are getting charged monthly that can not use the recycling service. Dan continues to state that, under the current system, it is not feasible for the owner to participate completely in this program. There was also discussion about the City providing more educational outreach.

Dan shared an excel spreadsheet (attached below) he created based on trends of annual tonnage recycling from 2016-2021. Spreadsheet states that overall recycling tonnage has gone down, but the cost of service keeps climbing. Matt stated that other utilities FCS works with sees this same trend due to several factors; change in product design, and contamination standards are much higher today then five years ago.

5. Motion of Support

6. Adjourn

Also Discussed:

Tyler will send out the presentation and recording in an email with instructions on moving forward.

Next Meeting (if needed)

CRC Third Meeting

<https://ci-moscow-id-us.zoom.us/j/86147310248>

CRC Third Meeting Minutes



City of Moscow 2022 Sanitation Citizen Rate Committee

Tuesday April 5th, 2022
4:00pm – 4:30pm

<https://ci-moscow-id-us.zoom.us/j/86147310248>

Called to order 4:00 PM

Committee Members Present: Amanda Bashaw, Latah County Solid Waste; Dan Schoenberg, Palouse Properties; Erich Hanisch, Safeway Mgr.; Rusty Vineyard, U of I Facilities; Mike O'Brien, Best Western.

Also in Attendance: Tim Davis, City of Moscow Sanitation Manager; Tyler Palmer, City of Moscow Deputy Supervisor; Matt Hobson, FCS Group; Sandra Kelly, Council member

1. Review

Tyler provided a brief overview of the process up to this point, and the general rate impacts brought out by the study.

Tyler introduced Matthew Hobson with the FCS Group who provided a review of the proposed alterations between rate classes.

2. General discussion

Questions were solicited and no one had any.

A vote of support for the rate study as presented was called. 5 voted support with Dan Schoenberg voting a conditional support with the premise that the multi-family recycling rate be worked on for equity as a class, equity in access, and also within the class to reflect smaller and larger units.

Tyler assured Dan that a work-group would be formed in the aftermath of the rate study to look at that very item and make recommendations to the City Council.

Tyler thanked the committee for their participation.

Adjourn 4:20 PM

Next Meeting (if needed):



City of Moscow

SANITATION UTILITY RATE AND COST OF SERVICE STUDY FINAL REPORT

April 2022

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FCS GROUP
Solutions-Oriented Consulting

April 29, 2022

Tyler Palmer
City of Moscow, ID
206 E Third Street
Moscow, ID 83843

Subject: Final Report for Sanitation Utility Rate and Cost of Service Study

Dear Tyler,

FCS GROUP is pleased to submit this final report of the Sanitation Utility Rate and Cost of Service Study. The report summarizes the methodology, findings, and recommendations for each of the core elements of the rate study. Section VII of the report is an addendum to the draft report that summarizes the rate recommendations of the Sanitation Citizen Rate Committee meeting on April 5, 2022.

It has been a pleasure working with you, Tim, and other City staff on this effort. Please let me know if you have any questions or need additional information on this report. I can be reached at (425) 336-4157.

Sincerely,



Angie Sanchez-Virnoche
Principal and Vice President



Matt Hobson
Project Manager



Amanda Levine
Senior Analyst

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Section I. EXECUTIVE SUMMARY

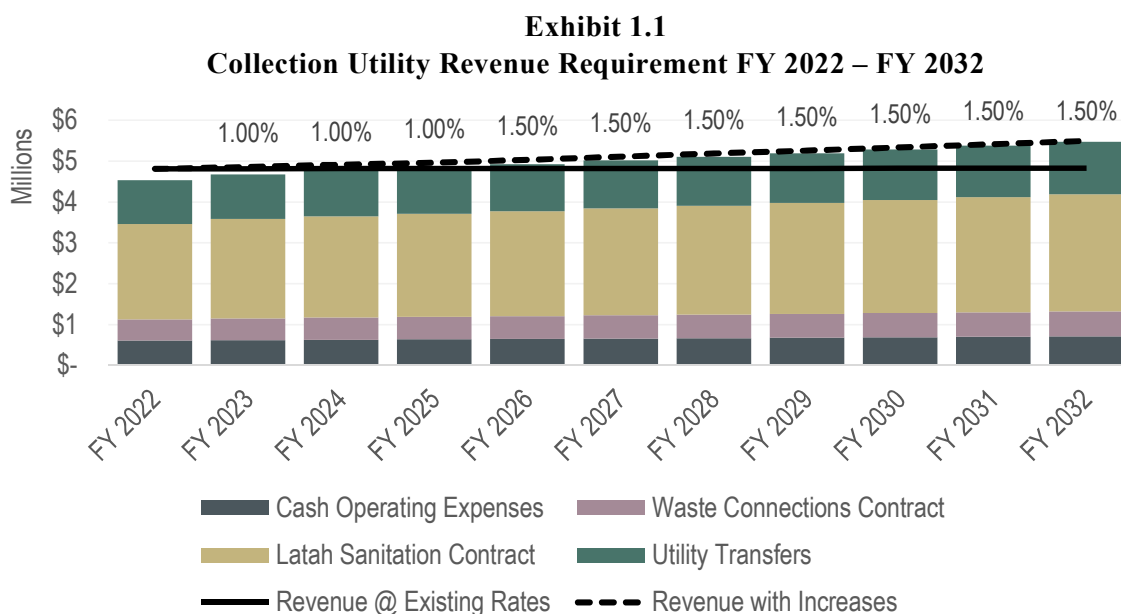
I.A. STUDY OBJECTIVES

The City of Moscow contracted with FCS GROUP in 2021 to complete a revenue requirement and cost of service study for the Sanitation utility. For this study, the Sanitation utility is split into two major functions: the collection function and the solid waste processing facility (SWPF) function. Throughout this report, each function will be referred to as its own separate utility.

I.B. REVENUE REQUIREMENT STUDY RESULTS

I.B.1. Collection Revenue Requirement

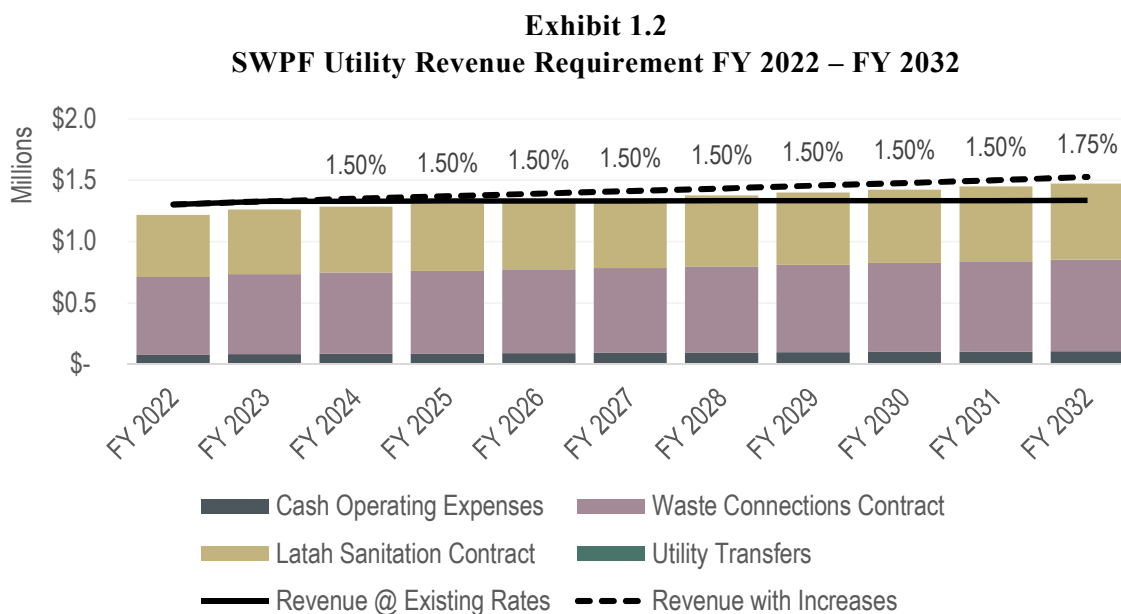
The main objectives of the collection revenue requirement included 1) maintaining the City's current fund balances, 2) meeting all operating expenses, and 3) setting aside funding for anticipated cell closure costs at the non-municipal solid waste (NMSW) landfill in FY 2023. Because of the relatively steady contract and operating expense costs, the City can meet these needs with annual rate revenue increases between 1.00 and 1.50 percent as shown in **Exhibit 1.1**.



I.B.2. Solid Waste Processing Facility Revenue Requirement

The main objectives of the SWPF revenue requirement included 1) maintaining the City's current fund balances, and 2) meeting all operating needs. There are no capital costs allocated to this function of the sanitation utility. Because of the relatively steady contract and operating expense

costs, the City can meet these needs with minimal annual rate increases between 1.00 and 1.75 percent, shown in **Exhibit 1.2**.



I.C. COST OF SERVICE STUDY RESULTS

In the City of Moscow, both the collection and SWPF utilities provide services to different groups or “classes” of customers. A cost-of-service analysis was completed to estimate the proportional share of overall utility costs attributable to each customer class. The analysis also evaluates how the actual cost to serve the different classes compare to the rate revenue generated by each class. In **Exhibit 1.3**, the difference between the cost-of-service column and the existing rate revenue column show which classes are overpaying or underpaying for their share of the utility services.

Exhibit 1.3
Test Year (2023) Cost of Service and Across-the-Board (ATB) Rate Revenue Comparison

Class of Service	Cost of Service	Existing Rate Revenue with ATB Increase	\$ Difference	% Difference
Mechanical Container Rate Class	\$ 1,939,039	\$ 2,455,913	\$ (516,874)	-21.05%
Residential Rate Class	2,151,610	1,807,962	343,648	19.01%
Commercial Rate Class	37,312	45,878	(8,566)	-18.67%
Apartment & Commercial Recycling	438,532	305,289	133,243	43.64%
SWPF-MSW	1,090,116	1,045,180	44,937	4.30%
SWPF-NMSW	201,796	236,456	(34,660)	-14.66%
SWPF-Asbestos	1,371	6,739	(5,367)	-79.65%
SWPF-Tires	11,097	15,931	(4,833)	-30.34%
Roll-Off and Compactor Services	156,737	108,187	48,550	44.88%
SWPF- Mixed Materials	5,316	5,392	(76)	-1.41%
Total Revenue Requirement	\$ 6,032,927	\$ 6,032,927	\$ 0	0.00%

I.D. RATE DESIGN PHASE-IN

Based on the cost-of-service results, and to mitigate large increases (or decreases) to individual customer classes, the recommended rate increases are phased into the City rate schedule over 5 years.

The cost-of-service rates begin in FY 2023 and end in FY 2027. From FY 2028 to FY 2032, annual revenue adjustments would be applied across-the-board (equally to each class and rate) to all customer classes as shown in **Exhibit 1.4**.

Exhibit 1.4
Cost of Service Phase-In Strategy

Class of Service	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Mechanical Container Rate Class	-3.13%	-3.53%	-4.00%	-3.44%	-3.94%	1.50%	1.50%	1.50%	1.50%	1.50%
Residential Rate Class	4.90%	4.90%	4.90%	4.90%	4.90%	1.50%	1.50%	1.50%	1.50%	1.50%
Commercial Rate Class	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	1.50%	1.50%	1.50%	1.50%	1.50%
Apartment & Commercial Recycling	8.90%	8.90%	8.90%	8.90%	8.90%	1.50%	1.50%	1.50%	1.50%	1.50%
SWPF-MSW	0.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.75%
SWPF-NMSW	0.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.75%
SWPF-Asbestos	0.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.75%
SWPF-Tires	0.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.75%
Roll-Off and Compactor Services	9.00%	9.00%	9.00%	9.00%	9.00%	1.50%	1.50%	1.50%	1.50%	1.50%
SWPF- Mixed Materials	0.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.75%

With these recommended rate adjustments, the 35-gallon residential roll cart monthly service rate would increase from \$21.10 to \$22.14 in FY 2023 – an increase of \$1.04. Monthly service rates for the residential 65- and 95-gallon roll cart service would increase by \$1.33 and \$1.63, respectively (see **Exhibit 1.5**). Monthly rates for the residential roll-cart services would increase by 4.90 percent annually from FY 2024 to FY 2027.

Exhibit 1.5
Monthly Rates for Common Residential Roll Cart Services

Class of Service	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Residential Rate Class						
35 Gallon Roll Cart	\$ 21.10	\$ 22.14	\$ 23.23	\$ 24.37	\$ 25.57	\$ 26.83
Rate Change		\$ 1.04	\$ 1.09	\$ 1.14	\$ 1.20	\$ 1.26
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%
65 Gallon Roll Cart	\$ 27.10	\$ 28.43	\$ 29.83	\$ 31.30	\$ 32.84	\$ 34.45
Rate Change		\$ 1.33	\$ 1.40	\$ 1.47	\$ 1.54	\$ 1.61
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%
95 Gallon Roll Cart	\$ 33.15	\$ 34.78	\$ 36.49	\$ 38.28	\$ 40.16	\$ 42.13
Rate Change		\$ 1.63	\$ 1.71	\$ 1.79	\$ 1.88	\$ 1.97
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%

Section II. RATE SETTING PRINCIPLES AND METHODOLOGY

II.A. MOSCOW SANITATION UTILITY INTRODUCTION

The City of Moscow owns and operates a sanitation utility that is responsible for solid waste (referred to in this report as garbage, refuse, or solid waste) collection and disposal. There are two functions within the sanitation utility that operate independently: the collection of garbage and recycling from City residential and commercial customers and the transfer, transportation, and processing/disposal of materials at the solid waste processing facility (SWPF) and recycling center. Within this financial forecast, the two separate functions of the sanitation utility are expected to be self-sufficient and are therefore treated as two separate utilities. The City provides collection services through a franchise agreement with Latah Sanitation, Inc (LSI). As part of the franchise agreement, LSI also operates the solid waste processing facility, recycling center, and biosolids composting facility. The long-haul transportation and disposal of solid waste is provided by Waste Connections, Inc.

The collection portion of the utility provides residential, commercial, and multi-family refuse and recycling collection within the City's service area. After collection, the waste is brought to the City-owned solid waste processing facility, and the recycling is delivered to the City-owned recycling center. The solid waste processing facility receives and processes municipal solid waste, non-municipal solid waste (e.g., construction and demolition debris), metal and tire recycling, compost, and household hazardous waste. Consolidated loads of municipal solid waste are then transported for disposal at Finley Buttes Landfill – located in north central Oregon.

Through its contracted waste collection program, the City offers a weekly refuse pickup service in which it collects approximately 8,700 tons of municipal solid waste (MSW). Weekly recycling collection is also provided to residential, commercial, and multi-family customers – contracted crews collected approximately 630 tons of material through its recycling program in FY 2021.

Additional waste is delivered to the City's sanitation utility by self-haulers, other jurisdictions, and the mix of roll-off and compactor customer accounts within the City. The Sanitation Division processed 11,500 tons of solid waste and 2,900 tons of recycling from these other generators in FY 2021.

II.B. RATE STUDY OVERVIEW

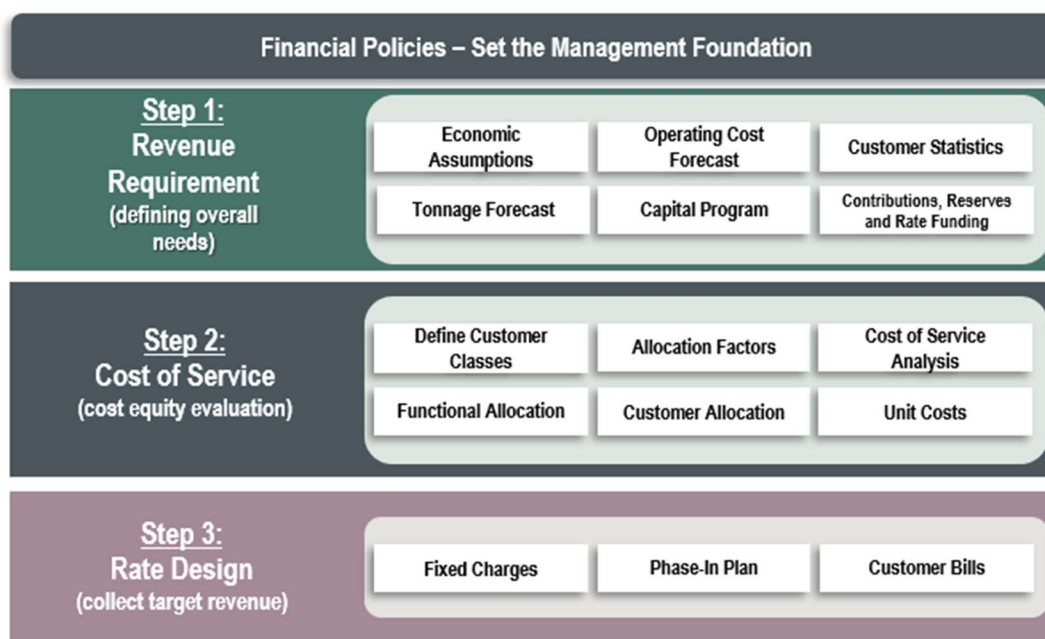
This report documents the results of the study, which is an update to the rate study completed in 2015. The methods used to establish user rates for both functions of the sanitation utility are based on principles that are generally accepted and widely followed throughout the industry, as well as several assumptions that were used in the 2015 study. These principles are designed to produce rates that proportionally recover costs from each customer class by setting the appropriate level of revenue to be collected from ratepayers and establishing a rate structure to collect those revenues.

The three key analyses completed as part of the rate study process are listed below:

- **Revenue Requirement.** This analysis identifies the total revenue requirement to fully fund the collection and solid waste processing facility utilities on a standalone basis, considering operating and maintenance expenditures, capital funding needs, and fiscal policy objectives.
- **Cost of Service.** This analysis equitably distributes costs to customer classes based on their proportional demand and use of the system.
- **Rate Design.** This analysis includes the development of rate structures that generate sufficient revenue to meet each function's revenue requirement forecast and to address the City's pricing objectives. In this case, the City's objectives include maintaining the current rate structure while phasing in the cost-of-service results.

Exhibit 2.1 illustrates the entire rate study process.

Exhibit 2.1 Overview of the Rate Study Process



II.C. FISCAL POLICIES

The basic framework for evaluating utility revenue needs is founded on a set of fiscal policies. Largely based on the City's Resolution No. 2011-11, these policies address a variety of topics including cash management, capital funding strategy, financial performance, and rate proportionality, and are intended to promote long-term financial viability for the City's sanitation utility. Topics addressed in the fiscal policy resolution include financial reserves, capital improvement plan management, debt management, and revenue sufficiency.

II.C.1. Utility Reserves

Reserves are a key component of any utility financial strategy, as they provide the flexibility to manage variations in costs and revenues that could otherwise have an adverse impact on ratepayers. The rate study included the following financial reserves:

- **Collection Utility Operating Reserve** – Operating reserves are designed to provide a liquidity cushion to ensure that adequate cash will be maintained to deal with significant cash balance fluctuations such as seasonal fluctuations in billings and receipts, unanticipated cash expenses, or lower than expected revenue collections. Industry practice is to maintain a minimum balance in the operating reserve equal to 30 to 60 days of operations and maintenance (O&M) expenses for a municipal solid waste utility. These, of course, are guidelines and actual levels should be established based upon each jurisdiction’s unique needs and tolerance for risk. The current operating reserve target for the sanitation utility is 25.00 percent of O&M expenses (equivalent to about 90 days). It is assumed that any operating funds above this target are available for capital projects. In FY 2022, the operating fund target of 90 days equates to approximately \$1.1 million.
- **SWPF Utility Operating Reserve** – The current operating reserve target for the sanitation utility is 25.00 percent of O&M expenses (equivalent to about 90 days). It is assumed that any operating funds above this target are available for capital projects. In FY 2022, the operating fund target of 90 days equates to approximately \$300,000.
- **Collection Utility Capital Reserve** – The City has historically transferred \$300,000 to \$400,000 into the capital fund each year to build a reserve for the anticipated construction of a new recycling center. The recent downward trend in recycling markets triggered the City to evaluate future recycling facility investments. As a result, no future annual transfers to the capital reserve are included in the rate study.

Reserves should fluctuate above and below targets, and such experience does not reflect on the quality of budgeting or management. In fact, if a reserve remains static for extended periods of time without use, this may indicate that it is not set appropriately, or is unnecessary. Utility reserves are intended to absorb fluctuation in revenues or expenditures without abrupt rate impacts. As reserve levels vary, a policy structure can define the mechanisms for regulating those levels and returning them to intended targets.

II.C.2. Debt Management

The City currently does not hold any debt related to the sanitation utility. However, utility rate studies generally include an evaluation of the potential for future debt. Debt issuance is a valuable tool for the City to use to finance certain costs, as it allows the City to spread a relatively large capital project cost over several years. Debt repayment structures can be quite flexible (e.g., deferred principal repayment), allowing the City to “shape” its cost structure and facilitate a stable progression of moderate rate adjustments. When developing its capital funding strategy, the City must weigh the pros and cons of issuing debt to pay for a project. Too much debt issuance may limit the City’s ability to manage its rates. However, excessive aversion to issuing debt can also create problems, shifting the burden of funding capital investment to existing customers. It is prudent to consider policies related to debt management as part of a broader utility financial policy structure. Common debt management policies may include the level of acceptable outstanding debt, debt repayment terms, bond coverage and total debt coverage targets. In the forecast discussed in this report, there is no additional debt for either the collection or SWPF utility.

II.D. REVENUE REQUIREMENT

The revenue requirement analysis forms the basis for a long-range financial plan and multi-year rate management strategy for the collection and SWPF utilities. It also enables the City to set utility rate structures which fully recover the total cost of operating each utility: capital improvement and

replacement, operations, maintenance, general administration, fiscal policy attainment, cash reserve management. Linking rate levels to a financial plan such as this helps to enable not only sound financial performance for the City's sanitation fund, but also establishes a clear and reasonable relationship between the rates imposed on utility customers and the costs incurred to provide the service.

A revenue requirement analysis establishes the total annual financial obligations of the utility by bringing together the following core elements:

- **Fiscal Policy Analysis.** Identifies formal and informal fiscal policies of the City to ensure that current policies are maintained, including reserve levels, rate funded capital/equipment and debt service coverage.
- **Capital Funding Plan.** Defines a strategy for funding each utility's capital improvement program, including an analysis of available resources from rate revenues, debt financing, and any special resources that may be readily available (e.g., grants, etc.).
- **Operating Forecast.** Identifies future annual non-capital costs associated with the operation, maintenance, and administration of the system.
- **Sufficiency Testing.** Evaluates the sufficiency of revenues in meeting all financial obligations, including any coverage requirements associated with long-term debt.
- **Strategy Development.** Designs a forward-looking strategy for adjusting rates to fully fund all financial obligations on a periodic or annual basis over the planning period.

II.E. COST OF SERVICE

The purpose of a cost-of-service analysis is to provide a rational basis for distributing the full costs of each utility service to each class of customers in proportion to the demands they place on the system. Detailed cost allocations, along with appropriate customer class designations, help to sharpen the degree of proportionality that can be achieved in the resulting rate structure design. The key analytical steps of the cost-of-service analysis are as follows:

- **Functional Cost Allocation.** Apportions the annual revenue requirement to the major functions of each solid waste utility:
 - » Collection Utility Functions of Service: residential roll-cart refuse collection, commercial roll-cart refuse collection, residential recycling collection, multi-family recycling collection, commercial recycling collection, mechanical refuse collection, compactor refuse collection, SWPF transfer, recycling processing, compost processing, MSW transport, and MSW disposal.
 - » SWPF Functions of Service: SWPF transfer, MSW transport, MSW disposal, and SWPF misc.
- **Cost Classification.** Establishes a rational relationship between functions (activities) and costs. For example, the cost of collecting refuse from residential roll-carts is generally based on the number of residential customer accounts. The cost of the MSW transport is based on the municipal solid waste tons hauled from the SWPF to the landfill. Accounts, billing units, annual collections, annual service volume and tonnage statistics are developed to allocate the cost-of-service to customer classes.
- **Customer Class Designation.** Identifies the customer classes that will be evaluated as part of the study. Existing as well as new or revised customer classes or class definitions may be considered.

It is appropriate to group customers that exhibit similar usage characteristics and service requirements. Solid waste customer classes are generally categorized based on variations of collection service, container size, material type, and processing requirements. The rate study evaluated ten (10) customer classes: Mechanical containers, residential, commercial, apartment & commercial recycling, roll-off and compactor services, SWPF MSW, NMSW, asbestos, tires, and mixed materials.

- **Cost Allocation.** Allocates the costs from the functional cost allocation to different customer classes based on their unique demands for each service as defined through the cost classification process. The results identify shifts in cost recovery by customer class from that experienced under the existing rate structure.

II.F. RATE DESIGN

Rate design is the third and final technical step in utility rate setting. The first two technical steps (identifying the total rate revenue needs and the proportional distribution of those revenue needs to the utility's customer classes of service) provide the revenue targets for rate design. The principal objectives of rate design are to implement rate structures that collect the appropriate level of revenue and that are reasonably aligned with cost of service.

No one rate structure will work well for every utility nor will one rate structure work equally well for all customer classes within a single utility. Solid waste utilities recover charges through a variety of rate structures from tipping fees, fixed fees, fees based on container size and container compaction rating, as well as service frequency. Given the range and complexity of potential rate structures, a solid waste utility should carefully plan and evaluate changes to an existing rate structure. Several considerations (e.g., data availability, implementation feasibility, intraclass proportionality) can help a utility understand the degree to which different rate structures will advance the agency's objectives.

Section III. REVENUE REQUIREMENT

III.A. OVERVIEW

A revenue requirement analysis forms the basis for a long-range financial plan and multi-year rate management strategy. The analysis is developed by completing an operating forecast that identifies future annual operating costs and a capital funding plan that defines a strategy for funding the capital improvement needs of the utility.

III.B. OPERATING FORECAST

The purpose of the operating forecast is to determine whether the existing rates and charges are sufficient to recover the costs the City incurs to operate and maintain the collection and SWPF utilities separately. The FY 2021 budget formed the baseline for this forecast. A long-term operating forecast was developed with the rate study focused on establishing rates for the FY 2023 to FY 2032 rate-setting period. FY 2022 rates were not developed as those were already adopted at the time of this study. The following list highlights some of the key assumptions used in the development of the operating forecast.

III.B.1. Operating Revenue

- **Rate Revenue** was based on actual detailed customer accounts and usage statistics from the City's billing system for FY 2021. The rate revenue for mechanical containers, residential, commercial, apartment & commercial recycling, and roll-off and compactor services are all allocated to the collection utility while revenues from SWPF MSW, NMSW, asbestos, tires, and mixed materials are allocated to the SWPF utility.
- **Non-Rate Revenue** consists of rural collection unit fees, refunds and reimbursements, and late fees. Representing less than 3.00 percent of total collection revenues, and less than 1.00 percent of all SWPF revenues, these line items are not expected to see significant changes in the future and were therefore forecast with no increase.
- **Growth** was held flat (no customer growth) based on discussions with City staff and a review of historical account growth.

III.B.2. Operating Expenses

All operating expenses are based on the 2021 budget and then allocated between the collection and SWPF functions. Most of the City's expenses are split 70.00 percent to collection, 30.00 percent to SWPF based on assumptions from the previous study. Other line items that directly support collection services like printing and binding, waste reduction education, insurance, and solid waste development are allocated 100.00 percent to collection.

Other notable costs include:

- **Annual Franchise Fee** is a collection expense, budgeted as \$234,000 in FY 2022 and represents 5.00 percent of the total collection rate revenue each year.

- **Utility Transfers** include transfers from the collection utility to the general fund, the recreation and culture fund, and the street fund.
- **Material Collection, Transportation, and Disposal Costs:** Costs are based on contract terms from existing collection, transportation, and disposal contracts.
 - » **Latah Sanitations Collection Contract:** Based on the collection fee schedule in the Latah Sanitation Franchise Agreement with the City of Moscow. The City incurs most of these contract expenses on a per unit per month basis. However, some charges are administered based on the level of service, tonnage, or a minimum fee annual charge. For example, the SW Processing Facility Operational Franchise Reimbursement fee is an annual charge of \$496,801 in FY 2021. The rate schedule beyond FY 2021 is assumed to increase at 100% of the previous year CPI.
 - **Collection Services Inside City (assigned 100% to collection utility):** This includes collection services to individual residential units, commercial roll carts, mechanical containers, special hauls, etc. These costs are incurred per billing unit monthly. In FY 2022, the cost of this collection service is approximately \$1.94 million.
 - **Operations & Maintenance Recycling Center (assigned 100% to collection utility):** This is the franchise reimbursement for the operation of the Moscow recycling center. The charge is based on total tonnage of recycling material. In FY 2022, the cost of this collection service is approximately \$121,000.
 - **Operations & Maintenance Compost (assigned 100% to collection utility):** This is the franchise reimbursement for the operation of the biosolids composting facility. There is an annual charge set in the contract. In FY 2022, the cost of this collection service to the sanitation utility is approximately \$72,000.
 - **Operations & Maintenance Transfer Station (allocated 45% to collection utility, 55% to SWPF utility):** This is the franchise reimbursement for the operation of the solid waste processing facility. This cost is split between the collection and SWPF functions of the sanitation utility. Because the SWPF receives municipal solid waste from the collection utility as well as from self-haulers and other jurisdictions, this cost is distributed between the collection and SWPF portions of the utility based on annual MSW tons (45.00 percent to the collection utility and 55.00 percent to SWPF). In FY 2022, the cost of the collection portion of service is approximately \$226,000, and the SWPF portion is \$277,000.
 - **Operations & Maintenance Miscellaneous Rate (assigned 100% to SWPF utility):** In FY 2022, the cost of the SWPF portion is approximately \$229,000. This is an annual fixed charge based on the contract.
 - » **Waste Connections Transportation and Disposal Contract:** Based on the City's current contract with Waste Connections, the transportation and disposal fees are calculated based on the total outbound MSW tons from the SWPF. The FY 2022 contract fees per ton are \$19.92 for transportation and \$34.22 for disposal. These fees are assumed to increase at 80% of the previous year CPI.
 - **Waste Connections Transportation and Disposal (allocated 45% to collection utility, 55% to SWPF utility):** Like the transfer station expenses, this cost is split between the collection and SWPF functions of the sanitation utility based on tonnage. The cost of the collection portion of service is approximately \$517,000, and the SWPF portion is \$632,000.

After each expense line item is allocated to the appropriate utility, it is then escalated each year in the forecast based on one of the following factors:

- **General Cost Inflation** was set at 1.85 percent for all years in the study period based on feedback from City staff and in alignment with internal City forecasting practices.
- **Construction Cost Inflation (CCI)** was set at 6.00 percent from FY 2021 through FY 2023, and 3.00 percent from FY 2024 through FY 2040.
- **Labor Cost Inflation** was set at 3.00 percent for all years in the study period based on feedback from the City.
- **Benefit Cost Inflation** was set at 5.00 percent for all years in the study period based on feedback from the City.

III.B.3. Debt Service

- **Existing and New Debt Service:**
 - » Both collection and SWPF utilities do not carry any existing debt. The forecast includes no new debt service for either utility.

III.C. CAPITAL FUNDING PLAN

The City's sanitation-related capital project plan is assigned 100.00 percent to the collection utility. The utility is anticipating \$1.7 million in capital costs in FY 2023 (including expected cost escalation) to fund the anticipated closure of a cell at the non-municipal solid waste landfill. There are no additional transfers to the capital fund planned for the utility. However, the utility plans to keep the reserve levels steady throughout the forecast for anticipated project costs, like a new recycling center. As shown below, the utility can support the forecasted project costs with existing cash on hand.

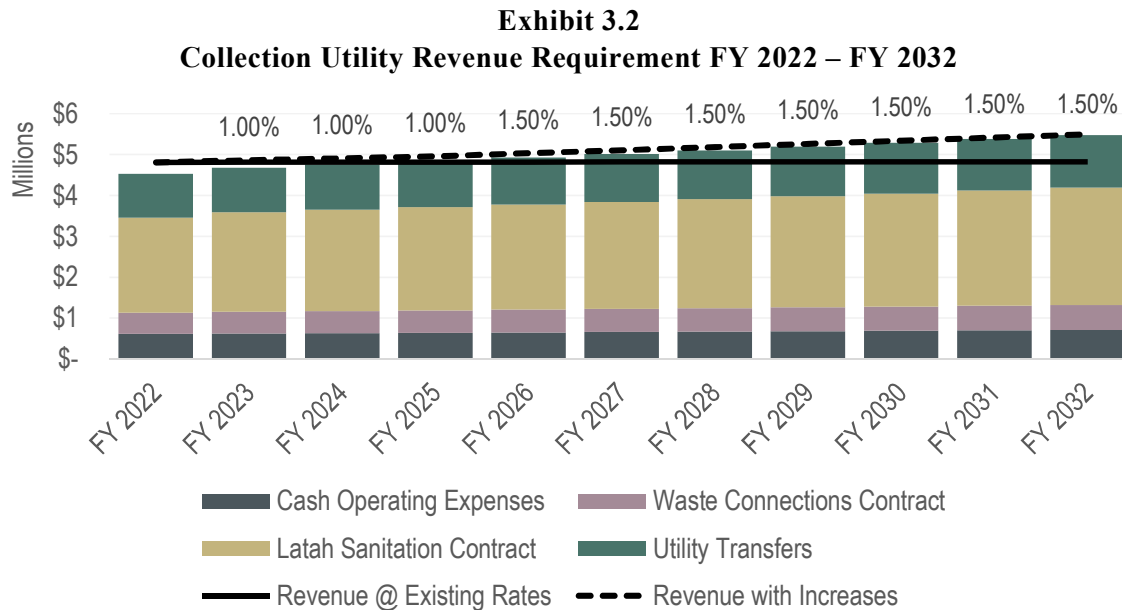
Exhibit 3.1 provides a summary of the funding sources for the capital expenditures. A detailed capital plan can be found in the excel model provided to the City.

Exhibit 3.1
Collection Capital Funding Plan

Funding Summary	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Total Capital Costs	\$ -	\$ 1,685,400	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Funding Sources											
Cash Balances	\$ 6,415,076	\$ 6,495,264	\$ 4,891,055	\$ 4,952,193	\$ 5,014,096	\$ 5,076,772	\$ 5,140,231	\$ 5,204,484	\$ 5,269,540	\$ 5,335,410	\$ 5,402,102
Interest Earnings	\$ 80,188	\$ 81,191	\$ 61,138	\$ 61,902	\$ 62,676	\$ 63,460	\$ 64,253	\$ 65,056	\$ 65,869	\$ 66,693	\$ 67,526
Total Available Cash	\$ 6,495,264	\$ 6,576,455	\$ 4,952,193	\$ 5,014,096	\$ 5,076,772	\$ 5,140,231	\$ 5,204,484	\$ 5,269,540	\$ 5,335,410	\$ 5,402,102	\$ 5,469,628

III.D. SUMMARY OF COLLECTION REVENUE REQUIREMENT

The operating forecast components come together to form the multi-year revenue requirement. The revenue requirement compares the overall revenue available to the collection utility to the expenses to evaluate the sufficiency of rates on an annual basis. **Exhibit 3.2** provides a summary of the collection revenue requirement findings.



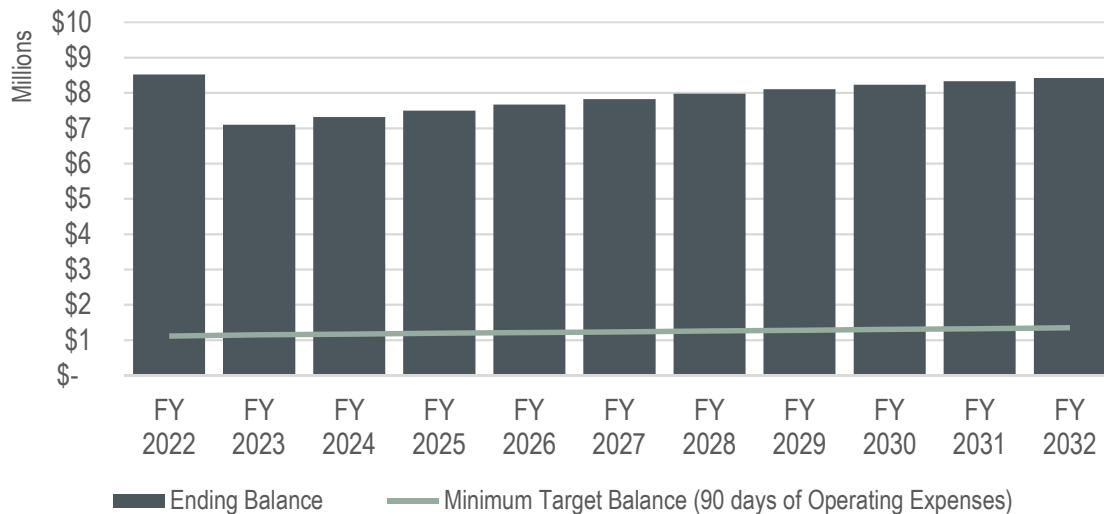
A summary of the collection utility revenue requirement is listed below:

- Revenues at current rate levels are projected to generate \$4.8 million in FY 2022 compared to \$4.5 million in expenditures – resulting in a cash surplus of \$280,000. It is not until FY 2025 when total expenditures exceed revenues at the current rates.
- After FY 2025, annual operating expenses are projected to continue to outpace revenues over the rate-setting period. By FY 2032, the annual cash deficit is projected to be \$650,000.
 - » Collection utility expenses are forecasted to increase at just under 2.00 percent after FY 2025.
- To meet the projected financial obligations of the collection utility and to ease the burden of higher rate increases in the future, rate increases are proposed at 1.00 percent annually from FY 2023 to FY 2025, and 1.50 percent from FY 2026 to FY 2032. Annual rate adjustments are assumed to be implemented at the beginning of each fiscal year.

III.E. COLLECTION FUND BALANCE AND FINANCIAL RESERVES

The City's fiscal policies establish a minimum financial reserve for the collection utility equivalent to 25.00 percent of annual expenditures. **Exhibit 3.3** shows a summary of the projected ending fund balance of both operating and capital reserves through FY 2032 with the proposed rate revenue adjustments. The fund balance is projected to remain above the financial reserve target for each year of the forecast and remain relatively steady through the years. The projected fund balance in FY 2032 is \$8.4 million – equivalent to 154.00 percent (562 days) of annual expenditures. The projected fund balance is designed to support anticipated capital projects or mitigate future rate revenue adjustments.

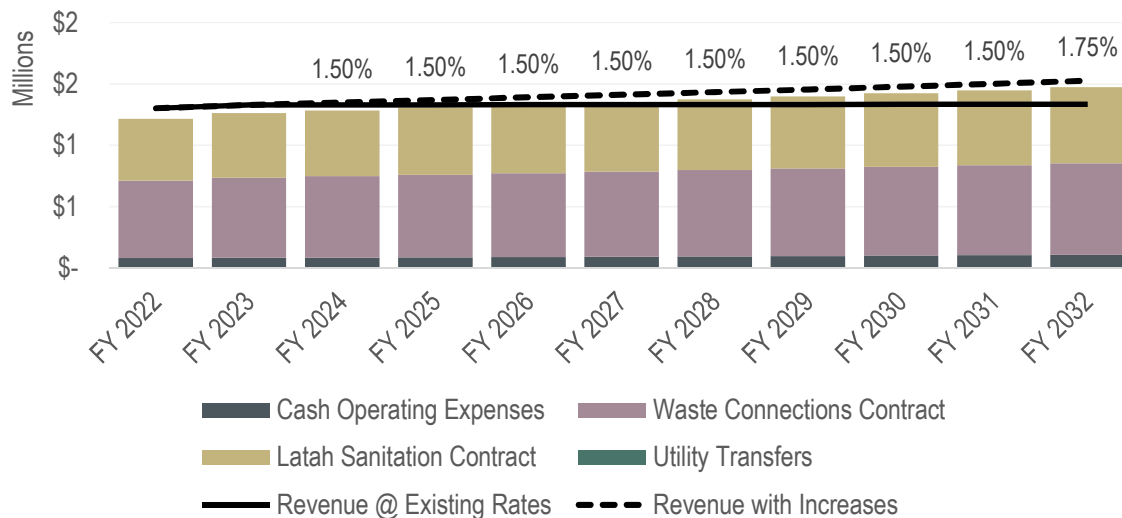
Exhibit 3.3
Collection Utility Ending Fund Balances



III.F. SUMMARY OF SWPF REVENUE REQUIREMENT

Exhibit 3.4 provides a summary of the SWPF revenue requirement findings. A long-term operating forecast was developed with the rate study focused on establishing rates for the FY 2024 to FY 2032 rate-setting period. FY 2022 and FY 2023 rates were not developed as those were already adopted at the time of this study.

Exhibit 3.4
SWPF Utility Revenue Requirement FY 2022 – FY 2032



A summary of the SWPF utility revenue requirement is listed below:

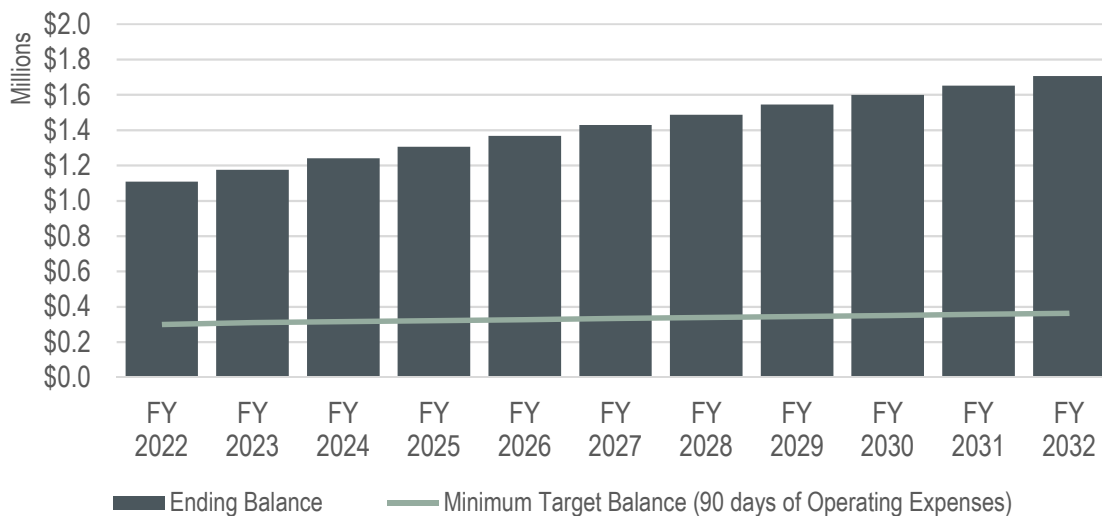
- Revenues at current rate levels are projected to generate \$1.3 million in FY 2022 compared to \$1.2 million in expenditures – resulting in a cash surplus of \$86,000. It is not until FY 2027 when total expenditures exceed revenues at the current/approved rates.

- After FY 2027, annual operating expenses are projected to continue to outpace revenues over the rate-setting period. By FY 2032, the annual cash deficit is projected to be \$138,000.
 - » SWPF utility expenses are forecasted to increase at approximately 1.75 percent after FY 2025.
- To meet the projected financial obligations of the SWPF utility and to ease the burden of higher rate increases in the future, rate increases are proposed at 1.50 percent annually from FY 2024 to FY 2031, and 1.75 percent in FY 2032. Annual rate adjustments are assumed to be implemented at the beginning of each fiscal year.

III.G. SWPF FUND BALANCE AND FINANCIAL RESERVES

The City's fiscal policies establish a financial reserve for the SWPF utility equivalent to 25.00 percent of annual expenditures. **Exhibit 3.5** shows a summary of the projected ending fund balance through FY 2032 with the proposed rate revenue adjustments. The fund balance is projected to remain above the financial reserve target for each year of the forecast. The projected fund balance in FY 2032 is \$1.7 million – equivalent to 116.00 percent (423 days) of annual expenditures.

Exhibit 3.5
SWPF Utility Ending Fund Balances



Section IV. COST OF SERVICE

IV.A. OVERVIEW

A cost-of-service analysis determines the proportional recovery of costs from customers according to unique demands each customer class places on the system. There are three fundamental steps to allocating the annual revenue requirement to customer classes and developing the final rates: 1) allocate utility assets and total utility costs by function, 2) develop customer-specific allocation factors and 3) allocate costs to customer classes. The methodology conforms to generally accepted industry practices as well as principles established in the American Public Works Association Rate Setting and Financing Guide for Solid Waste.

IV.B. SOLID WASTE CLASSES OF SERVICE

A class of service is a grouping of utility customers with similar usage characteristics who are served at similar costs. Classes of service can be defined based on several factors such as demand levels and patterns, service requirements, geography, and waste material. A cost-of-service analysis determines the proportional recovery of costs from each class of service based on these unique demands. The classes of services evaluated as part of the collection and SWPF rate study were based on Moscow's existing rates and current contracts and include:

- **Mechanical Container Rate Class:** Refuse collected from one-yard to six-yard dumpsters.
- **Residential Rate Class:** Residential Single-Family customers that have their garbage collected by Latah Sanitation Inc. in 35-, 65-, or 95-gallon curbside roll-carts.
- **Commercial Rate Class:** Commercial customers that have their garbage collected by Latah Sanitation Inc. in 35-, 65-, or 95-gallon curbside roll-carts.
- **Apartment and Commercial Recycling:** Recycling collection offered to multi-family and commercial customers. Recycling is collected by Latah Sanitation Inc. and processed at the City-owned recycling center.
- **Roll-Off and Compactor Services:** This includes the collection of roll-off containers as well as customer-owned and LSI-owned compactor containers.
- **SWPF MSW:** This class includes MSW delivered directly to the solid waste processing facility from sources other than LSI collection trucks contracted by the City. Customers within this category include small load self-haulers, waste collection trucks from outside the City service area, and waste haulers from other jurisdictions.
- **SWPF NMSW:** Non-municipal solid waste loads (e.g., construction and demolition debris) delivered directly to the solid waste processing facility
- **SWPF Asbestos:** Asbestos delivered to the solid waste processing facility for special handling.
- **SWPF Tires:** Private residents and businesses that deliver tires to the solid waste processing facility.
- **SWPF Mixed Materials:** Mixed loads (MSW and aggregate material) delivered to the solid waste processing facility.

IV.C. DEFINING SOLID WASTE FUNCTIONS

IV.C.1. Solid Waste Functions of Service

The first step in the cost-of-service analysis is to define the functions or activities that are supported by the sanitation utility. General functions within solid waste management include collection, transfer, transport, and processing/disposal. These functions can be further delineated based on the type of material being managed. This framework was used to develop the following functions of service for the utility:

- Residential Roll-Cart Refuse Collection
- Commercial Roll-Cart Refuse Collection
- Residential Recycling Collection
- Multi-family Recycling Collection
- Commercial Recycling Collection
- Mechanical Refuse Collection
- Mechanical Recycling Collection
- Compactor Refuse Collection
- SWPF Transfer
- SWPF Miscellaneous Functions
- Recycling Processing
- Compost Processing
- MSW Transport
- MSW Disposal

The revenue requirement for a test year is distributed or allocated to these functions of service based on principles of cost causation. The test year for the rate study is the projected revenue requirement for 2023 which is the first year of recommended rate increases.

This process included assigning each line-item account in the test year to the solid waste functions. In some cases, the expenses within an accounting line-item solely support one function of service. For example, all costs associated with the Operations & Maintenance Recycling Center are directly assigned to the “Recycling Processing” function. In other cases, the expenses within an accounting line-item support multiple functions of service: contract expenses are distributed to each function in proportion to the contract costs. A description of the allocation factors used within the functional cost allocation are described in the following section.

IV.C.2. Functional Cost Allocation Factors

The utility’s largest line-item expense is the contract franchise expenses for garbage and recycling collection within the City. This expense supports several functions of service including single-family residential, commercial, and roll-off garbage collection as well as recycling collection services for single-family residential, multi-family residential, and commercial customers. FCS GROUP evaluated the cost components, cost schedule, and terms of the franchise contract (Exhibit G) as the basis for allocating this expense to the supported functions of service. A summary of this allocation process includes:

- **Exhibit G, Section 2.0 Rates for Each Residential Unit.**
 - » 30.00 percent of the individual residential unit charge allocated to residential recycling collection
 - » 100.00 percent of the individual recycling roll cart and recycling roll cart operation and maintenance charges assigned to residential recycling collection
 - » 100.00 percent of apartment curbside recycling charge assigned to multi-family recycling collection
 - » All other charges assigned to residential roll-cart refuse collection
- **Exhibit G, Section 3.0 Rates for Business Units Using Manual Collection.**
 - » 100.00 percent of the commercial curbside recycling, individual recycling roll cart, and recycling roll cart operation and maintenance charges assigned to commercial recycling collection
 - » All other charges assigned to commercial roll-cart refuse collection
- **Exhibit G, Section 4.0 Rates for Recycling Mobile Containers.**
 - » 100.00 percent of charges allocated in proportion to all other contract expenses (note: no expenses are forecasted for this section, so the allocation method does not affect the results of the analysis)
- **Exhibit G, Section 5.0 Rates for Mechanical Containers.**
 - » 100.00 percent of charges assigned to Mechanical Refuse Collection
- **Exhibit G, Section 6.0 Rates for Special Services.**
 - » 100.00 percent of charges for large container service including additional large container services assigned to Compactor Refuse Collection.
 - » 100.00 percent of other charges allocated in proportion to all other contract expenses (note: no expenses are forecasted for these charges, so the allocation method does not affect the results of the analysis)

The charges and terms of the waste transport and disposal contract with Waste Connections was also used as a cost allocation factor. The contract includes two cost elements:

- 100.00 percent of the transportation base fee is assigned to MSW Transport
- 100.00 percent of the disposal base fee is assigned to MSW Disposal

IV.D. COLLECTION UTILITY FUNCTIONALIZATION

IV.D.1. Functionalization of Collection Test Year Revenue Requirement

Following the development of the functional cost allocation factors, test year (2023) revenue requirements for each accounting line-item were assigned to the functions of service. Most line items are allocated “as all other,” meaning the costs will be allocated in proportion to the allocation method of items described below:

- **Franchise Fee Expenses.** Allocated in proportion to the sanitation collection contract (26.2% Residential Roll-Cart Refuse Collection, 0.8% Commercial Roll-Cart Refuse Collection, 21.7% Residential Recycling Collection, 8.8% Multi-Family Recycling Collection, 1.8% Commercial

Recycling Collection, 36.2% Mechanical Refuse Collection, and 4.5% Compactor Refuse Collection)

- **Collection Services Inside City.** Allocated in proportion to sanitation collection contract.
- **Transfers to the Street Fund.** Allocated in proportion to sanitation collection contract.
- **Operations & Maintenance Recycling Center.** Assigned as recycling processing.
- **Operations & Maintenance Compost.** Assigned as compost processing.
- **Operations & Maintenance Transfer Station.** Assigned as SWPF transfer.
- **Waste Connection Trans.** Allocated as Waste Connections contract (36.8% MSW Transport, 63.2% MSW Disposal).
- **Post Landfill Closure Expense.** Assigned as MSW disposal.

Exhibit 4.1 details the functional allocation of the revenue requirement to each function of service.

Exhibit 4.1
Functional Allocation of Collection Test Year Revenue Requirement

Function of Service	Cost	% of Total
Residential Roll-Cart Refuse Collection	\$ 817,309	17.30%
Commercial Roll-Cart Refuse Collection	27,250	0.58%
Residential Recycling Collection	757,172	16.03%
Multi-Family Recycling Collection	304,958	6.46%
Commercial Recycling Collection	63,392	1.34%
Mechanical Refuse Collection	1,260,526	26.69%
Compactor Refuse Collection	156,737	3.32%
SWPF Transfer	331,002	7.01%
Recycling Processing	177,167	3.75%
Compost Processing	69,004	1.46%
MSW Transport	275,851	5.84%
MSW Disposal	482,862	10.22%
Total Revenue Requirement	\$ 4,723,230	100.00%

IV.D.2. Collection Customer Class Cost-of-Service

The costs identified in the functional allocation of the revenue requirement are assigned or allocated to each customer class based on the demands each class places on the utility. To complete this task, customer class allocation factors are developed to establish a relationship between the costs incurred by the utility to support the services received by the classes of customers. The functions of service are allocated to the customer classes of service based on the following factors:

- **Annual Collections.** The number of annual pickups for collection services.
- **Billing Units.** Total customers billed during the test year.
- **Annual Service Volume.** The annual cubic yards of collection service provided to customers. Annual service volume is the product of each customer's container size and annual pickups.

IV.D.3. Collection Cost-of-Service Results

The final step of the cost-of-service analysis is to compare the allocation of the test year revenue requirement with the rate revenue generated by each customer class at existing rates. This evaluation

identifies general differences between the allocated cost to provide utility services to customer classes and the rate revenue collected. It also identifies proportional differences in the cost that the City incurs to provide services to different customer classes. The cost-of-service analysis provides an initial and reasonable basis for potential rate adjustments to align rates with the cost to provide service. This cost-rate relationship is a primary tool used by public utilities when developing changes to rates.

IV.D.4. Test Year Cost of Service Collection Analysis

Exhibit 4.3 provides a comparison of the current rate revenue distribution between customer classes and the distribution of revenues resulting from the cost-of-service analysis within the collection utility.

Exhibit 4.2
Test Year Cost of Service and Across-the-Board (ATB) Rate Revenue Comparison

Class of Service	Cost of Service	Existing Rate Revenue with ATB Increase	\$ Difference	% Difference
Mechanical Container Rate Class	\$ 1,939,039	\$ 2,455,913	\$ (516,874)	-21.05%
Residential Rate Class	2,151,610	1,807,962	343,648	19.01%
Commercial Rate Class	37,312	45,878	(8,566)	-18.67%
Apartment & Commercial Recycling	438,532	305,289	133,243	43.64%
Roll-Off and Compactor Services	156,737	108,187	48,550	44.88%
Total Revenue Requirement	\$ 4,723,230	\$ 4,723,230	\$ 0	0.00%

The table above shows the five classes of service identified for the collection cost-of-service analysis. The first column is the calculated cost to provide service, based on the methodology outlined above. This is compared to the revenue at the existing rates plus an across the board (ATB) adjustment to total necessary systemwide revenue needs. The classes that show a negative difference in the last two columns are currently paying more than the cost of the service provided. Those with a positive difference would need a rate increase to cover the full cost of service.

A cost-of-service analysis is a reasonable allocation of the test year revenue requirement to classes of service based on available financial and operational data, expectations of future demand for service, and the allocation methodologies described in the previous sections. Given the need for assumptions and these other factors, FCS GROUP recommends a reasonable range for class-specific results to be plus or minus 5.0 percent, including the system average overall increase. Based on this framework, the cost-of-service results indicate that existing rate revenues generated from the current customer classes are out of the reasonable range with mechanical containers and commercial roll-carts paying more than the cost of service. The results for the other classes (residential, apartment and commercial recycling, and roll-off and compactor services) indicate that existing rates are less than the cost of service.

IV.D.5. Interpreting Cost-Of-Service Results

A cost-of-service analysis is a snapshot in time and because costs fluctuate each year, the needed increase by class can also fluctuate and interclass rate changes are not suggested unless the class's revenue difference is consistently outside of the plus or minus 5.0 percent range of reasonableness. For classes outside the threshold, public utilities can leverage several financial strategies to align rate revenues with cost-of-service results. These policy decisions may focus on the timing and level of rate adjustments for a particular class of service. For example, an agency may decide to gradually

increase rates for a class of service over several years to make progress towards cost of service while also keeping the rate increases relatively affordable. If an agency anticipates major changes to programs and services in the future, it may consider a slower or delayed strategy to rate adjustments until new cost data is available.

FCS GROUP recommends the following guidelines when considering policy options to adjust existing rates based on cost-of-service results:

- **Prioritize Class-Specific Rate Adjustments.** Prioritize adjustments to those classes that are farthest outside the threshold. Consider monitoring future cost of service results for classes that are relatively close but outside of the threshold.
- **Develop Multi-Year Phase-In Plan.** Developing a multi-year rate strategy can transition classes towards cost of service while also addressing potential affordability concerns.
- **Consider Future Utility Costs.** Future cost of service results can shift in response to major changes in programs, facility operations, and availability of information. Gradually implementing rate adjustments can provide flexibility in responding to current and future costs.
- **Hold Rates at Existing Levels.** For those customer classes whose rates are higher than the cost of service, consider holding rates at existing levels until rates are generally aligned with cost. This strategy can avoid the need to lower rates one year only to increase rates in future years.
- **Monitor Long-Term Trends.** Further evaluation may be appropriate for classes that are outside the range of reasonableness to confirm if results are indicative of an on-going trend or are an anomaly. This can be a particularly effective strategy if a cost-of-service analysis has not been conducted recently or is being completed for the first time.
- **Monitor Changes in Demand from Rate Adjustments.** Significant decreases or increases to rates can impact the demand for utility services – particularly for usage-based rates and subscription services. An agency should actively monitor the demand impact of major changes to rates and develop a contingency plan as needed.
- **Seek Legal Counsel.** Class-specific rate adjustments may be subject to existing contract agreements between the City and specific customer groups. FCS GROUP recommends that the City seek legal counsel to determine any legal restrictions or requirements that would affect rate adjustments based on the cost-of-service analysis.

IV.D.6. Collection Cost-Of-Service Phase-In Strategy

Based on feedback from City staff, a multi-year strategy was developed to transition the classes of service towards cost of service over a five-year period (FY 2023 to FY 2027). **Exhibit 4.3** details the annual changes to rate revenue by customer class (and subsets of customer class) to phase in existing rates towards cost of service through FY 2027.

Exhibit 4.3
Cost of Service Phase-In Strategy

Class of Service	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
Mechanical Container Rate Class	-3.13%	-3.53%	-4.00%	-3.44%	-3.94%	1.50%	1.50%	1.50%	1.50%	1.50%
Residential Rate Class	4.90%	4.90%	4.90%	4.90%	4.90%	1.50%	1.50%	1.50%	1.50%	1.50%
Commercial Rate Class	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	1.50%	1.50%	1.50%	1.50%	1.50%
Apartment & Commercial Recycling	8.90%	8.90%	8.90%	8.90%	8.90%	1.50%	1.50%	1.50%	1.50%	1.50%
Roll-Off and Compactor Services	9.00%	9.00%	9.00%	9.00%	9.00%	1.50%	1.50%	1.50%	1.50%	1.50%

IV.E. SWPF UTILITY FUNCTIONALIZATION

IV.E.1. Functionalization of SWPF Test Year Revenue Requirement

Following the development of the functional cost allocation factors, test year (2023) revenue requirements for each accounting cost center or object code were assigned to the functions of service. Most line items are allocated “as all other,” meaning the costs will be functionalized proportionally to the functional allocation results. The allocations are described below:

- **Operations & Maintenance Transfer Station.** Allocated as SWFP transfer.
- **Contractual Miscellaneous Rate.** Allocated as SWPF Misc.
- **Waste Connection Trans.** Allocated as LSI contract.
- **Post Landfill Closure Expense.** Allocated as MSW disposal.

Exhibit 4.5 details the functional allocation of the revenue requirement to each function of service.

Exhibit 4.4
Functional Allocation of SWPF Test Year Revenue Requirement

Function of Service	Cost	% of Total
SWPF Transfer	\$ 317,981	24%
MSW Transport	265,000	20%
MSW Disposal	463,868	35%
SWPF MISC.	262,849	20%
Total Revenue Requirement	\$ 1,309,697	100%

IV.E.2. SWPF Customer Class Cost of Service

The costs identified in the functional allocation of the revenue requirement are assigned to each customer class based on the demands each class places on the utility. To complete this task, forecasted tons and transactions for the customer classes are used as allocation factors. The allocation factors are intended to proportionally allocate the functional cost pools to the customer classes. The functions of service are allocated to the customer classes of service based on annual tonnage.

IV.E.3. SWPF Cost of Service Results

The SWPF cost-of-service analysis followed an identical methodology to the collection side and therefore the results of the study are interpreted as referenced in section IV.D.3 and section IV.D.5.

IV.E.4. Test Year Cost of Service SWPF Analysis

Exhibit 4.6 provides a comparison of the current rate revenue distribution between customer classes and the distribution of revenues resulting from the cost-of-service analysis within the SWPF utility.

Exhibit 4.5
Test Year Cost of Service and Across-the-Board (ATB) Rate Revenue Comparison

Class of Service	Cost of Service	Existing Rate Revenue with ATB Increase	\$ Difference	% Difference
SWPF-MSW	1,090,116	1,045,180	44,937	4.30%
SWPF-NMSW	201,796	236,456	(34,660)	-14.66%
SWPF-Asbestos	1,371	6,739	(5,367)	-79.65%
SWPF-Tires	11,097	15,931	(4,833)	-30.34%
SWPF- Mixed Materials	5,316	5,392	(76)	-1.41%
Total Revenue Requirement	\$ 1,309,697	\$ 1,309,697	\$ 0	0.00%

The table above shows the five classes of service identified for the SWPF cost-of-service analysis.

Based on the framework discussed in section IV.D.4, the cost-of-service results indicate that existing rate revenues generated from the current customer classes are out of the reasonable range with SWPF-NMSW, SWPF-Asbestos, and SWPF-Tires paying more than the cost of service they are provided, and the other classes SWPF-MSW and SWPF-Mixed Materials are within the reasonable range.

Because the majority (98 percent) of rate revenue from the SWPF is generated from the SWPF-MSW and SWPF-NMSW customer classes, it is recommended that future rate revenue adjustments are applied across-the-board to all SWPF classes. A cost-of-service phase-in schedule is not recommended for the SWPF utility.

Section V. RATE DESIGN

V.A. INTRODUCTION

Rate design is the third and final technical step in utility rate setting. The first two technical steps (identifying the total rate revenue needs and determining the proportional distribution of those revenue needs to the utility's customer classes of service) provide the revenue targets for rate design. The principal objectives of rate design are to implement rate structures that collect the appropriate level of revenue and that are reasonably aligned with cost of service.

No one rate structure will work well for every utility nor will one rate structure work equally well for all customer classes within a single utility. Solid waste utilities recover charges through a variety of rate structures from tipping fees, fixed fees, fees based on container size and container compaction rating, as well as service frequency. Given the range and complexity of potential rate structures, a solid waste utility should carefully plan and evaluate changes to an existing rate structure. Several considerations (e.g., data availability, implementation feasibility, intraclass proportionality) can help a utility understand the degree to which different rate structures will advance the agency's objectives.

V.B. OBJECTIVES OF RATE DESIGN

V.B.1. Collection and SWPF Utilities

Within this study, the rates are set so that each side of the utility is independently supported by respective user rates. This way, the customers who do not utilize certain parts of the sanitation utility are not expected to cover the costs to upkeep, replace and operate these services and facilities.

V.B.2. Phase-In Strategy

The annual rate phase-in schedule described in Section IV.D.6 was applied to existing collection utility rates to develop the projected rate schedule. Following the 5-year phase-in schedule, all collection rates would increase annually at the same level. **Exhibit 5.1** details the existing and projected rates for the collection utility from FY 2023 to FY 2032.

Exhibit 5.1
Collection Utility Phase in Schedule

Class of Service	Existing	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Mechanical Container Rate Class						
Dumpster 1 YD Rental	\$ 13.20	\$ 12.79	\$ 12.34	\$ 11.85	\$ 11.45	\$ 11.00
Dumpster 2 YD Rental	15.05	14.58	14.07	13.51	13.05	12.54
Dumpster 3 YD Rental	27.79	26.92	25.97	24.94	24.09	23.14
Dumpster 4 YD Rental	30.93	29.97	28.92	27.77	26.82	25.77
Dumpster 6 YD Rental	40.83	39.56	38.17	36.65	35.40	34.01
Dumpster 8 YD Rental	50.72	49.14	47.41	45.52	43.96	42.23
1 Yard 1 x Week	69.92	67.74	65.35	62.74	60.59	58.20
1 Yard 2 x Week	143.97	139.47	134.55	129.17	124.74	119.82
2 Yard 1 x Week	138.32	133.99	129.26	124.09	119.83	115.11
2 Yard 2 x Week	280.28	271.51	261.92	251.45	242.81	233.24
2 Yard 3 x Week	425.50	412.18	397.62	381.72	368.61	354.07
3 Yard 1 x Week	203.97	197.59	190.61	182.99	176.71	169.74
3 Yard 2 x Week	416.55	403.51	389.25	373.68	360.84	346.61
3 Yard 3 x Week	636.45	616.53	594.74	570.96	551.34	529.60
4 Yard 1 x Week	269.62	261.18	251.95	241.88	233.57	224.36
4 Yard 2 x Week	552.85	535.55	516.62	495.96	478.92	460.03
4 Yard 3 x Week	845.91	819.43	790.47	758.86	732.79	703.89
6 Yard 1 x Week	400.93	388.38	374.66	359.68	347.32	333.62
6 Yard 2 x Week	825.42	799.58	771.32	740.47	715.03	686.83
6 Yard 3 x Week	1,264.83	1,225.24	1,181.94	1,134.67	1,095.68	1,052.46
8 Yard 3 x Week	1,690.56	1,637.64	1,579.76	1,516.57	1,464.46	1,406.70
8 Yard 1 x Week	532.28	515.62	497.40	477.51	461.11	442.93
8 Yard 2 x Week	1,098.06	1,063.69	1,026.10	985.06	951.21	913.69
Lock Mechanism	3.50	3.40	3.28	3.15	3.05	2.93
Residential Rate Class						
35 Gallon Roll Cart	\$ 21.10	\$ 22.14	\$ 23.23	\$ 24.37	\$ 25.57	\$ 26.83
65 Gallon Roll Cart	27.10	28.43	29.83	31.30	32.84	34.45
95 Gallon Roll Cart	33.15	34.78	36.49	38.28	40.16	42.13
On Demand Base Fee	15.95	16.74	17.57	18.44	19.35	20.30
Base Fee No Cart	15.95	16.74	17.57	18.44	19.35	20.30
Residential Carryout	11.60	12.17	12.77	13.40	14.06	14.75
Inside Carryout	13.15	13.80	14.48	15.19	15.94	16.73
Commercial Rate Class						
35 Gallon Commercial RC	\$ 20.60	\$ 19.99	\$ 19.40	\$ 18.82	\$ 18.26	\$ 17.72
65 Gallon Commercial RC	31.10	30.17	29.27	28.40	27.55	26.73
95 Gallon Commercial RC	41.50	40.26	39.06	37.89	36.76	35.66
Apartment & Commercial Recycling						
Commercial Recy Base	\$ 5.05	\$ 5.50	\$ 5.99	\$ 6.53	\$ 7.12	\$ 7.76
Mult-Family Recy Base	5.05	5.50	5.99	6.53	7.12	7.76
Roll-Off and Compactor Services						
Compactor Services (CPPT) - U of I	\$ 213.40	\$ 232.61	\$ 253.55	\$ 276.37	\$ 301.25	\$ 328.37
Compactor Services - Non U of I	213.40	232.61	253.55	276.37	301.25	328.37
Roll-Offs: Hauling (ROPT)	112.20	122.30	133.31	145.31	158.39	172.65
Roll-Offs: Rental (RR30)	13.30	14.50	15.81	17.24	18.80	20.50
Roll-Offs: Rental (RR22)	18.10	19.73	21.51	23.45	25.57	27.88
Roll-Offs: Hauling (ROPT) - Non U of I	112.20	122.30	133.31	145.31	158.39	172.65
Roll-Offs: Rental (RR30) - Non U of I	13.30	14.50	15.81	17.24	18.80	20.50
Roll-Offs: Rental (RR22) - Non U of I	18.10	19.73	21.51	23.45	25.57	27.88

V.B.3. SWPF Rates

Exhibit 5.2 details the existing and projected rates for the collection utility from FY 2023 to FY 2032. Based on discussions with City staff, the minimum fee for MSW loads at the SWPF is set at \$10.00 throughout the forecast.

Exhibit 5.2
SWPF Utility Projected Rate Schedule

Class of Service	Existing	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
SWPF-MSW						
SWPF-MSW: Transfer Station Tipping Fee	\$ 95.85	\$ 97.80	\$ 99.27	\$ 100.76	\$ 102.28	\$ 103.82
SWPF-MSW: Minimum Fee	10.00	10.00	10.00	10.00	10.00	10.00
SWPF-NMSW						
SWPF-NMSW: Inert/Demolition Materials	\$ 39.10	\$ 39.90	\$ 40.50	\$ 41.11	\$ 41.73	\$ 42.36
SWPF-Asbestos						
SWPF-Asbestos: Asbestos	\$ 167.50	\$ 167.50	\$ 170.02	\$ 172.58	\$ 175.17	\$ 177.80
SWPF-Tires						
SWPF-Diverted Materials: Large Appliances	\$ 6.90	\$ 6.90	\$ 7.01	\$ 7.12	\$ 7.23	\$ 7.34
SWPF-Diverted Materials: Vehicle Bodies	43.35	43.35	44.01	44.68	45.36	46.05
SWPF-Diverted Materials: Tires	157.95	157.95	160.32	162.73	165.18	167.66
SWPF- Mixed Materials						
SWPF - Mixed Materials	\$ 67.65	\$ 69.00	\$ 70.04	\$ 71.10	\$ 72.17	\$ 73.26

V.C. SUMMARY OF RATE ADJUSTMENTS

V.C.1. Residential Rate Class

With these recommended rate adjustments, the 35-gallon residential roll cart monthly service rate would increase from \$21.10 to \$22.14 in FY 2023 – an increase of \$1.04. Monthly service rates for the residential 65- and 95-gallon roll cart service would increase by \$1.33 and \$1.63 respectively (see **Exhibit 1.5**). Monthly rates for the residential roll-cart services would increase by 4.90 percent annually from FY 2024 to FY 2027.

Exhibit 5.3
Residential Roll Cart Monthly Rates

Class of Service	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Residential Rate Class						
35 Gallon Roll Cart	\$ 21.10	\$ 22.14	\$ 23.23	\$ 24.37	\$ 25.57	\$ 26.83
Rate Change		\$ 1.04	\$ 1.09	\$ 1.14	\$ 1.20	\$ 1.26
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%
65 Gallon Roll Cart	\$ 27.10	\$ 28.43	\$ 29.83	\$ 31.30	\$ 32.84	\$ 34.45
Rate Change		\$ 1.33	\$ 1.40	\$ 1.47	\$ 1.54	\$ 1.61
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%
95 Gallon Roll Cart	\$ 33.15	\$ 34.78	\$ 36.49	\$ 38.28	\$ 40.16	\$ 42.13
Rate Change		\$ 1.63	\$ 1.71	\$ 1.79	\$ 1.88	\$ 1.97
Percent Change		4.90%	4.90%	4.90%	4.90%	4.90%

V.C.2. Other Class Rate Adjustments

Notable adjustments to other sanitation rates are summarized below:

- The mechanical rate class has recommended rate decreases of -3.10 percent in FY 2023. The monthly rate for a two-yard refuse dumpster serviced twice per week would decrease from \$280.28 in FY 2022 to \$271.51 in FY 2023. The monthly rate for a six-yard refuse dumpster serviced three times per week would decrease from \$1,264.83 to \$1,225.24 over the same period.
- The monthly base fee for multi-family recycling would increase from \$5.05 in FY 2022 to \$5.50 in FY 2023.
- The hauling fee for roll-off containers would increase from \$112.20 per haul in FY 2022 to \$122.30 per haul in FY 2023.

Section VI. SUMMARY

VI.A. STUDY RESULTS

The City's objectives for this rate study were to ensure that both functions of the sanitation utility (Collection and SWPF) can be financially self-sufficient and that customer rates are reasonably aligned with the cost to provide service. The following table summarizes the key results of the technical study elements:

Study Element	Results
Revenue Requirement	Collection Utility: To meet the projected financial obligations of the collection utility and to ease the burden of higher rate increases in the future, rate increases are proposed at 1.00 percent annually from FY 2023 to FY 2025, and 1.50 percent from FY 2026 to FY 2032. Annual rate adjustments are assumed to be implemented at the beginning of each fiscal year. SWPF Utility: Rate increases are proposed at 1.50 percent annually from FY 2024 to FY 2031, and 1.75 percent in FY 2032. Annual rate adjustments are assumed to be implemented at the beginning of each fiscal year.
Cost-of-Service Analysis	Collection Utility: The cost-of-service results indicate that existing rate revenues generated from the current customer classes are out of the reasonable range with mechanical containers and commercial roll-carts paying more than the cost of service. The results for the other classes (residential, apartment and commercial recycling, and roll-off and compactor services) indicate that existing rates are less than the cost of service. SWPF Utility: Results indicate that existing rate revenues generated from some of the current customer classes are out of the reasonable range with SWPF-NMSW, SWPF-Asbestos, and SWPF-Tires paying more than the cost of service and the other classes SWPF-MSW and SWPF-Mixed Materials within reasonable range.
Rate Design	Collection Utility: A five-year phase-in strategy (FY 2023 to FY 2027) was developed to transition existing rates towards the cost to provide service. Residential roll-cart rates are projected to increase 4.90 percent each year over the time period while mechanical container rates would decrease 3.00 to 4.00 percent each year. Following the 5-year phase-in schedule, all collection rates would increase annually at the same level. SWPF Utility: Rates for SWPF services would increase across-the-board 1.50 percent annually through FY 2031. The minimum fee charged for small MSW loads would remain at \$10 per load over the forecast period.

We recommend that the City revisit the study findings during the budget cycle each year to check that the assumptions used are still appropriate and that no significant changes have occurred that would alter the results of the study. This is especially important if there are any changes to the current City contracts, as those assumptions are important to this analysis.

VI.B. CITIZEN RATE COMMITTEE

A key component of the rate study was the involvement of the Citizen Rate Committee (CRC). The City has historically convened a Committee to obtain customer feedback and engagement in the rate setting process. The CRC was formally convened in December 2021, and in February 2022, with a mission to assemble diverse perspectives that represent the community to evaluate and advise on the City's sanitation rate structures and cost-of-service results. The CRC represented the constituency of the City's customers and stakeholders including residents, the business community, environmental interests, the University of Idaho, and the Moscow City Council.

Section VII. APRIL 2022 ADDENDUM

VII.A. CITIZEN RATE COMMITTEE RECOMMENDATIONS

The City's Public Works Department organized a meeting on April 5, 2022 to present a final overview and discussion of the rate study results. The committee approved the rate recommendations as outlined in Section V of the report with one adjustment. The current rates for Apartment and Commercial Recycling would remain in effect through FY 2023 as the City coordinates with stakeholders to review the recycling program and potential changes to services and rates.

FCS GROUP estimates that holding Apartment and Commercial Recycling rates at existing levels would decrease rate revenue by approximately \$56,000 from the rate study projections in FY 2023. The Sanitation Utility financial reserve is sufficient to mitigate the effects of this revenue loss. Based on the results of the cost-of-service analysis, it is recommended that the City consider adjusting the Apartment and Commercial Recycling rates beginning in FY 2024 or adjust rates for other customer classes to make up the revenue loss.

COMMITTEE STAFF REPORT

DATE: Monday, May 9, 2022



RESPONSIBLE STAFF

Bob Buvel, Staff Engineer

ADDITIONAL PRESENTER(S)

OTHER RESOURCES

AGENDA ITEM TITLE

Well House No. 6 Rebid Award (ACTION ITEM) - Bob Buvel

DESCRIPTION

The City published an advertisement for bids on April 16 2022, & April 23 2022 for the Well House No. 6 Rebid project. The project included the reconstruction of Well House No. 6, electrical improvements, and the coordination of the installation of a new generator. The Engineer's Estimate for the project was \$668,118.00.

Bid opening for the project took place on May 3rd, 2022, at which two (2) bid were received. The bids received were in the amount of \$924,512 and was submitted by Razz Construction, Inc and \$833,915.00 and was submitted by TML Construction. A bid tabulation is attached along with a bid analysis done by the consultant engineering design company Welch-Comer recommending acceptance of the bid.

STAFF RECOMMENDATION

Accept the low bid from TML Construction, Inc., award the contract for both the base bid and bid Alternate Number 1 in the amount of \$833,915.00, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount.

PROPOSED ACTIONS

PROPOSED ACTIONS: Recommend acceptance of the low bid from TML Construction, Inc., award the contract for both the base bid and bid Alternate Number 1 in the amount of \$833,915.00, and authorize staff approval of construction change orders in an amount not to exceed 10% of the contract amount, or provide staff further direction.

FISCAL IMPACT

Funds for the Well House No. 6 project will be expended from the Water Capital Project Fund 320-220-770-64 Well Capital Improvements and 320-220-770-62 Energy Control and supply.

PERSONNEL IMPACT

City staff will administer the construction contract and inspection.

ATTACHMENTS

1. Well House No. 6 Rebid - Welch-Comer Bid Analysis
2. Well House No. 6 Re-bid Construction Agreement_final

May 4, 2022

Mr. Scott Bontrager, P.E.
Mr. Demetre Makratzakis
City of Moscow
221 East Second Street
Moscow, ID 83843

Re: Well House No. 6 Rebid

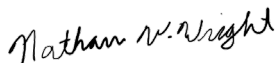
Dear Mr. Bontrager and Mr. Makratzakis:

Enclosed please find the bid tabulation, summary, and review checklist for the bids which were received at your office for the Well House No. 6 Project. We have reviewed the bid packages received and they appear to be responsive. The bids have come in higher than our engineers estimate, however, they came in lower than the previous bid.

Welch Comer & Associates recommends awarding the base bid and Add Alt 1, in the amount of \$833,915.00 to the low bidder, TML Construction, Inc. Should the City concur with our recommendation, please sign the appropriate Notice of Award (enclosed), but do not date and return to our office for processing.

Should you have any questions, please contact our office.

Sincerely,



Nathan Wright, P.E.
Project Engineer

NW/mdp
Enclosures

CITY OF MOSCOW									
WELL HOUSE NO. 6 REBID									
BID TABULATION									
Bid Opening: 05/03/2022									
				Engineer's Estimate		TML CONSTRUCTION, INC.		RAZZ CONSTRUCTION, INC.	
Pay Item	Description	Pay Unit	Estimated Quantity	Unit Price	Total Amount	Unit Price	Total Amount	Unit Price	Total Amount
15050.01	Mobilization	LS	1	\$ 42,000.00	\$ 42,000.00	\$ 30,000.00	\$ 30,000.00	\$ 92,000.00	\$ 92,000.00
024100.01	Demolition	LS	1	\$ 25,000.00	\$ 25,000.00	\$ 21,000.00	\$ 21,000.00	\$ 40,000.00	\$ 40,000.00
221007.01	Sodium Hypochlorite Generation System Coordin	LS	1	\$ 10,000.00	\$ 10,000.00	\$ 17,000.00	\$ 17,000.00	\$ 3,000.00	\$ 3,000.00
238100.01	Heating and Ventilation	LS	1	\$ 8,433.00	\$ 8,433.00	\$ 14,000.00	\$ 14,000.00	\$ 16,000.00	\$ 16,000.00
260000.01	General Electrical	LS	1	\$ 88,449.00	\$ 88,449.00	\$ 154,000.00	\$ 154,000.00	\$ 163,000.00	\$ 163,000.00
312200.01	Site Grading	LS	1	\$ 10,000.00	\$ 10,000.00	\$ 13,000.00	\$ 13,000.00	\$ 2,500.00	\$ 2,500.00
331116.01	2" Poly Water Line	LF	59	\$ 60.00	\$ 3,540.00	\$ 175.00	\$ 10,325.00	\$ 64.00	\$ 3,776.00
331116.02	2" Service Meter Piping	LS	1	\$ 5,000.00	\$ 5,000.00	\$ 10,000.00	\$ 10,000.00	\$ 1,350.00	\$ 1,350.00
333111.01	Sanitary Sewer Service Connection	LF	70	\$ 65.00	\$ 4,550.00	\$ 235.00	\$ 16,450.00	\$ 68.00	\$ 4,760.00
334111.01	Catch Basin	EA	1	\$ 3,500.00	\$ 3,500.00	\$ 4,000.00	\$ 4,000.00	\$ 2,600.00	\$ 2,600.00
334111.02	Pump to Waste Basin	LS	1	\$ 10,000.00	\$ 10,000.00	\$ 12,400.00	\$ 12,400.00	\$ 7,200.00	\$ 7,200.00
334111.03	10" Ductile Iron Drain Pipe	LF	10	\$ 300.00	\$ 3,000.00	\$ 400.00	\$ 4,000.00	\$ 170.00	\$ 1,700.00
334111.04	Drywell	EA	2	\$ 5,000.00	\$ 10,000.00	\$ 5,750.00	\$ 11,500.00	\$ 7,700.00	\$ 15,400.00
334111.05	4-Inch Floor Drain and Pipe	LS	1	\$ 3,000.00	\$ 3,000.00	\$ 20,000.00	\$ 20,000.00	\$ 3,830.00	\$ 3,830.00
334111.06	4-Inch Footing Drain Discharge Pipe	LF	16	\$ 65.00	\$ 1,040.00	\$ 140.00	\$ 2,240.00	\$ 56.00	\$ 896.00
061010.01	Building	LS	1	\$234,200.00	\$ 234,200.00	\$ 297,000.00	\$ 297,000.00	\$ 366,500.00	\$ 366,500.00
	Total Base Bid				\$ 461,712.00		\$ 636,915.00		\$ 724,512.00
ADD ALTERNATE 1									
263213.01	Standby Power System	LS	1	\$206,118.00	\$ 206,118.00	\$ 197,000.00	\$ 197,000.00	\$ 200,000.00	\$ 200,000.00
	TOTAL CONSTRUCTION COST				\$ 667,830.00		\$ 833,915.00		\$ 924,512.00

**CITY OF MOSCOW
WELL HOUSE NO. 6 REBID
BID SUMMARY***
Bid Opening 05/03/2022 at 2 p.m.

CONTRACTOR	BASE BID	ADD ALT 1	TOTAL BID
TML CONSTRUCTION, INC.	\$ 636,915.00	\$ 197,000.00	\$ 833,915.00
RAZZ CONSTRUCTION, INC.	\$ 724,512.00	\$ 200,000.00	\$ 924,512.00

* PLEASE NOTE THAT THIS IS FOR INFORMATION USE ONLY. THE OWNER RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS PURSUANT TO SECTION 00 2113
- INSTRUCTIONS TO BIDDERS OF THE CONTRACT DOCUMENTS.

BID REVIEW CHECKLIST PRIOR TO RECOMMENDATION

OWNER: City of Moscow

PROJECT: Well House No. 6

Open Date: 5/3/2022

Bid Review Performed By: Mindy Patterson

CONTRACTOR	TML CONSTRUCTION, INC.	RAZZ CONSTRUCTION, INC.
BID AMOUNT (Basis of Bid Award)	\$ 636,915.00	\$ 724,512.00
PUBLIC WORKS LICENSE NO.	14401-U-1-3-5	005083-Unlimited-1-2
License Limit (See List)		
License Confirmed with the License Board at www.dbs.idaho.gov		
BID PACKAGE		
Are all forms filled out completely and correctly?		
ALL ADDENDA ACKNOWLEDGED?	Yes	Yes
BID PROPOSAL FORM	Yes	Yes
BID SCHEDULE	Yes	Yes
FORM OF BID SECURITY	Yes	Yes
Surety Company Confirmed at www.fms.treas.gov/c570/index.html ?		
LIST OF SUBCONTRACTORS	Yes	Yes
PLUMBING	RL Jacobs Plumbing Inc.	Razz Construction, Inc.
HVAC/BOILER	Air Tech Mechanical Company	Air Tech Mechanical Company
ELECTRICAL	Strom Electric Inc.	Strom Electric Inc.
NON-COLLUSION AFFIDAVIT	Yes	Yes
CONTRACTOR FOR PW TO PAY ALL TAXES	Yes	Yes
AFFIDAVIT OF PAYMENT OR SECUREMENT OF ALL TAXES	Yes	Yes
List other requirements:		

NOTICE OF AWARD

Dated _____

Project: Well House No. 6 Rebid	Owner: City of Moscow	Owner's Contract No.:
Contract:		Engineer's Project No.:
Bidder: TML Construction		
Bidder's Address: P.O. Box 2970, Hayden, ID 83835		

You are notified that your Bid dated May 3, 2022 for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a contract for the Well House No. 6 Rebid Project.

The Contract Price of your contract is: \$833,915.00.

You must comply with the following conditions precedent within **ten (10)** days of the date of this Notice of Award, that is by _____

You must deliver to the OWNER one (1) fully executed counterpart of the Agreement including all the Contract Documents. This includes the set of Drawings. Contract Documents must bear your signature on the cover page.

1. You must deliver with the executed Agreement the Contract Security (Bonds), Certificate of Insurance and Public Works Contract Report along with this Notice of Award as Accepted, as specified in the Instructions to Bidders, General Conditions and Supplementary Conditions.
2. Please note that your Certificate of Insurance must list those additional insureds as identified in the Supplementary General Conditions.
3. The contract date referenced on the Performance and Payment Bond face **and** the bond date on the bond face **must** match the contract date on the first page of the Standard Form of Agreement. Failure to comply with dates may result in the rejection of bonds and further expense to the Contractor for re-issuance of the bonds with corrected dates.
4. Please complete the Public Works Contract Report within the required thirty (30) days and forward to the Engineer. The Engineer will forward to the Idaho State Tax Commission.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions. OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

**CONSTRUCTION AGREEMENT FOR WELL HOUSE NO. 6 REBID
BETWEEN CITY OF MOSCOW, IDAHO AND TML CONSTRUCTION INC**

THIS CONSTRUCTION AGREEMENT FOR WELL HOUSE NO. 6 REBID BETWEEN CITY OF MOSCOW, IDAHO, AND TML CONSTRUCTION INC (hereinafter "Agreement"), dated this ____ day of _____, 2022, 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 TML Construction, Inc., a general business corporation of the State of Idaho, PO Box 2970, Hayden, Idaho 83835 (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 Attachment 'A', 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;

NOW THEREFORE, the Parties to this Agreement, in consideration of the mutual covenants and stipulations set out, agree 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 six (6), and the following:

1. Drawings, Specifications and Proposal, Attachment 'A' for: Well House No.6 Rebid, consisting of 428 Pages;
2. Bid Proposal of CONTRACTOR, dated May 3, 2022, see Attachment 'B', consisting of 12 Pages;
3. Performance and Payment Bonds and Insurance Certificates;
4. Addenda, if applicable, Attachment 'C', consisting of 5 Pages; and
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 the General Conditions of 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:

Well House NO. 6 Re-Bid**ARTICLE 3.
CONTRACT TIME/SUBSTANTIAL COMPLETION**

The work to be performed pursuant to this Agreement shall be substantially completed no later than May 31, 2023, 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 Article 12 of the General Conditions. 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 Dollars (\$200) of the Contract Sum 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 One Hundred Dollars (\$100) of the Contract Sum 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 in accordance with the Contract Documents in current funds in the amount of Six Hundred Thirty-Six Thousand Nine Hundred Fifteen Dollars (\$636,915.00), as submitted by CONTRACTOR. In no event shall Contract amount exceed CONTRACTOR's bid amount of Six Hundred Thirty-Six Thousand Nine Hundred Fifteen Dollars (\$636,915.00) unless otherwise authorized by CITY by written agreement. Said Contract Sum shall be paid in accordance with the Contract Documents.

**ARTICLE 5.
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 6.
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 7.
HOLD HARMLESS/INDEMNIFICATION

In addition to other rights granted 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 and/or any 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 8.
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 of interest arise during the performance of this Agreement, CONTRACTOR shall immediately disclose such conflict to the CITY.

ARTICLE 9.
ENTIRE AGREEMENT, MODIFICATION AND ASSIGNABILITY

This Agreement and the exhibits 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 10.
LICENSES AND ADHERENCE TO LAW REQUIRED

CONTRACTOR represents that he 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 the Agreement engage in, a boycott of goods and services from Israel or territories under its control. Failure to comply with I.C. 67-2346 will result in this Agreement being void as against public policy.

ARTICLE 11. 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 12. 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 attorney's fees and other costs and expenses, whether the same are incurred with or without a lawsuit.

ARTICLE 13. 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 14. 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 15. 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:

TML Construction, Inc.
Brian K Petersen
P.O Box 2970
Hayden, ID 83835

CITY:

City of Moscow
Engineering Division
206 East Third Street
P O Box 9203
Moscow, Idaho 83843

ARTICLE 16. 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 17. 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.

ARTICLE 18. EXECUTION

IN WITNESS WHEREOF, said CONTRACTOR and CITY have caused this Agreement to be executed on the day and year first above written.

I, Brian K. Petersen, certify under penalty of perjury pursuant to the law of the State of Idaho, that I am an authorized agent to bind TML Construction Inc. to this Agreement.



O

208-664-9382

208-664-5946 (fax)

330 E. Lakeside Avenue, Suite 101
Coeur d'Alene, ID 83814

CONSTRUCTION SPECIFICATIONS

FOR CONSTRUCTION OF

WELL HOUSE NO. 6 REBID

FOR

CITY OF MOSCOW

LATAH COUNTY, IDAHO

MOSCOW PROJECT NO. 107-020

APRIL 2022

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Type text here

Community Planning & Design
Engineering Division
504 S Washington Street
(208) 883-7034

Drawings, Specifications and Proposal

For

WELL HOUSE NO. 6

CITY OF MOSCOW PROJECT NO. 107-020

APPROVED: 
SCOTT BONTRAGER, P.E.
ENGINEERING MANAGER / CITY ENGINEER

Prepared by:
Welch-Comer Engineers
330 E. Lakeside Ave, Suite 101
Coeur d'Alene, ID 83814
Phone: (208) 664-9382
Fax: (208) 664-5946

This document and ideas and designs incorporated herein, as an instrument of professional service, is the property of Welch, Comer & Associates, Inc., and is not to be used in whole or in part, for any other project or duplicated in whole or in part, without the written authorization of Welch, Comer & Associates, Inc.

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PART 1
Bidding, Contract Information,
and Required Documents

SECTION 00 1113 – ADVERTISEMENT FOR BIDS
WELL HOUSE NO. 6 REBID
FOR CITY OF MOSCOW
LATAH COUNTY, IDAHO

Separate sealed Bids for the WELL HOUSE NO. 6 REBID will be received by the CITY OF MOSCOW located at Haddock Building 2nd Floor, 504 S. Washington, Moscow, ID 83843, until 2:00 p.m. prevailing local time, on May 3, 2022. At 2:10 p.m. on the same day, all proposals will be publicly opened and read aloud at the same location. All interested individuals are welcome to attend.

Base Bid: The project consists of the demolition and reconstruction of an existing well house. This includes preservation of the existing well and some electrical components. Electrical improvements including installation of a new generator is included. Additionally, the existing chlorine gas injection system will be removed. Additional site utility work will be completed as part of the improvements. All work shall be in accordance with the contract documents.
Add Alternate 1: Includes all work associated with the purchase, installation, and connection to the new Generator as shown on the plans and specs.

Complete digital Project Manual and Project Plans, may viewed and downloaded at questcdn.com via the link provided on The City of Moscow Website at: www.ci.moscow.id.us – click on “Business” / “Bid Opportunities” / “Well House No. 6 Rebid” Once on the Quest site, you may download the digital plan documents for a non-refundable fee of \$20.00. The Quest project number is **8182494**. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with digital project information.

IMPORTANT – All communication about this project, including addenda will only be issued via QuestCDN, and only to those firms listed on the Plan Holder’s List.

The Contract Documents may also be examined at the City of Moscow (Engineering Division), 504 S Washington Street, 2nd Floor, Moscow, ID 83843.

Questions should be directed to Tracy Ortiz, Capital Projects Administrative Assistant, via Email only at: tortiz@ci.moscow.id.us.

A mandatory pre-bid meeting is scheduled at 504 S. Washington St, Moscow, Idaho on Friday, April 22, 2022 at 10:00 a.m., via GoTo Meeting. Please join the meeting from a computer, tablet or smartphone at <https://meet.goto.com/967680685> or you can dial in using your phone to 1(571) 317-3122. Following the meeting, a non-mandatory, but highly recommended site visit will be held.

Any objections to the contents or terms of the Specifications shall be raised three (3) days prior to bid opening or it shall be deemed to have been waived.

The City reserves the right to reject any and all Bid Proposals, to waive any formality in the Bidding Contract Documents and to make selection to the lowest responsive, responsible and qualified Bidder as it may best serve the interest of the Owner.



Tracy Ortiz, Deputy City Clerk

Publish Dates: April 16, 2022 & April 23, 2022

SECTION 00 2113 – INSTRUCTIONS TO BIDDERS

ARTICLE 1. GENERAL PROVISION

1.01 All bidding provisions to be in accordance with Idaho Code 67-2805. In the case of a conflict between these instructions to bidders and Idaho Code 67-2805, Idaho Code 67-2805 shall govern.

ARTICLE 2. DEFINED TERMS

2.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

Bidder – the individual or entity who submits a Bid directly to OWNER.

Issuing Office - the office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

Successful Bidder - the lowest responsible Bidder submitting a responsive Bid to whom OWNER (on the basis of OWNER's evaluations as hereinafter provided) makes an award.

ARTICLE 3. COPIES OF BIDDING DOCUMENTS

3.01 Complete sets of the Bidding Documents in the number and for the payment sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the Issuing Office. The payment will be considered as a non-refundable deposit.

3.02 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.03 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use

ARTICLE 4. PUBLIC WORKS CONTRACTOR'S LICENSE REQUIREMENTS

4.01 The Contractor and subcontractors for this project shall be licensed in the State of Idaho by the Idaho Public Works Contractors

State License Board in the Class and Type specified for the value and scope of Work, in accordance with the provisions of Title 54, Chapter 19, Idaho Code as amended. Contractor and subcontractors shall provide evidence of such licensing prior to the OWNER's issuance of Notice of Award.

ARTICLE 5. EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

5.01 Subsurface and Physical Conditions

The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Bidding Documents.

2. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Bidding Documents.

Copies of reports and drawings referenced in paragraph 4.01.A will be made available by OWNER to any Bidder on request. Those reports and drawings are not part of the Bidding Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in paragraph 4.02 of the General Conditions has been identified and established in paragraph 4.02 of the Supplementary Conditions, if any. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

5.02 Underground Facilities

Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities, including OWNER, or others.

5.03 Hazardous Environmental Condition

The Supplementary Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that ENGINEER has used in preparing the Bidding Documents.

Copies of reports and drawings referenced in paragraph 4.03.A will be made available by OWNER to any Bidder on request. Those reports and drawings are not part of the Bidding Documents, but the "technical data" contained

therein upon which Bidder is entitled to rely as provided in paragraph 4.06 of the General Conditions has been identified and established in paragraph 4.06 of the Supplementary Conditions, if any. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

5.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Bidding Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Bidding Documents to be within the scope of the Work appear in paragraph 4.06 of the General Conditions.

5.05 On request, OWNER will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.06 Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by OWNER or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, OWNER will provide to each Bidder for examination access to or copies of Bidding Documents (other than portions thereof related to price) for such other work.

5.07 It is the responsibility of each Bidder before submitting a Bid to:

Examine and carefully study the Bidding Documents, including any Addenda and the other related data identified in the Bidding Documents;

Visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and

performance of Work. It is recommended that Prospective Bidders attend a pre-bid conference at the Site as further described in the Advertisement for Bids;

Become familiar with and satisfy Bidder as to all Federal, State and local Laws and Regulations that may affect cost, progress, or performance of the Work;

Carefully study all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and carefully study all reports and drawings of a Hazardous Environmental Condition, if any, at the Site which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions;

Obtain and carefully study (or assume responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

Become aware of the general nature of the work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents;

Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

Promptly give ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies

that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by ENGINEER is acceptable to Bidder; and

Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

5.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences or procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in Bidding Documents and the written resolutions thereof by ENGINEER are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6. PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and place noted in the Advertisement for Bids. Representatives of OWNER and ENGINEER will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. ENGINEER will transmit to all prospective Bidders of record such Addenda as ENGINEER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7. SITE AND OTHER AREAS

7.01 The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Bidding Documents.

ARTICLE 8. INTERPRETATIONS AND ADDENDA

8.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to ENGINEER in writing.

Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda, mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

8.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by OWNER or ENGINEER.

ARTICLE 9. BID SECURITY

9.01 A Bid must be accompanied by Bid security made payable to OWNER in an amount of five percent (5%) of Bidder's maximum Bid price (including all alternates) and in the form of a certified check, cashiers check, cash or a Bid Bond (EJCDC No. C-430, 2007 Edition) issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions. Said check or bond if selected for use by Bidder, shall be made payable to the OWNER and shall be given as a guarantee that the Bidder will enter into the contract if they are the successful bidder. If the successful bidder fails to execute the contract, the municipality can use the funds to pay the difference between the lowest bidder and the next bidder, as well as administrative costs and the remainder gets refunded. The administrative costs are limited to no more than 25% of the amount of the bidder's security. I.C.67-2805(3)(a)(vi) and (vii).

9.02 If the Bidder elects to furnish a Bid Bond as its Bid security, the Bidder shall use the Bid Bond form bound herein.

9.03 Bid security of other Bidders whom OWNER believes do not have a reasonable chance of receiving the award will be returned within seven (7) days after the Bid opening.

ARTICLE 10. CONTRACT TIMES

10.01 The number of days within which, or the dates by which, the Work is to be (a) Substantially Completed and (b) also completed and ready for final payment are set forth in the Section 01 1000 Summary Technical Specification.

ARTICLE 11. LIQUIDATED DAMAGES

11.01 Owner and Contractor recognize that time is of the essence and that Owner will suffer financial loss if the work is not completed within times specified in Article 10 above, plus any extensions thereof allowed in accordance with article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by the Owner if the work is not completed on time.

Accordingly, instead of requiring such proof, Owner and the Contractor agree that as liquidated damages for delay (but not as a penalty) the Contractor shall pay to Owner sum of \$200/day will be deducted by owner for each and every calendar day beyond the substantial completion dates identified herein. An additional \$100/day will be deducted by owner for each and every day beyond final completion. Should such deductions exceed the outstanding amount of the Agreement, the Contractor and its surety shall be liable for the excess.

ARTICLE 12. SUBSTITUTE AND "OR-EQUAL" ITEMS

12.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in paragraph 6.05 of the General Conditions, or those substitute or materials and equipment approved by the ENGINEER and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. Request for ENGINEER's clarification of materials and equipment considered "or-equal" prior to the Effective Date of the Agreement must be received by the ENGINEER at least ten (10) days prior to the date for receipt of Bids. No items of material or equipment will be considered by ENGINEER as a substitute unless written request for approval has been submitted by Bidder and has been received by ENGINEER at least ten (10) days prior to the date for receipt of Bids. Each request shall conform to the requirements of paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. ENGINEER's decision of approval or disapproval of a proposed item will be final. If ENGINEER approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 13. SUBCONTRACTORS, SUPPLIERS, AND OTHERS

13.01 Subcontractors for plumbing, heating and air conditioning, and electrical work must be named according to Idaho State Code Section 67-2310. Failure to comply with provisions of this section may render a bid unresponsive and be grounds for rejection of bid.

ARTICLE 14. PREPARATION OF BID

14.01 The Bid form is included with the Bidding Documents. Additional copies may be obtained from ENGINEER.

14.02 All blanks on the Bid form shall be completed by printing in black or blue ink or by typewriter and the Bid signed. A Bid price shall be indicated for each section, Bid item, alternative, adjustment unit price item, and unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.

14.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

14.04 A Bid by partnerships shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

14.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.

14.06 A Bid by an individual shall show the Bidder's name and official address.

14.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The official address of the joint venture must be shown below the signature.

14.08 All names shall be typed or printed in ink below the signatures.

14.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form.

14.010 The address and telephone number for communication regarding the Bid shall be shown.

14.011 The Bid shall contain evidence of the CONTRACTOR and subcontractor's authority and qualification to do business and be licensed

in the State of Idaho by the Idaho Public Works Contractors State License Board in the Class and Type specified for the value and scope of Work, in accordance with the provisions of Title 54, Chapter 19, Idaho Code as amended, or covenant to obtain such qualification prior to award of Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid form. CONTRACTOR and subcontractors shall provide evidence of such licensing prior to the OWNER's issuance of Notice of Award.

ARTICLE 15. BASIS OF BID; EVALUATION OF BIDS

15.01 Unit Price

Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid Schedule. Bids must provide a total sum for the base contract and include a separate price for each alternate described in the Specifications as provided for in the Bid Form. The price of the Bid for each alternate will be the amount to be added to or deducted from the price of the Base Bid if the OWNER selects any of the alternates.

The total of all estimated prices will be determined as the sum of the products of the estimated quantity of each item and the unit price Bid for the item. The final quantities and Contract Price will be determined in accordance with paragraph 11.03 of the General Conditions.

Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Bidding Documents as provided in paragraph 11.02 of the General Conditions.

ARTICLE 16. SUBMISSION OF BID

16.01 A Bid shall be submitted no later than the date and time prescribed and place indicated in the advertisement or invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If the Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a

separate envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to the OWNER.

ARTICLE 17. MODIFICATION AND WITHDRAWAL OF BID

17.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

ARTICLE 18. OPENING OF BIDS

18.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 19. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

19.01 All Bids will remain subject to acceptance for thirty (30) days after the day of Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 20. BID PROTEST

20.01 Bid protest procedures to follow Idaho Code 67-2805.

ARTICLE 21. AWARD OF CONTRACT

21.01 Owner intends to award the contract to the qualified public works contractor that submits the lowest bid price and complies with the bidding procedures contained in these Instructions to Bidders and the laws of the state of Idaho.

21.02 If the Contract is to be awarded, OWNER will give Successful Bidder a Notice of Award within thirty (30) days after the day of Bid Opening. The form for Notice of Award is included in the Contract Documents for reference.

21.03 OWNER reserves the right to reject any or all Bids. OWNER also reserves the right to waive all informalities.

21.04 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

21.05 In evaluating Bids, OWNER will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data as may be requested in the Bid Form or prior to Notice of Award.

21.06 The Base Bid are generally referred to as follows:

Base Bid: The project consists of the demolition and reconstruction of an existing well house. This includes preservation of the existing well and some electrical components. Electrical improvements including installation of a new generator is included. Additionally, the existing chlorine gas injection system will be removed, and a new on-site chlorine generation system will be installed. Additional site utility work will be completed as part of the improvements. All work shall be in accordance with the contract documents.

21.07 If the Contract is to be awarded, OWNER will award the Contract to the responsible Bidder whose Base Bid that the OWNER deems to be in the OWNER's best interest is the lowest bid, and whose evaluation by the OWNER indicates to the OWNER that the award will be in the best interests of the Project. Award will be based on conforming with all the material terms and conditions of the Advertisement for Bids, is lowest price, and other factors considered.

21.08 Low bid and award of Contract, if awarded, will be based on the following:

BASE BID

Or

BASE BID + ADD ALTERNATE NO. 1

21.09 Award of the bid will be subject to funding available to OWNER at the time of contract award.

ARTICLE 22. CONTRACT SECURITY AND INSURANCE

22.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth OWNER's requirements as to performance Bond, payment Bond, and insurance. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by such Bonds on the prescribed forms included in the Bidding Documents and the evidence of insurance as required.

ARTICLE 23. SIGNING OF AGREEMENT

23.01 When OWNER gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Bidding Documents which are identified in the Agreement as attached thereto. Within **ten (10)** days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER. Within ten (10) days thereafter, OWNER shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 24. SCHEDULE OF VALUES

24.01 Prior to Notice to Proceed being issued, the Contractor shall submit a schedule of values to the Engineer as established in paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work, schedule of values will be unit prices as submitted with bid package).

ARTICLE 25. NOTICE TO PROCEED

25.01 Notice to Proceed shall be issued by OWNER at any time within thirty (30) days after the Effective Date of the Agreement. The form to be issued by the OWNER is included in the Bidding Documents for reference.

25.02 The Contract Times will commence to run on the day indicated on the Notice to Proceed.

25.03 In no event will the Contract Times commence to run later than sixty (60) days after Bid Opening or thirty (30) days after the Effective Date of the Agreement, whichever date is earlier, without mutual agreement between OWNER and CONTRACTOR.

ARTICLE 26. RETAINAGE

26.01 Retainage shall be an amount equal to five percent (5%) of approved payments to CONTRACTOR until the Work has been completed. Retainage shall be released to CONTRACTOR after completion and acceptance of the Work by the OWNER and ENGINEER, receipt from the State Tax Commission of the Public Works Contract Tax Release, and upon presentation of evidence that all taxes and bills for materials, service, labor and other charges have been paid or acceptable arrangements made for their payment.

SECTION 00 2123 – BIDDER'S CHECKLIST

The Bidder's Checklist is offered to the prospective bidder as a means of checking the Bidder's Bid Proposal in order to ensure that a complete Bid is submitted, free from omissions and errors that could possibly lead to rejection of the Bid. This checklist is provided only as a convenience for Bidders and is not intended to be a detailed or complete listing of all actions and documents that may be required. Bidders are advised to carefully read all portions of the Bidding Documents and to comply with all requirements.

BID FORM

1. Have questions arising from the Bidding Document been submitted to the proper authority and resolved in the proper manner?
2. Are all blank spaces filled out on Bid Form, including required signatures?
3. Have all Addenda been received, factored into the Bid, and acknowledged on the Bid Form?

BID SCHEDULE

4. Is each pay item shown in figures?
5. Is bid price shown correctly including totals? Recheck for errors and omissions. Total base bid must be shown in figures.

BID SECURITY

6. Has a certified check, cashiers check, cash or a Bid Bond in the amount specified been included with the Bidding Documents?
7. If a Bid Bond has been provided, is it issued by a surety company qualified in the State of Idaho, and is it accompanied by a current Power of Attorney? Is it on the form included in the Bidding Documents?

PROPOSED SUBCONTRACTORS

8. Are the subcontractors listed to whom work will be awarded, as well as their Idaho Public Works Contractor's license number in compliance with Idaho Code 67-2310? Be sure to include an answer for each category even if it is a subcontractor to a subcontractor or it is self-perform.

NON-COLLUSION AFFIDAVIT

9. Are all blanks been filled out on this required form, including signature of authorized representative?

CONTRACTOR FOR PUBLIC WORKS TO PAY AND SECURE ALL TAXES

10. Have all blanks been filled out on this required form, including signature of authorized representative?

AFFIDAVIT OF PAYMENT OR SECUREMENT OF ALL TAXES

11. Have all blanks been filled out on this required form, including signature of authorized representative?

BID PACKAGE SUBMITTAL

12. Are all required Bid Forms and the Bid Security placed in a properly addressed, sealed envelope, and ready for delivery to the specified authority prior to the time for the Bid Opening?

SECTION 00 4100 - BID FORM

PROJECT: WELL HOUSE NO. 6 REBID

THIS BID IS SUBMITTED TO: CITY OF MOSCOW
221 E. SECOND STREET
MOSCOW, ID 83843

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and with the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement for Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for thirty (30) days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within **ten (10)** days after the date of OWNER's Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - 3.1. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged: (List Addendum Number and Date of Issuance):

_____	_____
_____	_____
_____	_____

- 3.2. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
- 3.3. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work;
- 3.4. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. BIDDER accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which BIDDER is entitled to rely as provided in paragraph 4.2 of the General Conditions. BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER's purposes. BIDDER acknowledges that OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.
- 3.5. BIDDER is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

- 3.6. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 3.7. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
- 3.8. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.
4. BIDDER will complete the Work in accordance with the Contract Documents for the following price:

BASE BID: \$ _____

ADD ALTERNATE NO. 1: \$ _____

TOTAL BASE BID + ADD ALT. NO. 1: \$ _____

Unit Prices have been completed in accordance with paragraph 11.03.B of the General Conditions.

Bidder acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.

5. BIDDER agrees that the Work will be substantially completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.
7. **The following documents are attached to and made a condition of this Bid:**
- 7.1. Required Bid Security in the form of _____.
- 7.2. List of Subcontractors
- 7.3. Non-Collusion Affidavit
- 7.4. Contractor for Public Works to Pay and Secure All Taxes
- 7.5. Affidavit of Payment or Securement of All Taxes
8. Communications concerning this Bid shall be addressed to:
- ☐ The address of the BIDDER indicated below.
- ☐ The following address: _____
9. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED ON _____, _____.

State of Idaho Public Works Contractors License No. _____

Idaho State Tax Commission Use Tax Reporting No. _____

BIDDER is an individual/partnership/corporation/joint venture: _____

BIDDER: _____ (SEAL)

Signature: _____ Name/Title: _____

Signature: _____ Name/Title: _____

Phone Number and Address for receipt of official communications:

Phone: _____

Fax: _____

Email: _____

SECTION 00 4322 – UNIT PRICES FORM

CITY OF MOSCOW WELL HOUSE NO. 6 REBID

BASE BID					
Pay Item No.	Description	Unit	Estimated Quantity	Unit Price	Price
015050.01	Mobilization	LS	1	\$	\$
024100.01	Demolition	LS	1	\$	\$
221007.01	Sodium Hypochlorite Generation System Coordination and Utility Connections	LS	1	\$	\$
238100.01	Heating and Ventilation	LS	1	\$	\$
260000.01	General Electrical	LS	1	\$	\$
312200.01	Site Grading	LS	1	\$	\$
331116.01	2" Poly Water Line	LF	59	\$	\$
331116.02	2" Service Meter Piping	LS	1	\$	\$
333111.01	Sanitary Sewer Service Connection	LF	70	\$	\$
334111.01	Catch Basin	EA	1	\$	\$
334111.02	Pump to Waste Basin	LS	1	\$	\$
334111.03	10" Ductile Iron Drain Pipe	LF	10	\$	\$
334111.04	Drywell	EA	2	\$	\$
334111.05	4-Inch Floor Drain and Pipe	LS	1	\$	\$
334111.06	4-Inch Footing Drain Discharge Pipe	LF	16	\$	\$
061010.01	Building	LS	1	\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
TOTAL BASE BID PRICE:					\$

ADD ALTERNATE NO. 1					
Pay Item No.	Description	Unit	Estimated Quantity	Unit Price	Price
263213.01	Standby Power System	LS	1	\$	\$
				\$	\$
				\$	\$
				\$	\$
TOTAL ADD ALTERNATE NO. 1 PRICE:					\$

SECTION 00 4350 - BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER *(Name and Address):*

SURETY *(Name and Address of Principal Place of Business):*

OWNER *(Name and Address):*

BID

Bid Due Date:

Description *(Project Name and Include Location):*

BOND

Bond Number:

Date

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal) Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2. All Bids are rejected by Owner, or

3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 4400 - LIST OF SUBCONTRACTORS

(TO BE SUBMITTED WITH PROPOSAL)

Pursuant to Section 67-2310, Idaho Code, commonly known as the naming law, the names and addresses of the entities who will perform the plumbing, heating and air conditioning and electrical work, subject to approval of Owner and Engineer, if Undersigned is awarded the Contract, are as follows:

Plumbing (Name): _____

(Address): _____

Idaho Public Works Contractors License No.: _____

Idaho Plumbing Contractors License No.: _____

Warm Air Heating & Air Conditioning (Category 2)(Name): _____

(Address): _____

Idaho Public Works Contractors License No.: _____

Electrical (Name): _____

(Address): _____

Idaho Public Works Contractors License No.: _____

Idaho Electrical Contractors License No.: _____

Failure to name a properly license contractor in each of the above categories will render the bid unresponsive and void.

The Undersigned notifies that he is of this date duly licensed as an Idaho Public Works Contractor and further that he possesses Idaho Public Works Contractor's License No. _____.

Dated this _____ day of _____, 20__.

(Company)

(Address)

(Authorized Signature)

(Printed Name and Title)

Please note that if any of this work is being provided on the project the licensed contractor must be noted. This means Subs to Subcontractors MUST be listed if they are performing work in one of these categories, no matter what the bid item encompasses. If you are unsure if an item of work would qualify as HVAC, Plumbing, or Electrical it is your responsibility to contact the Division of Building Safety for clarification. The Engineer will not provide this determination.

SECTION 00 4500 – NON-COLLUSION AFFIDAVIT

State of _____)
:SS
County of _____)

_____, being first duly sworn, deposes and says that he/she is
_____, (sole owner, a partner, president,
secretary, etc.) of _____

_____,
the party making the foregoing bid, that such Bid is not made in the interest of or on behalf of any undisclosed person, partnership, company association, organization, or corporation; that such Bid is genuine and not collusive or sham; that said Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, nor that anyone shall refrain from bidding; that said Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of said Bidder or of any other bidder, nor to fix any overhead, profit, or cost advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such Bid are true; and, further, that said Bidder has not directly or indirectly, submitted its bid price or any breakdown thereof, nor the contents thereof, nor divulged information or data relative thereto, not paid and will not pay fee in connection therewith to any corporation, partnership, company association, organization, bid depository, nor to any member or agent thereof, not to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his/her general business.

Signed: _____

Title: _____

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public in and for the State

of _____

Residing at: _____

My Commission expires: _____

SECTION 00 4550 - CONTRACTOR FOR PUBLIC WORKS TO PAY OR SECURE ALL TAXES

The Contractor, in consideration of securing the business of erecting or constructing public works in this State, recognizing that the business in which he is engaged is of a transitory character, and that in the pursuit thereof, his property used therein may be without the State when taxes, excises, or license fees to which he is liable become payable agrees:

1. To pay promptly when due all taxes (other than on real property) excises and license fees due to the State, its subdivisions, and municipal and quasi-municipal corporations therein, accrued or accruing during the term of this contract, whether or not the same shall be payable at the end of such term;
2. That if the said taxes, excises and license fees are not payable at the end of said term, but liability for the payment thereof exists, even though the same constitute liens upon his property, to secure the same to the satisfaction of the respective officers charged with the collection thereof;
3. That, in the event of his default in the payment or securing of such taxes, excises and license fees, to consent that the Department, Officer, Board or Taxing Unit entering into this contract may withhold from any payment due him hereunder the estimated amount of such accrued and accruing taxing units to which said contractor is liable.

CONTRACTOR:

By: _____

Name: _____

Address: _____

(S E A L)

ATTEST:

Name: _____

SECTION 00 4650 – SUCCESSFUL BIDDER’S CHECKLIST

Upon Notice of Award, the successful bidder will be required to submit, for approval, the following information prior to the execution of the Agreement by the Owner and issuance of formal Notice to Proceed.

- _____ 1. Notice of Award sent to the Contractor by the Owner.
- _____ 2. One (1) Original of Signed Agreement (original-quality form mailed to Successful Bidder by Owner).
- _____ 3. One (1) Original of Performance Bond (according to form included herein)
- _____ 4. One (1) Original of Payment Bond (according to form included herein)
- _____ 5. Original Public Works Contract Report (according to form included herein)
- _____ 6. Evidence of Insurance (certificates with requested cancellation clause naming the additional insureds as specified in Section 00 7300 – Supplementary Conditions)
 - a) General Liability
 - b) Automobile Liability
 - c) Worker’s Compensation

SECTION 00 4700 - NOTICE OF AWARD (SAMPLE)

Dated _____

Project:	Owner:	Owner's Contract No.:
Contract:		Engineer's Project No.:
Bidder:		
Bidder's Address: (send Certified Mail, Return Receipt Requested)		

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a contract for the _____

The Contract Price of your contract is: _____

You must comply with the following conditions precedent within **ten (10)** days of the date of this Notice of Award, that is by _____

You must deliver to the OWNER one (1) fully executed counterpart of the Agreement including all the Contract Documents. This includes the set of Drawings. Contract Documents must bear your signature on the cover page.

1. You must deliver with the executed Agreement the Contract Security (Bonds), Certificate of Insurance and Public Works Contract Report along with this Notice of Award as Accepted, as specified in the Instructions to Bidders, General Conditions and Supplementary Conditions.
2. Please note that your Certificate of Insurance must list those additional insureds as identified in the Supplementary General Conditions.
3. The contract date referenced on the Performance and Payment Bond face **and** the bond date on the bond face **must** match the contract date on the first page of the Standard Form of Agreement. Failure to comply with dates may result in the rejection of bonds and further expense to the Contractor for re-issuance of the bonds with corrected dates.
4. Please complete the Public Works Contract Report within the required thirty (30) days and forward to the Engineer. The Engineer will forward to the Idaho State Tax Commission.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions. OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

SECTION 00 5200 - EJCDC STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR ON THE BASIS OF A STIPULATED PRICE (Sample)

THIS AGREEMENT is dated as of the _____ day of _____, in the year 20__ by and between **OWNERS NAME** (hereinafter called the OWNER) and _____ (hereinafter called the CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents titled "Project Name," dated _____ 20__.

Base Bid:

Article 2. ENGINEER.

The Project has been designed by Welch, Comer & Associates, Inc. The OWNER has retained Welch, Comer & Associates, Inc. and designated the firm as the ENGINEER who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with design of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIMES.

- 3.1 The Work will be substantially completed within _____ (_____) calendar days after the date when the Contract Times commence to run as provided in paragraph 2.03 of the EJCDC General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within ten (10) calendar days after the date of substantial completion.
- 3.2 *Liquidated Damages:* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring such proof, OWNER and the Contractor agree that as liquidated damages for delay (but not as a penalty) the **Contractor shall pay to OWNER the sum of one-half of one percent (0.005) of the Agreement amount, including change orders, will be deducted by OWNER for each and every calendar day that the date of final completion is delayed.** Should such deductions exceed the outstanding amount of the Agreement, the Contractor and its surety shall be liable for the excess.

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in the attached Bid Schedule included in the Bid Proposal.

TOTAL OF ALL UNIT PRICES: \$ _____ (_____ In Words)

As provided in paragraph 11.3 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by ENGINEER as provided in paragraph 9.08 of the General Conditions. Unit prices have been computed as provided in paragraph 11.3 of the General Conditions.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

- 5.1 Progress Payments: Retainage. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, during construction on a duly certified estimate of the work complete, less five percent (5%) retainage. All such payments will be measured by the schedule of values established in paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is not schedule of values, as provided in the General Requirements. Payment of Owner approved applications for payment shall be made within thirty (30) calendar days from the date of approval.
- 5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07. Payment of OWNER approved final application for payment shall be made within sixty (60) calendar days from date of approval.

Article 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 6.1 This Agreement (pages 1 to 4 inclusive)
- 6.2 Performance, Payment, and other Bonds identified as such
- 6.3 Notice to Proceed
- 6.5 The Contract Documents as itemized in the Index to Contract Documents
- 6.4 Supplementary General Conditions (pages 1 to 6 inclusive)
- 6.5 EJCDC General Conditions (pages 1 to 42 inclusive)
- 6.6 Addenda numbers to inclusive
- 6.7 CONTRACTOR's Bid Package as identified
- 6.8 Documentation submitted by CONTRACTOR prior to Notice of Award (pages ____ to ____, (inclusive)).
- 6.9 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraph 3.05 of the General Conditions.

The documents listed in paragraph 6.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 6. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

Article 7. MISCELLANEOUS.

- 7.1 Terms used in this Agreement will have the meanings indicated in the General Conditions.
- 7.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 7.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreement and obligations contained in the Contract Documents.

7.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

OWNER: _____

CONTRACTOR: _____

By: _____

By: _____

Name/Title: _____

Name/Title: _____

Date: _____

Date: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____

Attest _____

Address for giving notices:

Address for giving notices:

License No. _____

SECTION 00 5300 - PERFORMANCE BOND (SAMPLE)

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

EJCDC No. C-610 (2002 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, which is incorporated herein by reference.
2. If the CONTRACTOR performs the Contract, the Surety and the CONTRACTOR have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no OWNER Default, the Surety's obligation under this Bond shall arise after:
 - 3.1. The OWNER has notified the CONTRACTOR and the Surety at the address described in Paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER's right, if any, subsequently to declare a CONTRACTOR Default; and
 - 3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR's right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and the Surety have received notice as provided in paragraph 3.1; and
 - 3.3. The OWNER has agreed to pay the Balance of the Contract Price to:
 - 3.3.1. The Surety in accordance with the terms of the Contract;
 - 3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.
4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 4.1. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or
 - 4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the 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 Contract, and pay to the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR Default; or
 - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;
 - 4.4.1. After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or
 - 4.4.2. Deny liability in whole or in part and notify the OWNER citing reasons therefor.
5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen 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 paragraph 4.4, and the OWNER refuses the payment tendered 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.
6. After the OWNER has terminated the CONTRACTOR's right to complete the Contract, and if the Surety elects to act under

paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

- 6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;
 - 6.2. 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 paragraph 4; and
 - 6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the CONTRACTOR.
7. The Surety shall not be liable to the OWNER or others for obligations of the CONTRACTOR that are unrelated to the Contract, and the Balance of 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, or successors.
 8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.
 9. 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 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.
 10. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page.
 11. The Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of the Surety to execute, seal and deliver such Bond and bind the Surety thereby.
 12. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
 13. Definitions.
 - 13.1. Balance of Contract Price: The total amount payable by the OWNER to the CONTRACTOR under the 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 Contract.
 - 13.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.
 - 13.3. CONTRACTOR Default: Failure of the CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
 - 13.4. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

SECTION 00 5400 - PAYMENT BOND (SAMPLE)

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal
Place of Business):

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By:

Signature and Title

(Attach Power of Attorney)

Attest:

Signature and Title

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By:

Signature and Title

(Attach Power of Attorney)

Attest:

Signature and Title:

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

- 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
- 2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

- 4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
- 4.2. Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

- 6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
- 6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, 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.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. 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 Contract, architectural and engineering services required for performance of the Work of Contractor and 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.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

SECTION 00 5500 – PUBLIC WORKS CONTRACT REPORT

Idaho State Tax Commission

Ref. No. (State use only)

WH-5 Public Works Contract Report

Idaho Code sections 54-1904A and 63-3624(g) require all public works contracts to be reported to the Tax Commission. This form must be filed with the Tax Commission within 30 days after a contract is awarded.

Contract awarded by (public body and address)

Contract awarded to (contractor's name and address)

State of incorporation	Federal Employer Identification Number (EIN)	Date qualified to do business in Idaho
Business operates as ☐ Sole proprietorship ☐ Partnership ☐ Corporation ☐ LLC		Public Works contractor license number
Sole proprietor's Social Security number	Idaho sales/use tax permit number	Idaho withholding tax permit number
Awarding agency project number		Amount of contract \$
Description and location of work to be performed		

PROJECT DATES

Scheduled project start date: _____ Completion date: _____

If the following information is not available at this time, please indicate date it will be: _____

ALL SUBCONTRACTORS

Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			
Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			
Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			
Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			

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ALL SUBCONTRACTORS (CONTINUED)

Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			

Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			

Name		Federal EIN	
Address		Public works contractor number	
City, State, ZIP	☐ LLC ☐ Sole proprietorship	☐ Corporation ☐ Partnership	Amount of subcontract \$
Description of work			

SUPPLIERS

Use the space below to report major suppliers of materials and supplies; items removed from inventory; equipment purchased, rented, or leased for use in project; materials provided by government agency. Please indicate how sales or use tax was paid.

Name		Federal EIN	Total value \$
Address		Materials and equipment purchased and used	
City, State, ZIP	Phone	☐ Tax paid to supplier ☐ Tax paid to state* ☐ No tax paid	

Name		Federal EIN	Total value \$
Address		Materials and equipment purchased and used	
City, State, ZIP	Phone	☐ Tax paid to supplier ☐ Tax paid to state* ☐ No tax paid	

Name		Federal EIN	Total value \$
Address		Materials and equipment purchased and used	
City, State, ZIP	Phone	☐ Tax paid to supplier ☐ Tax paid to state* ☐ No tax paid	

Name		Federal EIN	Total value \$
Address		Materials and equipment purchased and used	
City, State, ZIP	Phone	☐ Tax paid to supplier ☐ Tax paid to state* ☐ No tax paid	

* If tax was not paid to suppliers but **was** or **will be** reported as "items subject to use tax" under your permit number, indicate period of return on which payment **was** or **will be** reported: _____

If tax was paid to a state **other** than Idaho, name state next to "total value" box(es) above. If tax is due and has **not previously been reported**, attach payment to this form. **If you need more room, please photocopy this page.**

SIGN HERE	Authorized signature	Print name	Phone number	Date
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File with the Idaho State Tax Commission, PO Box 36, Boise ID 83722-2210.

For more information, call (208) 334-7618 • Fax: (208) 332-6619 • E-mail: Contractdesk@tax.idaho.gov.

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SECTION 00 5600 - NOTICE TO PROCEED (Sample)

Dated _____

Project:	Owner:	Owner's Contract No.:
Contract:		Engineer's Project No.:
Contractor:		
Contractor's Address: [send Certified Mail, Return Receipt Requested]		

You are notified that the Contract Times under the above contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

(add other requirements)

(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

SECTION 00 5700 – PRE-CONSTRUCTION CONFERENCE NOTICE (Sample)

DATED: _____

TO: _____
(CONTRACTOR)

ADDRESS: _____

CONTRACT FOR: _____

A Pre-Construction Conference will be held at _____ on _____, _____, 200_ at the office of Welch, Comer & Associates, Inc. located at 330 E. Lakeside Avenue, Ste. 101, Coeur d'Alene, ID 83814.

The Contractor will have a schedule of Work for the Project (CPM, bar chart, etc.) prepared and submitted to the Engineer a minimum of three (3) days prior to the conference. In addition, the Contractor is required to furnish a full list of all subcontractors and suppliers the Contractor intends to use during the course of the project to complete the Work.

The Contractor and all subcontractors for the Project are required to be in attendance and participate in the discussion.

Any concerns you may have about the Project should be discussed at this time.

Welch, Comer & Associates, Inc.
(ENGINEER)

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

SECTION 00 6000 – CHANGE ORDER (Sample)

CHANGE ORDER No. _____

PROJECT: DATE OF ISSUANCE:	STATE: EFFECTIVE DATE:
OWNER: CONTRACTOR: ENGINEER:	

You are directed to make the following changes in the Contract Documents:
(supplemental plans and specifications attached)

<u>Item Description</u>	<u>Change in Price</u>
-------------------------	------------------------

JUSTIFICATION:

CHANGE IN CONTRACT PRICE:		CHANGE IN CONTRACT TIMES (days)	
Original Contract Price	\$ _____	Original Contract Times	
		Substantial Completion:	
		Ready for Final Payment:	
Previous Change Orders		Previous Change Orders	
Change Order No. _____	\$ _____	Change Order No. _____	
Change Order No. _____	\$ _____	Change Order No. _____	
Change Order No. _____	\$ _____	Change Order No. _____	
Net Changes from Previous Change Orders	\$ _____	Net Changes from Previous Change Order	
Contract Price prior to this Change Order	\$ _____	Contract Times prior to this Change Order	
		Substantial Completion:	
		Ready for Final Payment:	
Net Increase/Decrease of this Change Order	\$ _____	Net Increase/Decrease of this Change Ord	
Contract Price with all approved Change Orders	\$ _____	Contract Times with all approved Change	
		Substantial Completion:	
		Ready for Final Payment:	

This document will become a supplement to the contract and all provisions will apply hereto.

RECOMMENDED (ENGINEER):

By: _____	Name/Title: _____
-----------	-------------------

RECOMMENDED (Owner):

By: _____	Name/Title: _____
-----------	-------------------

ACCEPTED (Contractor):

By: _____	Name/Title: _____
-----------	-------------------

APPROVED (Agency):

CHANGE ORDER INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

SECTION 00 6100 – PAY REQUEST (Sample)

OWNER NAME					
PROJECT NAME					
CONTRACTOR PARTIAL PAYMENT REQUEST					
Owner:		Contractor:			
Period of		Pay Request Number:			
Request:		to		Date of Pay Request:	
CHANGE ORDER SUMMARY				PAYMENT REQUEST SUMMARY*	
No.	Approved	Additions	Deductions		
				1. Original Contract	\$ -
				2. Change Orders	\$ -
				3. Revised Contract Amount	\$ -
				4. Work Completed	\$ -
				5. Stockpiled Materials	N/A
				6. Retainage (5%)	\$ -
				7. Previous Payments	\$ -
				8. Amount Due (4+5-6-7)	\$ -
Totals		\$ -	\$ -	*Detailed breakdown attached.	
Net Change			\$ -	% of Contract Amount Earned	#DIV/0!
CONTRACT TIMES					
Calendar Dates			Number of Calendar Days		
Starting Date			Substantial Completion		60
Substantial Completion Date			Ready for Final Payment		10
Ready For Final Payment			Change Order Days		
% of Contract Days Expired			Total Calendar Days		70
CONTRACTOR's Certification					
The undersigned CONTRACTOR certifies that: (1) all previous progress payments received from OWNER on account of Work done under this Contract have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Contractor Partial Payment Requests numbered ____ through ____ inclusive; (2) title to all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Partial Payment Request will pass to OWNER at time of payment free and clear of all liens, claims, security interest and encumbrances (except such as are covered by Bond acceptable to OWNER indemnifying OWNER against any such lien, claim, security interest or encumbrance); and (3) all Work covered by the Partial Payment Request is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.					
PROPOSED BY CONTRACTOR:			RECOMMENDED BY ENGINEER		
			Welch, Comer & Associates, Inc.		
By:			By:		
Date:			Date:		
APPROVED BY OWNER:					
By:					
Date:					

APPLICATION FOR PAYMENT INSTRUCTIONS

A. GENERAL INFORMATION

The sample form of Schedule of Values is intended as a guide only. Many projects require a more extensive form with space for numerous items, description of Change Orders, identification of variable quantity adjustments, summary of materials and equipment stored at the site and other information. It is expected that a separate form will be developed by Engineer and Contractor at the time Contractor's Schedule of Values is finalized. Note also that the format for retainage must be changed if the Contract permits (or the law provides), and Contractor elects to deposit securities in lieu of retainage. Refer to Article 14 of the General Conditions for provisions concerning payments to Contractor.

B. COMPLETING THE FORM

The Schedule of Values, submitted and approved as provided in paragraphs 2.05.B.3 and 2.07 of the General Conditions, should be reproduced as appropriate in the space indicated on the Application for Payment form. Note that the cost of materials and equipment is often listed separately from the cost of installation. Also, note that each Unit Price is deemed to include Contractor's overhead and profit.

All Change Orders affecting the Contract Price should be identified and included in the Schedule of Values as required for progress payments.

The form is suitable for use in the Final Application for Payment as well as for Progress Payments; however, the required accompanying documentation is usually more extensive for final payment. All accompanying documentation should be identified in the space provided on the form.

C. LEGAL REVIEW

All accompanying documentation of a legal nature, such as Lien waivers, should be reviewed by an attorney, and Engineer should so advise Owner.

PART 2

Supplementary Conditions and General Conditions

SECTION 00 7300 – SUPPLEMENTARY GENERAL CONDITIONS

To The

Standard General Conditions of the Construction Contract, EJCDC No. C-700 (2007 ed.)

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700) (2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1.01.A.

The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.

SC-1.01.A.3. Add the following language to the end of paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is included in the Bidding Documents for reference.

SC-1.01.A.9. Add the following language to the end of paragraph 1.01.A.9:

The Change Order form to be used on this Project is included in the Bidding Documents for reference.

SC-1.01.A.19.

Delete paragraph 1.01.A.19 in its entirety and insert the following in its place:

ENGINEER – The Project has been designed by:

Welch, Comer & Associates, Inc.
330 E. Lakeside Ave., Ste. 101
Coeur d'Alene, Idaho 83814
(208) 664-9382; Fax: 664-5946

who is hereinafter called Engineer and who is to act as Owner's representative, assume all duties and responsibilities and have the rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

SC-1.01.A.53.

Add the following new paragraph immediately after paragraph 1.01.A.52:

REQUEST FOR INFORMATION – A written request for information, requiring a written response, to OWNER, ENGINEER, or

CONTRACTOR, initiated by OWNER, ENGINEER, OR CONTRACTOR.

SC-1.02.E.

Delete paragraphs 1.02.E.1, 1.02.E.2, 1.02.E.3, and 1.02.E.4 in their entirety and insert the following in their place:

The words “furnish”, “install”, “perform”, “provide” and “supply”, or any combination or similar directive or usage thereof, shall mean furnishing and incorporating in the Work including all necessary labor, materials, equipment, and everything necessary to perform the Work indicated, unless specifically limited in the context.

SC-2.02.

Delete the first sentence of paragraph 2.02 in its entirety and replace with the following:

Owner shall furnish one electronic set of the finalized Drawings and Project Manual. No printed sets will be provided.

SC-2.05.A.3.

Delete paragraph 2.05.A.3 in its entirety and insert the following in its place:

The bid schedule shall serve as the schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and will serve as the basis for progress payments during the performance of Work. All such prices provided by Contractor on the bid schedule will include an appropriate amount of overhead and profit applicable to each item of Work.

SC-2.05.B.

Add the following new paragraph immediately after paragraph 2.05.A:

B. Within ten (10) days after the Bidder receives Notice of Award, the Bidder to whom the award is made, shall execute and return the Agreement in the required number of copies, shall furnish the required Payment and Performance Bonds, the original plus one copy of completed form WH-5 Public Works Contract Report, and shall provide certificates of insurance (and other evidence of insurance

which the Owner and any additional insured may reasonably request) with copies to each additional insured identified in the Supplementary Conditions which Contractor is required to purchase and maintain in accordance with Article 5 of the General Conditions.

SC-2.07.A.3.

Delete paragraph 2.07.A.3 in its entirety.

SC-2.08.

Add the following new paragraph immediately after paragraph 2.07:

Pursuant to Idaho Code, the State Tax Commission has promulgated mandatory procedures for Public Works Contracts with which Contractor and Owner must comply. The Contract Documents contain form WH-5, which Contractor must fill out when the Contract is awarded and return to the Owner, who will in turn forward one (1) copy to the State of Idaho Tax Commission Audit Bureau.

Upon completion of the Contract and as a condition of release of retainage (Final Payment) to the Contractor, the Owner must receive Form 10-248-79 (Public Works Contract Tax Release) from the Audit Bureau indicating the Contractor has complied with the Idaho tax laws.

SC-3.01.

Add the following new paragraphs immediately after paragraph 3.01.C:

D. The Specifications may vary in form, format and style. Some specification sections are written in varying degrees of streamlined or declarative style and some sections may be relatively narrative by comparison. Omissions of such words and phrases as "the Contractor shall," "in conformity with," "as shown," or "as specified" are intentional in streamlined sections. Omitted words and phrases shall be supplied by inference. Similar types of provisions may appear in various parts of a section or articles within a part depending on the format of the section. The Contractor shall not take advantage of any variation of form, format or style in making claims for extra Work.

E. The cross referencing of specification sections under the subparagraph heading "Related Sections include but are not necessarily limited to:" and elsewhere within each specification section is provided as an aid and convenience to the Contractor. The

Contractor shall not rely on the cross referencing provided and shall be responsible to coordinate the entire work under the Contract Documents and provide a complete Project whether or not the cross referencing is provided in each section or whether or not the cross referencing is complete.

SC-4.04.A.1

Amend the first sentence of paragraph 4.04.A.1 by striking out the words "and Engineer" immediately following the word "Owner...".

SC-4.06.G

Delete paragraph 4.06.G in its entirety.

SC-4.06.H

Amend the first sentence of paragraph 4.06.H by striking out the words "and Engineer" immediately following the words "hold harmless Owner...".

SC-5.01.B.

Delete paragraph 5.01.B in its entirety and insert the following in its place:

All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are acceptable to OWNER. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

SC-5.04.C.

Add the following new paragraph immediately after Paragraph 5.04.B:

C. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:

a. State:	Statutory
b. Applicable Federal (e.g. Longshoremen's)	Statutory
c. Employer's Liability	\$500,000

2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody, and control of the Contractor:

- a. General Aggregate: \$2,000,000
 - b. Products – Completed Operations Aggregate \$1,000,000
 - c. Personal and Advertising Injury \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
 - e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable
 - f. Excess or Umbrella Liability
 - 1. General Aggregate \$2,000,000
 - 2. Each Occurrence \$2,000,000
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
- a. Bodily Injury: Each Person \$1,000,000
Each Accident \$1,000,000
 - b. Property Damage:
Each Accident \$1,000,000
 - c. Combined Single Limit of \$1,000,000
4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
- a. Bodily Injury: Each Person \$2,000,000
Each Accident \$2,000,000
 - b. Property Damage:
Each Accident \$2,000,000
Annual Aggregate \$2,000,000
5. All certificates of insurance shall name as additionally insured:

Owner: City of Moscow

SC-5.04.B.

Amend paragraph 1 of 5.04.B by striking out the words “and Engineer,” immediately following the words “professional liability) Owner...”.

Add the following paragraphs immediately after paragraph 5.04.B.6:

7. The required insurance for the project shall not be canceled without thirty (30) days written notice to the Owner. The Evidence of insurance provided to the Owner shall state this requirement without any reservations of responsibility from the insurance providers. Coverage in the minimum amounts set forth herein, or as provided by the Contractor, if

greater, shall not be construed to relieve the Contractor from liability in excess of such coverage limits.

8. Compliance. Failure of the Contractor to fully comply with these requirements will be considered a material breach of Contract and shall be cause for immediate termination of the Contract at the option of the Owner.

The Owner will not pay progress estimate payments due under Article 14 of the Standard General Conditions until the Contractor has fully complied with this section. This remedy is not exclusive and the Owner may take such other action as is available to it under other provisions of this Contract, or otherwise in law.

9. Coverage in the minimum amounts set forth herein, or as provided by the Contractor, if greater, shall not be construed to relieve the Contractor from liability in excess of such coverage limits.

SC-5.05.

Delete paragraph 5.05 in its entirety.

SC-5.06.

Delete paragraph A of section 5.06 in its entirety and replace with the following:

A. CONTRACTOR shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. This insurance shall:

1. Include the interest of Owner, Contractor, Subcontractors, Engineer, and Engineer's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;
2. Be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the work, temporary buildings, false work, and materials and equipment's in transit, and shall insure against at least the following perils or causes of loss: fire, lighting, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement

of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. Include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
4. Cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such material and equipment have been included in an Application for Payment recommended by ENGINEER;
5. Allow for partial utilization of the Work by OWNER;
6. Include testing and startup; and
7. Be maintained in effect until final payment is made or otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other and to each additional insured to whom a certificate of insurance has been issued.
8. Contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued.

SC-5.10.

Add the following new paragraphs immediately after paragraph 5.10.A:

B. All insurance required by the Contract Documents, or by laws or regulations shall remain in full force and effect on all phases of the Work, whether or not the Work is occupied or utilized by OWNER, until all Work included in the agreement has been completed and final payment has been made.

C. Nothing contained in the insurance requirements shall be construed as limited the

extent of CONTRACTOR's responsibility for payment of damages resulting from his operations under the Contract. CONTRACTOR agrees that he alone shall be completely responsible for procuring and maintaining full insurance coverage as provided herein or as may be otherwise required by the Contract Documents. Any approval by OWNER or ENGINEER shall not operate to the contrary.

SC-6.05.C.

Amend the paragraph by making two subparagraphs under the title C. Engineer's Evaluation. The paragraph text is retitled 6.05.C.2 after Effective Date of Agreement. A new paragraph is added before this paragraph to read as follows:

1. During Bidding. The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in paragraph 6.05 of the General Conditions, or those substitute materials and equipment approved by the Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function, and quality to be met by any proposed substitute or "or-equal" item. Request for Engineer's clarification of materials and equipment considered "or-equal" prior to the Effective Date of the Agreement must be received by the Engineer at least 5 days prior to the date for receipt of Bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

SC-6.06.G

Amend the first sentence of paragraph 6.06.G by striking out the words "and Engineer" immediately following the words "for the benefit of Owner...".

SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:

- H. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-6.07.B

Amend the first sentence of paragraph 6.07.B by striking out the words "and Engineer," immediately following the words "hold harmless Owner...".

SC-6.12.A.

Add the following language at the end of the first sentence of paragraph 6.12.A:

CONTRACTOR shall include accurate locations for buried and imbedded items.

SC-6.17.A.

Amend the first sentence of paragraph 6.17.A by adding the word "required" immediately after the words "CONTRACTOR shall submit."

Add the following new paragraphs immediately after 6.17.A.1.b:

- c. Shop Drawings submitted as herein provided by CONTRACTOR and reviewed by ENGINEER for conformance with the design concept shall be executed in conformity with the Contract Documents unless otherwise required by OWNER.
- d. When Shop Drawings are submitted for the purpose of showing the installation in greater detail, their review shall not excuse CONTRACTOR from requirements shown on the drawings and Specifications.

SC-6.17.C.3.

Amend paragraph 6.17.C.3. by striking out "variation." at the end of the paragraph and inserting in its place "variation; otherwise CONTRACTOR will not be relieved of the responsibility of executing the Work in accordance with the Contract Documents, even though such Shop Drawings or Samples have been otherwise reviewed."

Add the following new paragraph immediately after paragraph 6.17.C.3:

- a. If a Shop Drawing or Sample, as submitted, indicates a variation from the Contract Requirements as set forth in the Contract Documents and ENGINEER finds same to be in the interest of OWNER and to be so minor as not to involve a change in the Contract Price or time for performance, ENGINEER may approve the Shop Drawings or Samples; provided however, such departure is slight in nature and does not affect the design concept of the Work."

SC-6.17.D.3.

Add the following new paragraphs immediately after paragraph 6.17.D.3:

4. ENGINEER's check and review of Shop Drawings and Samples, Standard Specifications and descriptive literature submitted by CONTRACTOR will be only for general conformance with design concept, except as otherwise provided, and shall not be construed as:

- a. permitting any departure from the Contract Requirements;
- b. relieving CONTRACTOR of the responsibility for any error in details dimensions or otherwise that may exist in such submittals;
- c. constituting a blanket approval of dimensions, quantities, or details of the material or equipment shown; or
- d. approving departures from additional details or instructions previously furnished by ENGINEER. Such check or review shall not relieve CONTRACTOR of the full responsibility of meeting all of the requirements of the Contract Documents."

SC-6.20.A.

Amend the sentence of paragraph 6.20.A by striking out the words "and Engineer" from the third line immediately following the words "harmless Owner...", striking out the words "or arbitration" immediately following the words "and all court..." and striking out the word "negligent" immediately following the words "to the extent caused by any..." approximately two thirds into the paragraph.

SC-6.20.B

Amend the first sentence of paragraph 6.20.B by striking out the words "or Engineer" immediately following the words "In any and all claims against Owner..."

SC-8.02.A

Amend the first sentence of paragraph 8.02.A by striking out the words "to whom the Contractor makes no reasonable objection" immediately following the words "appoint an engineer..."

SC-8.11

Delete paragraph 8.11 in its entirety.

SC-9.05.B.

Add the following new paragraph immediately after paragraph 9.05.A:

B. The acceptance at any time of Work by or on behalf of OWNER shall not be a bar to future rejection if they are subsequently found to be defective, inferior in quality, or not equal to the material or equipment specified, or are not as represented to ENGINEER or OWNER.

SC-10.01. Delete paragraph 10.01 in its entirety and insert the following in its place:

1. The Owner reserves the right to make, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the Contractor agrees to perform the work as altered.
2. If the alternations or changes in quantities significantly change the character of the work under the contract, whether or not changed by any such different quantities or alterations, an adjustment, excluding loss of anticipated profits, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then a claim may be made therefore as provided in paragraph 10.05. If the alteration or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid

for as provided elsewhere in the contract.

3. If the alteration or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract.
4. The term "significant changes" shall be construed to apply only to the following circumstances:
 - a. When the character of the work is altered differs materially in kind or nature from that involved or included in the original proposed construction; or
 - b. When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

SC-11.03.C.

Add the following language at the end of paragraph 11.03.C:

Work described in the Contract Documents but not identified in the listing of unit price items shall be considered incidental to unit price work listed and the cost of incidental work included as a part of the unit price.

SC-12.03.A.

Add the following new paragraph immediately after paragraph 12.03.E:

F. Time extensions will not be granted for rain, wind, flood, or other natural phenomena of normal intensity for the locality where Work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for a minimum continuous period of at least one-fourth of the Contract Time involved with the average of the preceding 5-year climatic range during the same time interval based on U.S. Weather Bureau statistics for the locality where the Work is performed.

SC-12.03.D

Amend the first sentence of paragraph 12.03.D by striking out the word "Engineer," immediately following the word "Owner..."

SC-14.02.A.3 Add the following language at the end of paragraph 14.02.A.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

SC-14.04.E.

Add the following new paragraph immediately after paragraph 14.04.E:

F. If parts of the Work have been determined to be not acceptable for Substantial Completion requiring additional Work by CONTRACTOR and re-inspection or re-testing by ENGINEER, the cost of such re-inspection or re-testing including time, travel and living expense shall be paid by CONTRACTOR to OWNER who will reimburse ENGINEER. OWNER may offset said monies by deducting that amount from payments due to CONTRACTOR.

SC-16.01.

Add the following new paragraph immediately after paragraph 16.01.C:

D. The Owner and Contractor further agree to include a similar mediation provision in all agreements with independent contractors and consultants retained for the project and to require similar mediation provision in all agreements with subcontractors, subconsultants, suppliers or fabricators so retained, thereby providing for mediation as the primary method for dispute resolution between the parties to those agreements.

E. All documents referred to in the "Index to Bidding Documents" are considered as official, Contract/Bidding Documents and the applicable sections are binding on the Contractor.

SC-17.01

Add the following new paragraph immediately after paragraph 17.01.A:

B. All documents referred to in the "Index to Contract Documents" are considered as official, Contract Documents and the applicable sections are binding on the Contractor.

SC-17.05

Replace paragraph 17.05 with the following:

GOVERNING LAW AND JURISDICTION IN THE STATE OF IDAHO

This Agreement (Contract) shall be governed by and construed, interpreted and enforced pursuant to the laws of the State of Idaho. By signing this Agreement (Contract) the Contractor submits to personal jurisdiction in the state courts of the State of Idaho and any action required by either party to enforce the terms and conditions of this Agreement shall be brought in the First Judicial District of the State of Idaho, Latah County.

END OF SECTION

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies:

1. 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:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. 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).

3.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or 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.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. 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's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

- 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price

or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
 2. *Samples:*
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Submittal Procedures:*
1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 6. any inspection, test, or approval by others; or
 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed 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 Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits

and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

- a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect to any other item of Work; and
 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.

- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and

equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the

Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

PART 3

Technical Specifications

CIVIL TECHNICAL SPECIFICATIONS INDEX AND STAMP PAGE

Division 01 – General Requirements

- Section 01 1000 – Summary
- Section 01 2000 – Price and Payment Procedures
- Section 01 2200 – Unit Prices
- Section 01 3000 – Administrative Requirements
- Section 01 3100 – Submittal Procedures
- Section 01 4000 – Quality Control
- Section 01 5050 – Mobilization
- Section 01 7000 – Execution and Closeout Requirements
- Section 01 7800 – Closeout Submittals

Division 02 – Site Requirements

- Section 02 4100 – Demolition

Division 22 – Plumbing

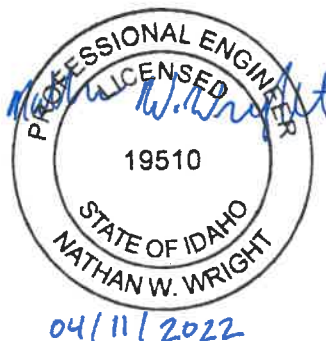
- Section 22 1007 – On-Site Generated Sodium Hypochlorite System (OSSHS)

Division 31 – Earthwork

- Section 31 2200 – Grading
- Section 31 2316 – Excavation
- Section 31 2316.13 – Trenching
- Section 31 2323 – Fill

Division 33 – Utilities

- Section 33 1116 – Site Water Utility Distribution Piping
- Section 33 1300 – Disinfecting of Water Utility Distribution
- Section 33 1725 – High Density Polyethylene Pipe
- Section 33 3111 – Site Sanitary Utility Sewerage Piping
- Section 33 4111 – Site Storm Utility Drainage Piping



**SECTION 01 1000
SUMMARY**

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Well House Number 6 Rebid.
- B. Owner's Name: City of Moscow.
- C. Engineer's Name: Welch Comer Engineers.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on unit prices as described in Document 00 5200 – Agreement Form.

1.03 CONTRACT DESCRIPTION OF WORK

- A. The project consists of the
 - a. Base Bid: Includes mobilization, demolition, and reconstruction of an existing well house. This includes preservation of the existing well and some electrical components. Electrical improvements including modification to the existing system along with upgrades. Additionally, the existing chlorine gas injection system will be removed. Additional site utility work will be completed as part of the improvements. All work shall be in accordance with the contract documents.
 - b. Add Alternate 1: Includes all work associated with the purchase, installation, and connection to the new Generator as shown on the plans and specs.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing site during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas in and around the existing wellhouse.
 - 1. Approved Staging Areas: Coordinate with Owner.
 - 2. Approved Waste Areas: At approved off-site location.
- B. Construction Permits:
 - 1. Contractor Obtained:
- C. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Owner.
- D. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Access: Contractor shall maintain emergency vehicle access through the site at all times throughout construction.

2. Contractor shall be responsible for notifying emergency services of road closures during construction and approved detour routes.
 3. The City is to obtain control to access the public works yard at all time. The contractor shall coordinate with the City for access to the site. Construction shall not inhibit access to other areas of the public works yard outside of the construction area.
 4. Do not obstruct roadways, sidewalks, or other public ways without permit.
- E. Time Restrictions:
1. Limit construction activities to the hours of 7:00 AM to 7:00 PM Monday through Friday.
 2. No construction shall occur on Saturday, Sunday, or federal holidays without prior permission from Engineer. If permission is granted for work on these days, then the work hours on these days shall be limited to the hours of 7:00 AM to 7:00 PM.
- F. Utility Outages and Shutdown:
1. Limit shutdown of utility services to 4 hours at a time, arranged at least 48 hours in advance with Owner.
 2. When Contractor is required to provide notice to Owner and/or Engineer, hours or days shall be considered business hours or days.

1.06 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner and Engineer.
- B. Work shall be completed in the following sequence for each segment defined in paragraph 1.07.

1.07 CONTRACT TIME

- A. The Owner will suffer financial loss and potential damages if the Work is not completed within the times specified herein, therefore all Contract Times and Milestones shall be enforced under the Agreement by Owner assessing LIQUIDATED DAMAGES as provided in Section 00 2113 - Instructions to Bidders.
- B. Liquidated damaged will be assessed for each day. That work continues past each milestone shown below. Owner and the Contractor agree that as liquidated damages for delay (but not as a penalty) the Contractor shall pay to Owner sum of \$200/day will be deducted by owner for each and every calendar day beyond the substantial completion dates identified herein. An additional \$100/day will be deducted by owner for each and every day beyond final completion. Should such deductions exceed the outstanding amount of the Agreement, the Contractor and its surety shall be liable for the excess.
- C. Base Bid Substantial Completion: The work shall be substantially completed no later than April 1st 2023. Substantial completion includes the completion of the new wellhouse, and all utility work required for the well to be fully operational including all services, chlorine injection, electrical equipment, etc.
- D. Add Alternate 1 Substantial Completion Final: Lead times on generators are unpredictable at this time. Contractor will be given 30 days from Notice to proceed to purchase generator and provide owner with receipt of purchase. Upon receipt of the generator, contractor will then have 30 days to install generator and have in full operation. During this time the contractor shall keep the well in service.
- E. Final Acceptance: The Work will be finally complete and ready for Owner acceptance in accordance with Article 14 of the General Conditions within thirty (30) days from the

date of substantial completion for any combination of the Contract Award made by Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Price and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 01 2200 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.03 AUTHORITY

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specifications section shall govern.

1.04 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Schedule are for bidding award purposes only. Quantities and measurements supplied or placed in the Work and measured by the Engineer determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated in the bid form, provide the required quantities at the unit prices installed.

1.05 PAYMENT

- A. Payment includes: Full compensation for all required labor, product, tools, equipment, plants, transportation, services, and incidentals; erection, application or installation of an item of the Work; taxes, insurance, bonds, overhead and profit.

1.06 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Engineer for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.
- E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.07 APPLICATIONS FOR PROGRESS PAYMENTS

- A. The Contractor shall submit the requested quantities to the Engineer for review and approval. Alternatively, the Contractor may choose to sign off on daily quantity sheets prepared by the Engineer's field representative. If quantity sheets are not signed and Contractor does not submit quantities, Engineer will utilize quantities on the quantity sheet to prepare the pay request. The Engineer will prepare a pay request based on the quantities agreed to by the Contractor and the Engineer.
- B. Payment Period: Submit at intervals stipulated in the Agreement.
- C. Form to be used: A Pay Request support sheet can be requested from the Engineer. If the Contractor uses their own form, it shall show each pay item from the original contract as well as all change orders items.
- D. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Engineer for approval.
- E. Forms filled out by hand will not be accepted.
- F. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.
- G. Execute certification by signature of authorized officer.
- H. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- I. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- J. Submit one copy of each Application for Payment.
- K. Include the following with the application. If any of these items are not included with application, or found to be incomplete, a portion of the requested payment may be withheld at the Engineer's discretion:
 - 1. Construction progress schedule, revised and current as specified in Section 01 3000.
 - 2. Project record documents made to date as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.
 - 3. Affidavits attesting to off-site stored products if stockpile is being requested. All requests for stockpiled material must be verified by the Engineer's on-site representative prior to release of funds. A timely request for verification must be made to ensure the payment of stockpiled materials.

- L. When Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- M. Engineer's representative shall keep a record of daily quantities when representative is on site. Contractor shall be responsible for reviewing daily quantities and shall sign each quantity sheet if quantities are agreeable to Contractor. If Contractor disagrees with quantities, it is the responsibility of the Contractor to notify the Engineer and to provide documentation of the installed quantities for which the Contractor is requesting payment.

1.08 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Engineer will issue instructions directly to Contractor through a FIELD ORDER.
- C. For other required changes, Engineer will issue a WORK CHANGE DIRECTIVE signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
 - 2. Promptly execute the change.
- D. Owner or Contractor may make a claim for an adjustment in the Contract Price if:
 - 1. The Bid price of a particular item of Unit Price Work amounts to more than 5 percent of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
 - 2. There is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.
- E. For changes for which advance pricing is desired, Engineer will issue a PROPOSAL REQUEST which includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 calendar days.
- F. Contractor may propose a change by submitting a request for change to Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Engineer for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.

2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Engineer.
 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 4. For changes ordered by Engineer without a quotation from Contractor, the amount will be determined by Engineer based on the Contractor's substantiation of costs as specified for Time and Material work.
- H. Substantiation of Costs: Provide full information required for evaluation.
1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- I. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- J. After execution of Change Order, promptly revise Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.
- K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- L. Promptly enter changes in Project Record Documents.

1.09 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 1. All closeout procedures specified in Section 01 7000.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2200
UNIT PRICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.02 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work as measured by the Engineer will determine the payment amount.
- B. If there is a change in the estimated quantities as provided on the Bid Schedule the unit prices will remain as established in the Contract Documents.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Engineer.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 - 3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
- E. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- G. Measurement by Area: Measured by square dimension using mean length and width or radius.
- H. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- I. Lump Sum Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

- J. Truck Tickets: Each truck to be weighed shall bear a unique identification number. This number shall be legible and in plain view of the scale operator. Each vehicle operator shall obtain a weigh ticket from the scale operator. In order to receive payment, tickets shall include the following information, at a minimum:
 - 1. Date of haul
 - 2. Project name
 - 3. pay item
 - 4. Identification number of hauling vehicle
 - 5. Weight delivered
- K. Vehicle operator shall deliver tickets in a legible condition to the engineer at the time payment is requested. If tickets do not include the above items, or are illegible, payment may not be made.

1.05 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Engineer, multiplied by the unit price.
- B. Payment will not be made for any of the following:
 - 6. Products wasted or disposed of in a manner that is not acceptable.
 - 7. Products determined as unacceptable before or after placement.
 - 8. Products not completely unloaded from the transporting vehicle.
 - 9. Products placed beyond the lines and levels of the required Work or beyond the specified pay limits.
 - 10. Products remaining on hand after completion of the Work.
 - 11. Loading, hauling, and disposing of rejected Products.

1.06 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Engineer.
 - 2. The defective Work will be partially repaired to the instructions of the Engineer, and the unit price will be adjusted to a new unit price at the discretion of Engineer.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Engineer to assess the defect and identify payment adjustment is final.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Progress photographs.
- E. Coordination drawings.
- F. Submittals for review and information.
- G. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Stages of the Work, Work covered by each contract, occupancy.
- B. Section 01 4000 - Quality Requirements
- C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

- A. Project Coordinator: Engineer.
- B. Cooperate with the Engineer in allocation of mobilization areas of site; for field offices and sheds, for vehicle access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Engineer.
- D. Comply with Engineer's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Engineer for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Engineer.
- G. Make the following types of submittals to the Engineer:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Coordination drawings.

9. Closeout submittals.

H. Contractor is responsible for coordinating with impacted utilities and shall coordinate holding of power poles to pay any fees that be associated with such activities.

1.04 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals and work of the various sections of the project to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed at a later date.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate completion and clean-up of work of separate sections in preparation for substantial completion and for portions of work designated for Owner's partial occupancy.
- D. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with the contract documents, to minimize disruption of Owner's activities.

1.05 FIELD ENGINEERING

- A. Construction staking is the responsibility of the Contractor. All project related control within the project limits are identified and shown on the construction plans. Additional control is the responsibility of the Contractor.
 - 1. Survey Monuments: During the preparation of the construction drawings, review of available records and field research was conducted to locate existing survey monuments within the project construction limits in accordance with Idaho Code 55-1613. Existing survey monuments are identified within the plans. Monuments identified as "Owner to replace" will be replaced at the expense of the Owner. All other monuments are intended to be preserved and if destroyed the replacement of said monuments is the responsibility of the Contractor. Ref (IC 55-1613). If monuments are replaced by the Contractor, the Engineer and the Owner will be notified by the Contractor upon re-establishment of the monuments.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor.
 - 4. Subcontractors, if applicable.
 - 5. Funding Agencies, if applicable.
- C. Agenda:
 - 1. Execution of Owner- Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.

4. Submission of list of Subcontractors, and progress schedule.
 5. Designation of personnel representing the parties to Contract, Owner and Engineer.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling: Contractor to submit a schedule for the entire project duration, including subcontractor work. The schedule must be approved by the Engineer prior to commencement of work. Schedule shall be in accordance with Section 01 3216.
 8. Use of premises by Owner and Contractor.
 9. Owner's requirements and occupancy prior to completion.
 10. Construction facilities and controls provided by Owner.
 11. Temporary utilities provided by Owner.
 12. Survey and building layout.
 13. Security and housekeeping procedures.
 14. Application for payment procedures.
 15. Procedures for testing.
 16. Procedures for maintaining record documents.
 17. Requirements for start-up of equipment.
 18. Inspection and acceptance of equipment put into service during construction period.
 19. Scheduling activities of a Geotechnical Engineer.
 20. Schedule construction progress meetings.
- D. Engineer shall record minutes and distribute copies within five days after meeting to participants, with a copy to Contractor, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- D. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Engineer, Funding Agencies as appropriate to agenda topics for each meeting.
- E. Agenda:
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.

9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to Work.
- F. Engineer will record minutes and distribute copies within five days after meeting to participants, with a copy to Contractor, Owner, Funding Agency, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. See Section 01 3216: Construction Project Schedules

3.04 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Submit new photographs at least once a month, within 3 days after exposure.
- C. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- D. Photography Type: Digital; electronic files.
- E. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Engineer.
- F. In addition to periodic, recurring views, take photographs of each of the following events:
 1. Completion of site clearing.
 2. Excavations in progress.
 3. Foundations in progress and upon completion.
 4. Structural framing in progress and upon completion.
 5. Enclosure of building, upon completion.
 6. Final completion, minimum of ten (10) photos.
- G. Take photographs as evidence of existing project conditions as follows:
 1. Interior views.
 2. Exterior views.

H. Views:

1. Provide aerial photographs from four cardinal views at each specified time, until structure is enclosed.
2. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
3. Consult with Engineer for instructions on views required.
4. Provide factual presentation.
5. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
6. Point of View Sketch: Provide sketch identifying point of view of each photograph.

I. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.

1. Delivery Medium: Via email.
2. File Naming: Include project identification, date and time of view, and view identification.
3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
4. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
5. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
6. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

J. Optical Slides: 35 mm, color; 1 set assembled into transparent slide holder sheets for 3-ring binder.

1. Binders: Provide one 2-inch binder with initial submittal.
2. Identification: Mark each slide with project identification, date and time of view, and view identification.
3. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each slide.

K. Photographer Quality Prints: Full color; three prints of each view.

1. Glossy; smooth texture; white tint; single weight; contrast grade 4, extra hard.
2. Size: 8 x 10 inch; mounted for binder and tabs.
3. Identify each print on back. Identify name of Project, contract number, phase, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
4. Assemble prints into transparent holder sheets for 3-ring binder.
5. Binders: Provide one 2-inch binder with initial submittal.
6. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each print.
7. Negatives: Include negatives with print submittal, arranged in chronological sequence, with typed table of contents.
8. Negatives: Negatives will remain property of photographer; require that photographer maintain negatives for ten years from Date of Substantial Completion.

3.05 COORDINATION DRAWINGS

- A. Provide information required by Engineer for preparation of coordination drawings.
- B. Review drawings prior to submission to Engineer.

END OF SECTION

SECTION P01 3100 SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Mechanics and administration of the submittal process for:
 - a. Shop Drawings.
 - b. Miscellaneous submittals.
 - c. Operation and Maintenance manuals.
 - 2. General content requirements for shop drawings.
 - 3. Content requirements for Operation and Maintenance manuals.
- B. Related Sections include but are not necessarily limited to:
 - 1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 1 - General Requirements.
 - 3. Sections in Divisions 2 through 16 identifying required submittals.

1.02 DEFINITIONS

- A. Shop Drawings:
 - 1. See General Conditions.
 - 2. Product data are Shop Drawing information
- B. Operation and Maintenance (O&M) Manuals:
 - 1. Contain the information required for proper installation and maintenance of building materials and finishes.
 - 2. Contain the technical information required for proper installation, operation and maintenance of process, electrical and mechanical equipment and systems.
- C. Miscellaneous Submittals:
 - 1. Submittals other than Shop Drawings and O&M Manuals
 - 2. Representative types of miscellaneous submittal items include but are not limited to:
 - a. Construction Schedule.
 - b. HVAC test and balance reports.
 - c. Installed equipment and systems performance test reports.
 - d. Manufacturer's installation certification letters.
 - e. Instrumentation and control commissioning reports.
 - f. Warranties.
 - g. Service agreements.
 - h. Schedule of Values.

1.03 SUBMITTAL SCHEDULE

- A. Schedule of Shop Drawings:
 - 1. Submitted and approved within 20 days of receipt of Notice to Proceed.

2. Account for multiple transmittals under any specification section where partial submittals will be transmitted.
- B. Shop Drawings: Submittal and approval prior to initiation of work.
- C. Operation and Maintenance Manuals and Completed Equipment Record Sheets: Initial submittal within 60 days after date of Shop Drawings are approved.

1.04 PREPARATION OF SUBMITTALS

- A. General
 1. All submittals and all pages of all copies of a submittal shall be completely legible.
 2. Submittals which, in the Engineer's sole option, are illegible will be returned without review.
 3. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- B. Shop Drawings:
 1. Scope of any submittal:
 - a. Limited to one (1) Specification Section.
 - b. Do not submit under any Specification Section entitled (in part) "Basic Requirements" unless the product or material submitted is specified, in total, in a "Basic Requirements" section.
 2. Numbering submittals:
 - a. Include a prefix (the Specification Section number) followed by a series number, for example a submittal from this section would be labeled "013000-01", beginning with "01" and increasing sequentially with each additional submittal.
 - b. If more than one (1) submittal under any specification Section, assign consecutive series numbers to subsequent submittals.
 - c. Submittal numbers may be included either in the title of the document or on the top of the first page of the submittal.
 3. Describing submittal contents:
 - a. Provide a description of each component or item in submittal capable of receiving an independent review action. Description shall be provided on the product sheet for each item (or on the first page of multiple-page product sheets).
 - b. Identify for each item:
 - i. Manufacturer and Manufacturer's Drawing or data number.
 - ii. Contract Document tag number(s).
 - iii. Unique page numbers for each page of each separate item.
 - c. When submitting "or-equal" items that are not the products of named manufacturers, include the words "or-equal" in the item description.
 4. Contractor review:
 - a. Contractor shall review each submittal prior to submitting to Engineer. By submitting the submittal to the Engineer, Contractor is certifying that he/she has satisfied the Contractor's responsibility stipulated under General Conditions paragraph 6.17C.
 5. Resubmittals:
 - a. Number with original root number and suffix letter starting with "A" on the resubmittal.

- b. Do not increase the scope of any prior submittal.
 - c. Do not include submittal information for items listed with prior "No Exceptions" or "Furnish as Corrected" in resubmittal.
 - d. Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "Revise and Resubmit" or "Rejected" item not included in resubmittal.
 - i. Obtain Engineer's approval to exclude items.
- 6. All submittals shall be submitted and returned electronically, unless otherwise pre-approved by Engineer.
- 7. Provide clear space (3 IN SQ) for Engineer stamp for each item capable of receiving independent review action.
- 8. Contractor shall not use red color for marks on submittals.
- 9. Submittal contents:
 - a. Coordinate and identify Shop Drawing contents so that all items can be easily verified by the Engineer.
 - b. Identify equipment or material used, tag number, drawing detail reference, weight, and other project specific information.
 - c. Provide sufficient information together with technical cut sheets and data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
 - d. Indicate exact item or model and all options proposed.
 - e. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charges, layout drawings, rough-in diagrams, wiring diagrams, controls, weight, and other pertinent data in addition to information specifically stipulated in the Specification Section.
 - i. Arrange data and performance information in format similar to that provided in Contract Documents.
 - ii. Provide, at minimum, the detail specified in the Contract Documents.
 - f. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.
- 10. Samples
 - a. Identification:
 - i. Identify sample as to transmittal number, manufacturer, item, use, type, project designation, tag number, standard Specification Section or Drawing detail reference, color, range, texture, finish and other pertinent data.
 - ii. If identifying information cannot be marked directly on sample without defacing or adversely altering samples, provide a durable tag with identifying information securely attached to the sample.
 - b. Include application specific brochures, and installation instructions.
 - c. Provide Contractor's stamp of approval on samples or transmittal form as indication of Contractor's checking and verification of dimensions and coordination with interrelated work.
 - d. Resubmit samples of rejected items.
- C. Miscellaneous Submittals:

1. Prepare in the format and detail specified in Specification requiring the miscellaneous submittal.

D. Operation and Maintenance Manuals:

1. Owner's use of manufacturer's Operation and Maintenance materials:
 - a. Materials are provided for Owner's use, reproduction and distribution as training and reference materials within Owner's organization.
 - i. Applicable to hard copy or electronic media
 - ii. Applicable to materials containing copyright notice as well as those with no copyright notice.
 - b. Notify manufacturer of this intended use of materials provided under the Contract.
2. Submittal format:
 - a. Interim submittals: Submit one (1) electronic copy in Portable Document Format (PDF) until manual is approved.
 - b. Final Submittals:
 - i. Within 30 days of receipt of approval, submit two (3) paper copies AND three (3) electronic copies on Compact Disc (CD-ROM) in Portable Document Format (PDF).
 - (a) Compact discs to be secured in jewel cases.
 - ii. Non-conforming CD's will be returned with comments.
 - iii. Provide final CDs within 30 days of receipt of comments.
3. Paper copy submittals:
 - a. Submit Operation and Maintenance Manuals printed on 8-1/2 x 11 IN size heavy first quality paper with standard three-hole punch and bound in appropriately sized three-ring (or post) vinyl view binders with clear overlays front, spine and back.
 - i. Provide binders with titles inserted under clear overlay on front and on spine of each binder.
 - (a) As space allows, binder titles shall include, but not necessarily be limited to, Project Name, related Specification Number, Equipment Name(s) and Project Equipment Tag Names.
 - ii. Provide a Cover Page for each manual with the following information:
 - (a) Manufacturer(s).
 - (b) Date.
 - (c) Project Owner and Project Name.
 - (d) Specification Section.
 - (e) Project Equipment Tag Numbers.
 - (f) Model Numbers.
 - (g) Engineer.
 - (h) Contractor.
 - iii. Provide a Table of Contents or Index for each manual.
 - iv. Use plastic-coated dividers to tab each section of each manual per the manual's Table of Contents / Index for easy reference.
 - v. Provide plastic sheet lifters prior to first page and following last page.

- b. Reduce Drawings or diagrams bound in manuals to a 8-1/2 x 11 IN or 11 x 17 IN size.
 - i. Where reduction is not practical to ensure readability, fold larger Drawings separately and place in vinyl envelopes which are bound into the binder.
 - ii. Identify vinyl envelopes with Drawing numbers
 - c. Mark each sheet to clearly identify specific products and component parts and data applicable to the installation for the Project.
 - i. Delete or cross out information that does not specifically apply to the Project
4. Electronic copy submittals:
- a. Electronic copies of the Operation and Maintenance Manuals are to be produced in Adobe Acrobat's Portable Document Format (PDF) Version 5.0 or higher.
 - b. Do not password protect and or lock the PDF document.
 - c. Create one (1) PDF document (PDF File) for each equipment O&M Manual.
 - d. Drawings or other graphics must be converted to PDF format and made part of the one (1) PDF document.
 - i. Scanning to be used only where actual file conversion is not possible.
 - e. Rotate pages that must be viewed in landscape to the appropriate position for easy reading.
 - f. Images only shall be scanned at a resolution of 300 dpi or greater.
 - i. Perform Optical Character Recognition (OCR) capture on all images.
 - ii. Achieve OCR with the "original image with hidden text" option.
 - iii. Work searches of the PDF document must operate successfully to demonstrate OCR compliance.
 - g. Create bookmarks in the navigation frame, for each entry in the Table of Contents / Index.
 - i. Normally three (3) levels deep (i.e. "Chapter," "Section," "Sub-Section").
 - h. Thumbnails must be generated for each PDF file.
 - i. Set the opening view for PDF files as follows:
 - i. Initial view: Bookmarks and Page.
 - ii. Magnification: Fit in Window.
 - iii. Page layout: Single page,
 - iv. Set the file to open to the cover page of the manual with bookmarks to the left, and the first bookmark linked to the cover pages.
 - j. All PDF documents shall be set with the option "Fast Web View" to open the first pages of the document for the viewer while the rest of the document continues to load.
 - k. File naming conventions:
 - i. File names shall use a "ted dot three" convention (XXXXX-YY-Z.PDF) where XXXXX is the Specification Section Number, YY is the Shop Drawing Root number and Z is an ID number used to designate the associated volume.
 - (a) Example 1:

- (1) Two (2) pumps submitted as separate Shop Drawings under the same Specification Section:
 - Pump 1= 11061-01-1.pdf
 - Pump 2= 11061-02-1.pdf
 - (b) Example 2:
 - (1) One (1) Control system submitted as one (1) Shop Drawing but separated into two (2) O&M Volumes:
 - Volume 1= 13440-01-1.pdf
 - Volume 2= 13440-01-2.pdf
- I. Labeling:
 - i. As a minimum, include the following labeling on all CD-ROM discs and jewel cases:
 - (a) Project Name.
 - (b) Equipment Name and Project Tag Number.
 - (c) Project Specification Section.
 - (d) Manufacturer Name.
 - (e) Vendor Name.
- 5. Operation and Maintenance Manuals for Materials and Finishes:
 - a. Building Products, Applied Materials and Finishes:
 - i. Include product data, with catalog number, size, composition and color and texture designations.
 - ii. Provide information for re-ordering custom manufactured products.
 - b. Instructions for Care and Maintenance:
 - i. Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods and recommended schedule for cleaning and maintenance.
 - c. Moisture Protection and Weather Exposed Products:
 - i. Include product data listing, applicable reference standards, chemical composition, and details of installation.
 - ii. Provide recommendations for inspections, maintenance and repair.
 - d. Additional requirements as specified in individual product specifications.
- 6. Operation and Maintenance Manuals for Equipment and Systems:
 - a. Submission of Operation and Maintenance Manuals for equipment and systems is applicable but not necessarily limited to:
 - i. Major equipment.
 - ii. Equipment powered by electrical, pneumatic or hydraulic system.
 - iii. Specialized equipment and systems including instrumentation and control systems and system components for HVAC process system control.
 - iv. Valves and water control gates.
 - b. Equipment and System Operation and Maintenance Manuals shall include, but not necessarily be limited to, the following completed forms and detailed information, as applicable:
 - i. Equipment function, normal operating characteristics, limiting operations.
 - ii. Assembly, disassembly, installation, alignment, adjustment, and checking instructions.

- iii. Operating instructions for start-up, normal operation, control, shutdown, and emergency conditions.
- iv. Lubrication and maintenance instructions
- v. Troubleshooting guide.
- vi. Parts lists:
 - (a) Comprehensive parts and parts price lists
 - (b) A list of recommended spare parts.
 - (c) List of spare parts provided as specified in the associated Specification Section.
- vii. Outline, cross-section, and assembly Drawings; engineering data; and electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, work description of wiring diagrams and interconnection diagrams.
- viii. Test data and performance curves.
- ix. As-constructed fabrication or layout Drawings and wiring diagrams.
- x. Instrumentation or tag numbers assigned to the equipment by the Contract Documents are to be used to identify equipment and system components.
- xi. Additional Information as specified in the associated equipment or system Specification Section.

1.05 TRANSMITTAL OF SUBMITTALS

A. Shop Drawings, Samples and Operation and Maintenance Manuals:

- 1. Transmit all submittals to:
 - a. Project Administrator as noted at Pre-Construction meeting.
- 2. All submittals must be from Contractor.
 - a. Submittals will not be received from or returned to subcontractors.
 - b. Operation and Maintenance Manual submittal stamp may be Contractor's standard approval stamp.
- 3. Provide submittal information defining specific equipment or materials utilized on the Project.
 - a. Generalized product information, not clearly defining specific equipment or materials to be provided, will be rejected.

B. Miscellaneous Submittals:

- 1. Transmit under Contractor's standard letter of transmittal or letterhead.
- 2. Submit in triplicate or as specified in individual Specification Section.
- 3. Transmit to:
 - a. Project Administrator as noted at Pre-Construction meeting.
- 4. Provide copy of letter of transmittal without attachments to Engineer's Resident Project Representative.
 - a. Exception for concrete, soils compaction and pressure test reports.
 - i. Transmit one (1) copy of test reports to Resident Project Engineer.
 - ii. Transmit one (1) copy of test reports to location and individual indicated above for other miscellaneous submittals.

1.06 ENGINEER'S REVIEW ACTION

A. Shop Drawings and Samples:

1. Items within submittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. NO EXCEPTIONS
 - b. FURNISH AS CORRECTED
 - c. REVISE AND RESUBMIT
 - d. REJECTED
 - e. ENGINEER'S REVIEW NOT REQUIRED.
2. In relying on the representation on the Contractor's review and approval stamp, Owner and Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
 - a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:
 - i. Review and approval will be limited to the single item described.
 - ii. Other items identified in the submittal will:
 - (a) Not be logged as received by the Engineer.
 - (b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
 - (c) Be submitted by the Contractor as a new series number, not as a re-submittal number.
 - b. Engineer, at Engineer's discretion, may review the transmittal letter item list and descriptions, and conduct review.
 - i. Unless Contractor notifies Engineer in writing that the Engineer's revision of the transmittal letter item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.
3. Submittals returned with "No Exceptions" or "Furnish as Corrected" are considered ready for fabrication and installation.
 - a. If for any reason a submittal that has a "No Exceptions" or "Furnish as Corrected" is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.
4. Submittals with "No Exceptions" or "Furnish as Corrected" combined with "Revise and Resubmit" or "Rejected" will be individually analyzed giving consideration as follows:
 - a. The portion of the submittal given "Revise and Resubmit" or "Rejected" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference.)
 - b. Items marked "No Exceptions" or "Furnish as Corrected" will be fully distributed.
 - c. If a portion of the items or system proposed are acceptable, however, the major part of the individual drawings or documents are incomplete or require revision, the entire submittal may be given "Revise and Resubmit" or "Rejected".
 - i. This is at the sole discretion of the Engineer.
 - ii. In this case, some drawings may contain relatively few or no comments or the statement "Resubmit to maintain a complete package."

- iii. Distribution to the Owner and field will not be made (unless previously agreed to otherwise.)
- 5. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "Revise and Resubmit" or "Rejected".
- 6. Calculations required in individual Specifications Sections will be received for information purposes only, as evidence calculations have been performed by individual meeting specified qualifications, and will be returned with "Engineer's Review Not Required."
- 7. All costs, associated with the review of any Shop Drawing resubmitted more than once shall be borne by the Contractor.
- 8. Transmittals of submittals which Engineers considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "No Exceptions" or "Furnish as Corrected" in a prior submittal, will be returned with "Engineer's Review Not Required."
- 9. Samples may be retained for comparison purposes.
 - a. Remove samples when directed.
 - b. Include in bid all costs of furnishing and removing samples.
- 10. Approved samples submitted or constructed, constitute criteria for judging completed work.
- 11. Finished work or items not equal to samples will be rejected.
- B. Operation and Maintenance Manuals:
 - 1. Engineer will review and indicate one of the following review actions:
 - a. NO EXCEPTIONS
 - b. ~~FURNISH AS CORRECTED~~ - Not Used.
 - c. REVISE AND RESUBMIT.
 - d. ~~REJECTED~~ - Not Used.
 - 2. Acceptable paper copy submittals will be retained with the transmittal form returned with a request for one (1) additional paper copy and two (2) electronic copies on CD-ROM.
 - 3. Deficient submittals (paper copy and/or electronic copy) will be returned along with the transmittal form which will be marked to indicate deficient areas.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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**SECTION 01 4000
QUALITY CONTROL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. References and standards.
- B. Quality assurance submittals.
- C. Control of installation.
- D. Tolerances.
- E. Inspection services.
- F. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01 3100 - Submittal Procedures.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Work under this section shall be considered incidental to other items of the work.
- B. Engineer may withhold full or partial payment for items for which testing reports have not been submitted or where test indicate the specifications have not been met.

1.04 REFERENCE STANDARDS

- A. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2014.
- B. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2013.
- C. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- D. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.
- E. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2013.
- F. Idaho Standards for Public Works Construction (current edition).

1.05 SUBMITTALS

- A. Testing Agency Qualifications:
 - 1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time Inspectors specialist
- B. Design Data: Submit for Engineer's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.

3. Identification of applicable standards.
 4. Identification of test and inspection methods.
 5. Number of tests and inspections required.
 6. Time schedule or time span for tests and inspections.
 7. Entity responsible for performing tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique Characteristics of each quality control service.
- D. Test Reports: Within 24 hours of each test/inspection, Contractor shall submit One copy of report to Engineer.
1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Engineer, provide interpretation of results.

1.06 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.07 TESTING AND INSPECTION AGENCIES

- A. Owner shall be responsible for the following testing. Owner shall employ and pay for services of an independent agency to perform the following services.
 - i. Subgrade testing and preparation testing
 - ii. Structural fill placement and (density and moisture content tests)
 - iii. Concrete Testing

- iv. Reinforced Masonry special inspection
 - v. Open-Web Steel Bar Joist special inspection
 - vi. Steel Roof Decking special inspection
 - vii. Adhesive Anchors in Concrete and Masonry special inspection
- B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will employ 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 inspecting they are engaged to perform.
 - 2. Payment for these services shall be the responsibility of the Owner.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- C. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. 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.
- 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - b. Submit a certified written report, in duplicate, of each quality-control service.
 - c. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
 - d. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
- D. Testing and inspecting required by Contractor and not required by the Contract Documents are Contractor's responsibility.
- E. Contractor Employed Agency:
- 1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 543, ASTM C 1021, ASTM C 1077, and ASTM C 1093.
 - 2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
 - 3. Laboratory: Authorized to operate in the State in which the Project is located.
 - 4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 QUALITY ASSURANCE

- A. Monitor quality control of suppliers, manufacturers, products, services, site conditions, and on-site workmanship, to assure that Work produced meets the specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.

- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

3.02 TOLERANCES

- A. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

3.03 QUALITY CONTROL

- 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 work tested or inspected.
 - 3. Date test or inspection results were transmitted to Engineer.
 - 4. Identification of testing Agency or special Inspector conducting test or inspection.
 - 5. Maintain log at project site. Post changes and modifications as they occur. Provide access to test and inspection log during normal working hours.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests and inspections required by Engineer.
 - 7. Submit, before leaving the site, a written report in duplicate of each test, inspection and similar quality control service to the contractor.
- C. Testing Frequencies: The frequency at which testing shall take place is as follows:

Section	Description	Test Frequency	Minimum Tests
31 2323	Structural Fill/Embankment	Every 250 SY, each lift	One per lift
31 2323	Trench backfill	Every 200 LF, each lift*	One per lift
03 3000	Structural Cast-in-Place Concrete	See Section 03 3000	See Section 03 3000

*And at all trenched transverse crossings.

D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Engineer.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct an appropriate remedy or adjust payment.

END OF SECTION

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**SECTION 01 5050
MOBILIZATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Unit Price - Measurement and Payment

1.02 RELATED SECTIONS

- A. Section 01 2200 - Unit Prices

1.03 PRICE AND PAYMENT PROCEDURES

- A. Mobilization:

1. Measurement Method: Per Lump Sum
2. Includes: Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, necessary for all work involved in mobilization as specified herein. All mobilization costs for subcontractors is considered incidental to this bid item. Allowable amounts for partial payment of mobilization are as follows:
 - a. 60% of the contract unit price or 6% of the total contract amount, whichever is less, will be paid on the first monthly progress estimate.
 - b. 40% of the contract unit price or 4% of the total contract amount, whichever is less, will be paid on the second monthly progress estimate providing that productive work on the project has been initiated.
 - c. Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10% of the total original contract amount will be paid.
 - d. Total contract amount is defined as the original total of all bid items plus the cost of items paid for at invoice as shown on the original bid schedule.

- B. This Section shall be paid under the following pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
015050.01	Mobilization	LS

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 MOBILIZATION

- A. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all offices, buildings, and other facilities necessary for the work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work on the various contract items on the project site. Mobilization cost for subcontracted work shall be considered to be included in the contract lump sum price bid by the Contractor.

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**SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- J. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3100 - Submittal Procedures.
- C. Section 01 4000 - Quality Control: Testing and inspection procedures.
- D. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- E. Section 02 4100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

- A. See Section 01 3100 - Submittal Procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.

- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities. Retainage will not be paid until record drawings have been submitted and found to be accurate and complete.

1.05 QUALIFICATIONS

- A. For demolition work, employ a firm specializing in the type of work required.
 - 1. Minimum of 5 years of documented experience.
- B. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Engineer. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
- C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located.
- D. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 - 3. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
 - 1. Pest Control Service: Weekly treatments.
- I. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Engineer of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on Drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.
- H. Utilize recognized engineering survey practices.

- I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- K. Periodically verify layouts by same means.
- L. Maintain a complete and accurate log of control and survey work as it progresses.
- M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Engineer before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
 - 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.

2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 2. Remove items indicated on drawings.
 3. Relocate items indicated on drawings.
 4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 1000 for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
 1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Engineer.

2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Engineer review and request instructions.
 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- H. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
 3. Patch as specified for patching new work.
- I. Clean existing systems and equipment.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-conforming work.
- D. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
- E. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- F. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

- G. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- H. Restore work with new products in accordance with requirements of Contract Documents.
- I. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- J. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- K. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- L. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- M. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.

- H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.10 SYSTEM STARTUP

- A. Notify Engineer and owner seven days prior to start-up of each item.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.12 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, adjusting, and balancing HVAC systems: See Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.

3.13 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
 - 1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- B. Use cleaning materials that are nonhazardous.

- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
- K. Execute final cleaning prior to final project assessment.
- L. Clean Owner-occupied areas of work.

3.14 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Engineer.
 - 2. Provide copies to Owner.
 - 3. Provide copies to Engineer and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Engineer when work is considered ready for Engineer's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's Substantial Completion inspection.
- E. Owner will occupy all of the building as specified in Section 01 1000.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Accompany Project Coordinator on Contractor's preliminary final inspection.
- H. Notify Engineer when work is considered finally complete and ready for Engineer's Substantial Completion final inspection.
- I. Complete items of work determined by Engineer listed in executed Certificate of Substantial Completion.
- J. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) calendar days after acceptance, listing date of acceptance as start of warranty period.

3.15 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.

- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

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**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 3000 - Administrative Requirements: Shop drawings, product data, and samples.
- C. Section 01 3100 - Submittal Procedures: Submittal instructions.
- D. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.
- E. Individual Product Sections: Specific requirements for operation and maintenance data.
- F. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Engineer with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit four copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit four sets of revised final documents in final form within 10 days after final inspection.
- C. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
 - 4. Provide four complete sets.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
- G. Submit documents to Engineer with final pay request. **Final payment will not be processed until record drawings are approved.**

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.
- P. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- D. Prepare data in the form of an instructional manual.
- E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Engineer, Consultants, Contractor and subcontractors, with names of responsible parties.
- H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- I. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- L. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Engineer or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

- M. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- N. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
- F. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- G. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- H. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- I. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

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SECTION 02 4100 DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building demolition excluding removal of hazardous materials and toxic substances.
- B. Selective demolition of built site elements.
- C. Selective demolition of building elements for alteration purposes.
- D. Abandonment and removal of existing utilities and utility structures.
- E. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.
- B. Section 31 2200 - Grading: Topsoil removal.
- C. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- D. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- E. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Demolition:
 - 1. Measurement Method: Per lump sum.
 - 2. Includes: All labor, materials, equipment and excavation for demolition as shown on the plans and as necessary for the construction of the new building.
 - 3. Excludes: Work done outside of the pay limit shown on the plans or as directed by the Engineer.
- B. This section shall be paid under the following Pay Item:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
024100.01	Demolition	LS

1.04 REFERENCE STANDARDS

- A. 29 CFR 1910 - U.S. Occupational Safety and Health Standards; current edition.
- B. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.05 SUBMITTALS REQUIRED

- A. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.

- 3. Include a summary of safety procedures.
- B. Show Drawings: Indicate demolition and removal sequence and location and construction of barricades, fences, and temporary work.
- C. Provide sequencing of electrical system and plans for protecting existing well.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.06 PROJECT CONDITIONS

- A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- B. Comply with other requirements specified in Section 01 7000.

1.07 REGULATORY REQUIREMENTS

- A. Notify affected utility companies before starting work and comply with their requirements.
- B. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
- C. Comply with all applicable state and federal requirements including, but not limited to, IDEQ requirements and OSHA standards.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 31 2323 - Fill.

PART 3 EXECUTION

3.01 SCOPE

- A. Remove the entire well house structure.
- B. Remove portion of water service and cut and cap as shown on plans.
- C. Remove footing drain.
- D. Remove and dispose of existing catch basin.
- E. Preserve and protect existing well and concrete block.
- F. Relocate electrical panels to be preserved.
- G. Remove concrete Floor, sidewalk, footings, etc.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits. Cost and procurement of permits is the responsibility of the Contractor.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Use of explosives is not permitted.

4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 5. Provide, erect, and maintain temporary barriers and security devices.
 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 8. Do not close or obstruct roadways or sidewalks without permission from the Owner.
 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Do not begin removal until built elements to be salvaged or relocated have been removed.
- D. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- E. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- G. If hazardous materials are discovered during removal operations, stop work and notify Engineer and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- H. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.
- I. Perform demolition in a manner that maximizes salvage and recycling of materials.
1. Comply with requirements of Section 01 7419 - Waste Management.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.
- K. Do not burn or bury materials on site.
- L. Backfill areas excavated, open pits, and holes caused as a result of demolition, in accordance with Section 31 2323.
- M. Rough grade and compact areas affected by demolition to maintain site grades and contours.
- N. When demolishing sidewalks or curb and gutter, cut a straight, clean line at the removal limits so that concrete remaining in place will not be damaged. All concrete damaged by

the Contractor that was to remain in place shall be replaced at the Contractor's expense.

O. Underground Storage Tanks: Remove and dispose of as specified in Section 02 6500.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Disconnect, cap and identify designated utilities within demolished areas.
- E. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- F. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- G. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- H. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- I. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 REMOVE MISCELLANEOUS TRAFFIC ITEMS

- A. Work shall include removing miscellaneous traffic items called out in the plans from the site.
- B. Removed items shall become the property of the City.
- C. Items disposed of shall be disposed of at an approved waste site.
- D. Holes resulting from removal of traffic items shall be backfilled in accordance with Section 31 2323, backfill is incidental to this item.

3.05 REMOVE AND RELOCATE EXISTING SIGN

- A. Work shall include removing and relocating existing signs as shown on the plans.
- B. Holes resulting from the removal shall be backfilled in accordance with Section 31 2323, backfill is incidental to this item.
- C. Signs shall be installed in the same fashion as a new sign.
- D. New posts shall be supplied for the relocated sign.
- E. Old posts shall be disposed of at an approved waste site.

3.06 REMOVE EXISTING SIGN

- A. Work shall include removing and disposing of existing sign at an approved waste site.
- B. Signs that are not damaged shall remain property of the City and returned to the City.

3.07 RELOCATE EXISTING MAILBOX

- A. Work shall include removing the existing mailboxes from their posts and setting them on new posts.
- B. Mail service shall not be interrupted during construction.
- C. Mailboxes shall be relocated in the same clusters that they are in prior to construction.
- D. Holes resulting from the removal of mailbox posts shall be backfilled in accordance with Section 31 2323, backfill is incidental to this item.

3.08 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Engineer before disturbing existing installation.
 - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
 - 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and water): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. Where existing active systems serve occupied facilities, but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - 3. See Section 01 1000 for other limitations on outages and required notifications.
 - 4. Verify that abandoned services serve only abandoned facilities before removal.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.

4. Patch as specified for patching new work.

3.09 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Remove demolished materials from the site.
- C. Relics, antiques, and similar objects remain the property of the Owner. Obtain direction from the Engineer regarding method of removal.
- D. Leave site in clean condition, ready for subsequent work.
- E. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 22 1007
SODIUM HYPOCHLORITE GENERATION SYSTEM COORDINATION
AND UTILITY CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sodium Hypochlorite Generation System Coordination and Utility Connections

1.02 PRICE AND PAYMENT

- A. Sodium Hypochlorite Generation System Coordination and Utility Connections
1. Measurement Method: Per Lump Sum
 2. Includes: All labor, materials, equipment, necessary to install utility lines including power, water, wasteline, etc. as outlined herein and as shown on the plans.
- B. This section shall be paid under the following Pay Items.

<u>Pay Item Description</u>	<u>Pay Unit</u>
221007.01 Sodium Hypochlorite Generation System Coordination and Utility Connections	LS

1.03 SCOPE OF WORK

- A. The owner will have others provide and install an on-site sodium hypochlorite generation system. The contractor will be responsible to allow the owner and their contractor access to the site for the relocation and reinstallation of the Sodium Hypochlorite Generation System. Additionally, the contractor will be required to provide the following utility connections as summarized herein and shown on the plans;
1. ¾" SCH 80 PVC feed line to miox filter
 2. 4" SDR 35 PVC sewer line
 3. Supply and connect 1ph/120 v power to chemical feed pump
 4. Supply and connect 1ph/120 v power to Miox oxidant level controller
 5. Supply and connect 1ph/120 v power to Miox hydrogen monitor
 6. Mount the hydrogen monitor at the high level in the building's wall above the Miox Vault generator cabinet and supply 4-wire communication wire from the monitor to the generator cabinet
 7. Supply 4-wire communication wire from the Miox oxidant level controller located next to the oxidant tank to the Miox Vault generator cabinet
- B. The City has contracted with Filtration Technology Inc. to provide and install the Sodium Hypochlorite Generation System. For coordination on utility connections contact

Gregg Fisher
 Filtration Technology Inc.
 2218 S Crosscreek Ln
 Boise, ID 83706
 work: 208-336-6611
 fax: 208-336-6637

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 31 2200 GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Subsoil Excavation for site structures and building pads.
- B. Finish grading .

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation.
- B. Section 31 2316.13 - Trenching: Trenching and backfilling for utilities.
- C. Section 31 2323 - Fill: Filling and compaction.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Site Grading:
 - 1. Measurement method: Shall be lump sum.
 - 2. Includes: labor, materials and equipment necessary to grade and compact the site as shown on plans. Other incidentals including excess material disposal necessary to complete work in accordance with the drawings or as directed by the Engineer.
 - 3. Excludes: Payment will not be made for over-excavated work nor for replacement materials.
- B. This section shall be paid under the following Pay Items for each Bid Schedule:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
312200.01	Site Grading	LS

1.04 PROJECT RECORD DOCUMENTS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect above and below grade, utilities that remain, from damage.
- D. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from grading equipment and vehicular traffic.
- F. Notify utility company to remove and relocate utilities.

- G. Protect site features to remain, including but not limited to bench marks, survey control points, existing well, piping, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

3.03 SUBSOIL EXCAVATION

- A. Before ground is broken for excavation, all clearing and grubbing required shall have been completed within the area to be excavated.
- B. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- C. If over excavation occurs below the lines and grades specified on the drawings, the Contractor shall refill such excavated area to the proper elevation in accordance with Section 31 2323.
- D. Benching Slopes: Horizontally bench existing slopes greater than 4(H):1(V) to key fill material to slope for firm bearing.
- E. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.04 SOIL STOCKPILING

- A. Stockpile excavated subsoil on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site. Contractor shall ascertain that there is sufficient material for completion of all fills before disposing of any material. Shortage of material caused by premature disposal of any material by the Contractor shall require replacement of the material by the Contractor at their expense.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 6 inch in size. Remove soil contaminated with petroleum products.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).
- C. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

3.08 FIELD QUALITY CONTROL

- A. See Section 31 2323 for compaction density testing.

3.09 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

- B. Leave site clean and raked, ready to receive landscaping.
- C. Excess topsoil and subsoil shall become the property of the Contractor.

END OF SECTION

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**SECTION 31 2316
EXCAVATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for Site Structures.
- B. Excavating for Slab-on-Grade.
- C. Trenching for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 02 4100 - Demolition: Shoring and underpinning.
- B. Section 31 2200 - Grading: Grading.
- C. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- D. Section 31 2323 - Fill: Fill materials, filling, and compacting.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Excavation is considered incidental to other pay items.

1.04 FIELD MEASUREMENTS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Protect structures, pipes, electrical equipment, and other features to remain.

1.05 EXISTING CONDITIONS

- A. Contractor shall review the Geotechnical Engineering reports prior to performing excavations.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 2200 for additional requirements.
- C. Locate, identify, and protect utilities that remain and protect from damage.
- D. Notify utility company to remove and relocate utilities.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 EXCAVATING

- A. Underpin adjacent structures that could be damaged by excavating work.
- B. Excavate subsoil to accommodate new structures and construction operations.
- C. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- D. All excavations shall be sloped and/or shored to meet the latest OSHA Construction Standards, as well as applicable state and federal safety regulations.
- E. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- F. Do not interfere with 45 degree bearing splay of foundations.
- G. Cut utility trenches wide enough to allow inspection of installed utilities.
- H. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.
- I. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- J. De-watering shall be required, as necessary, at locations where excavation extends below static ground water level or the natural soils are saturated and of low strength.
- K. Remove stumps, trees, rubbish, vegetation, frozen lumps, or other unsuitable materials from site.
- L. The surface of the subgrade shall not contain standing water and shall be free of loose material, foreign objects, and rocks greater than 6 inches in maximum dimension.
- M. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.
- N. Remove excess excavated material from site.

3.04 FIELD QUALITY CONTROL

- A. Provide for visual inspection of load-bearing excavated surfaces before placement of foundations.

3.05 PROTECTION

- A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

**SECTION 31 2316.13
TRENCHING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Document Geotechnical Engineering Evaluation -dated May 28, 2021 by GPI: Geotechnical report; bore hole locations and findings of subsurface materials.
- B. Section 31 2200 - Grading: Site grading.
- C. Section 31 2316 - Excavation: Building and foundation excavating.
- D. Section 31 2323 - Fill: Backfilling at building and foundations.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for general requirements applicable to unit prices for earthwork.
- B. Work associated with trenching are considered incidental to other pay items.

1.04 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Utility: Any buried pipe, duct, conduit or cable.

1.05 REFERENCES

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2010
- B. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
- D. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.
- F. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- G. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- H. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2005.
- I. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.

- J. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
- K. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010

1.06 SUBMITTALS REQUIRED

- A. Materials Sources: Submit name of imported materials source.
- B. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- C. Compaction Density Test Reports.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need. Location to be determined by the engineer.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Verify that survey bench marks and intended elevations for the Work are as indicated.
- D. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- B. If tests indicate materials do not meet specified requirements, change material and retest.
- C. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 2200 for additional requirements.
- C. Locate, identify, and protect utilities that remain and protect from damage.
- D. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 TRENCHING

- A. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. The bottom of trenches shall be accurately graded to the lines and grades shown on the drawings.
- F. Hand trim excavations. Hand trim for bell and spigot pipe joints. Remove loose matter.
- G. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- H. Remove excavated material that is unsuitable for re-use from site.
- I. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.
- J. Remove excess excavated material from site.
- K. Remove water or materials that interfere with, and ensure that no standing or running water occurs in excavation process.
- L. Provide and maintain dewatering systems as necessary to keep the excavation free from water. All water encountered must be pumped out of the trench and the trench kept dry until the pipe has been installed and the joints closed. Any ground water entering an open pipe shall immediately be removed and the pipe shall be flushed clean of any debris or mud prior to continuing installation. If the contaminated pipe cannot be readily cleaned by flushing or other acceptable means, the contaminated pipe shall be removed, properly cleaned or replaced as necessary to ensure a clean, uncontaminated installation.
- M. Trench work shall conform to OSHA recognized standard Trench Safety Practices in regards to sloping and/or shoring requirements. Work may be terminated by Owner or Engineer if it is determined that the Contractor has not provided adequate safety.
- N. Excavation shall be in compliance with ISPWC 301-304. Trench safety rules and regulations, as adopted by OSHA shall be strictly enforced. Contractor shall be solely responsible for worker safety throughout the project.

3.04 PREPARATION FOR UTILITY PLACEMENT

- A. Remove all soft and unstable material and other portions of the subgrade, that cannot be compacted satisfactorily, as directed. Place and compact structural fill to bring excavation back to grade. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.

- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Place and compact materials in equal continuous layers as indicated in Section 31 2323 - Fill.
- G. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Correct areas that are over-excavated.
 - 1. Thrust bearing surfaces: Fill with concrete.
 - 2. Other areas: Use structural fill, flush to required elevation, compacted to the minimum maximum dry density as specified in Section 31 2323 - Fill.
- I. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density as determined by ASTM D1557.
 - 2. At other locations: 95 percent of maximum dry density as determined by ASTM D1557 unless otherwise approved by the engineer.
- J. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Utility Piping
 - 1. Bedding: Use Fill Type A10.
 - 2. Compact in maximum 6 inch lifts to 95 percent of maximum dry density as determined by ASTM D1557 unless otherwise specified or indicated. (refer to section 31 2323 - Fill)

3.07 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

- A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.
- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.09 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 2323

FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for building volume below grade and paving.
- B. Backfilling and compacting for utilities outside the building to utility main connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Reference Document: Geotechnical Engineering report dated May 28, 2021 completed by GPI.
- B. Section 31 2200 - Grading: Site grading.
- C. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.
- D. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for general requirements applicable to unit prices for earthwork.
- B. Work associated with fill are considered incidental to other pay items.

1.04 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.

1.05 REFERENCE STANDARDS

- A. AASHTO T 99 - Standard Specification for Moisture-Density Relations of Soils Using a 2.5 kg (5.5-lb) Rammer and a 305 mm (12 in.) Drop; American Association of State Highway and Transportation Officials; 2001 (2004).
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2010
- C. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
- E. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.

- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- I. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2005.
- J. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
- K. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
- L. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.
- M. Idaho Standards for Public Works Construction

1.06 QUALITY ASSURANCE

- A. Perform work in accordance with current edition of all applicable standards and Idaho Standards for Public Works Construction, current edition.
- B. Maintain one copy of the subsurface soil investigation document on site.

1.07 SUBMITTALS REQUIRED

- A. Materials Sources: Submit name of imported materials source.
- B. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- C. Compaction Density Test Reports.

1.08 FIELD MEASUREMENTS

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Verify that survey bench marks and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Type S1: Shall be excavated and imported material.
- B. Type S2: Shall be excavated and imported material.
 - 1. Unified Soil Classification, GW, GP, SW or SP
 - 2. Acceptable for use as structural fill if boulders exceeding 6-inch nominal size are removed.
 - 3. This material shall be free from peat, wood, roots, bark, debris, garbage, rubbish, or other extraneous material, and shall have a gradation and moisture content such that the specified compaction can be readily attained.

- C. Type A3: Aggregate: (3/4" minus): The material shall meet the following gradation requirements:

U.S. Standard Sieve Size	Percent By Weight Passing
3/4 inch	90 to 100
No. 4	40 to 65
No. 8	30 to 50
No. 200	3 to 9

2.02 SOURCE QUALITY CONTROL

- A. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 2200 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.
- F. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.

3.02 PREPARATION

- A. Proofroll subgrade surface to identify soft spots.
- B. Excavate soft areas of subgrade that cannot be scarified and compacted satisfactorily, as directed.
- C. Place and compact structural fill to bring excavation back to grade.
- D. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- E. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Fill should not be place on porous, wet, frozen or spongy subgrade surfaces.
- E. Fill material shall be place in horizontal layers and compacted to the density specified. Material type, maximum layer depth, relative compaction, and general application are specified in the following Fill Classification Table.

Fill Class	Maximum Uncompressed Layer Depth, Inches	Minimum Relative Compaction, Percent	General Application
S2	12	95% of ASTM D1557 within 2.5' of sub-grade	1. Pipeline backfill in roadways and roadway shoulder. 2. Structural backfill, provided material can be readily compacted to the degree specified. 3. Non-structural site fill.
S3, S4	6	90% of ASTM D1557 below 2.5' of sub-grade	1. Pipeline backfill in roadways and roadway shoulders. 2. Structural backfill, provided material can be readily compacted to the degree specified. 3. Non-structural site fill.
A3	6	95% of ASTM D1557 within 2.5' of sub-grade	1. Structural backfill around footings and foundation. 2. Aggregate Base Coarse under paved roadways - non contaminated. 3. Graveled roadway surface. 4. Under slab-on-grade.
A10	6	95% of ASTM D1557 within 2.5' of sub-grade	1. Utility pipe bedding and initial pipeline backfill (pipe cushion).

- F. Unclassified material may be submitted by the Contractor to the Engineer for use. However, prior authorization shall be acquired from the Engineer prior to using unclassified material.
- G. Maintain optimum moisture content of fill materials to attain required compaction density.
- H. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- I. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- J. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- K. Correct areas that are over-excavated.
 - 1. Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density as determined by ASTM D-1557.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to specifications.
- L. Reshape and re-compact fills subjected to vehicular traffic.

3.04 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.05 FIELD QUALITY CONTROL

- A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.

- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 or AASHTO T 99 ("Standard Proctor") or ASTM D1557 or AASHTO T180 ("Modified Proctor").
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

3.06 CLEANING

- A. Remove unused materials from site.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

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SECTION 33 1116 SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe and fittings for site water lines including domestic water lines and fire water lines.
- B. Valves.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation: Excavating of trenches.
- B. Section 31 2323 - Fill: Bedding and backfilling.
- C. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.
- D. Section 33 1300 - Disinfecting of Water Utility Distribution: Disinfection of site service utility water piping.

1.03 PRICE AND PAYMENT PROCEDURES

- A. 2-Inch Poly Water Line:
 - 1. Measurement Method: Per lineal foot.
 - 2. Includes: All materials, equipment, and labor to install pipe, fittings, tracer wire, warning tape, cleaning, testing and disinfecting the water main, thrust restraints, and other work necessary for completion of the item. Including all various types and sizes of water line as shown on the construction drawings. Also includes all labor, materials and equipment necessary to supply, connect, and install all temporary valving, couplers, fittings and thrust blocks required to complete pressure testing.
 - 3. Excludes: Waterline and fittings within 5 feet of the building or pump control discharge structure shall be considered incidental to other items of the work.
- B. 2" Service Meter and Piping
 - 1. Measurement Method: Per Lump Sum.
 - 2. Includes: All work within 5' of the building and all casing necessary to facilitate getting under building. All materials, equipment, and labor necessary to demo the existing connection and make a new connection while salvaging the existing meter and backflow preventer, as shown on the construction drawings. This includes all, fittings, valves, mounting brackets, connectors as necessary for an operational connection to the mainline.
 - 3. Includes: All labor, equipment, and materials required to provide temporary water service to all impacted water system customers while the existing service is out of service for a period exceeding 4 hours.
- C. This section shall be paid under the following Pay Items.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
331116.01	2" Poly Water Line	LF
331116.02	2" Service Meter Piping	LS

1.04 REFERENCES

- A. AASHTO HB - Standard Specifications for Highway Bridges; Seventeenth Edition.
- B. ASME B16.3 - Malleable Iron Threaded Fittings Classes 150 and 300; 2011.

- C. ASME B16.4 - Gray Iron Threaded Fittings Classes 125 and 250; 2011.
- D. ANSI/NSF 61 - Drinking Water System Components - Health Effects, National Sanitation Foundation; 2000 (NSF 61).
- E. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2012 (ANSI B16.18).
- F. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; The American Society of Mechanical Engineers; 2013.
- G. ASME B18.2.2 - Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series); 2010.
- H. ASME B18.5.2.1M - Metric Round Head Short Square Neck Bolts; 2006 (Reaffirmed 2011).
- I. ASME B18.5.2.2M - Metric Round Head Square Neck Bolts; 1982 (Reaffirmed 2010).
- J. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- K. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2012.
- L. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a (Reapproved 2014).
- M. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts [Metric]; 2007.
- N. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2009.
- O. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2012.
- P. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2009.
- Q. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2013.
- R. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings; 1996 (Reapproved 2010).
- S. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter; 2012.
- T. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals; 1998 (Reapproved 2011).
- U. ASTM F 477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2007.
- V. AWS A5.8/A5.8M - Specification for Filler Metals for Brazing and Braze Welding; American Welding Society; 2011 and errata.
- W. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings; American Water Works Association; 2008 (ANSI/AWWA C104/A21.4).
- X. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; 2010 (ANSI/AWWA C105/A21.5).
- Y. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings for Water; American Water Works Association; 2003 (ANSI/AWWA C110/A21.10).

- Z. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; 2012 (ANSI/AWWA C111/A21.11).
- AA. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges; 2011.
- BB. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; American Water Works Association; 2009 (ANSI/AWWA C151/A21.51).
- CC. AWWA C200 - Steel Water Pipe, 6 In. (150 mm) and Larger; 2012 (ANSI/AWWA C200).
- DD. AWWA C203 - Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape-Hot-Applied; 2008 (ANSI/AWWA C203).
- EE. AWWA C205 - Cement-Mortar Protective Lining and Coating for Steel Water Pipe, 4 in. (100 mm) and Larger - Shop Applied; 2012 (ANSI/AWWA C205).
- FF. AWWA C206 - Field Welding of Steel Water Pipe; 2011 (ANSI/AWWA C206).
- GG. AWWA C207 - Steel Pipe Flanges for Waterworks Service, Size 4 In. Through 144 In. (100 mm Through 3,600 mm); 2007 (ANSI/AWWA C205).
- HH. AWWA C208 - Dimensions for Fabricated Steel Water Pipe Fittings; 2012 (ANSI/AWWA C208).
- II. AWWA C209 - Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines; 2006 (ANSI/AWWA C209).
- JJ. AWWA C210 - Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines; 2007 (ANSI/AWWA C210).
- KK. AWWA C153/A21.53 - Ductile-Iron Compact Fittings for Water Service; American Water Works Association; 2006 (ANSI/AWWA C153/A21.53).
- LL. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works Association; 2009.
- MM. AWWA C502 - Dry Barrel Fire Hydrants; American Water Works Association; 2005 (ANSI/AWWA C502/C502a).
- NN. AWWA C504 - Rubber Seated Butterfly Valves, 3 In. (75 mm) Through 72 In. (1,800 mm); American Water Works Association; 2010.
- OO. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; 2011 (ANSI/AWWA C508).
- PP. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; 2009 (ANSI/AWWA C509).
- QQ. AWWA C510 - Double Check Valve Backflow Prevention Assembly; American Water Works Association; 1998 (ANSI/AWWA C510).
- RR. AWWA C511 - Reduced-Pressure Principle Backflow Prevention Assembly; American Water Works Association; 1997 (ANSI/AWWA C511).
- SS. AWWA C512 - Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service; American Water Works Association; 2004 (ANSI/AWWA C512).
- TT. AWWA C515 - Reduced-Wall, Resilient Seated Gate Valves for Water Supply Service; American Water Works Association; 2001 (ANSI/AWWA C515).
- UU. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; 2010 (ANSI/AWWA C600).
- VV. AWWA C602 - Cement-Mortar Lining of Water Pipelines in Place, 4 In. (100 mm) and Larger; 2011.

- WW. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water; American Water Works Association; 2005 (ANSI/AWWA C605).
- XX. AWWA C606 - Grooved and Shouldered Joints; American Water Works Association; 2011.
- YY. AWWA C651 - Disinfecting Water Mains; American Water Works Association; 2005 (ANSI/AWWA C651).
- ZZ. AWWA C701 - Cold-Water Meters-Turbine Type, for Customer Service; American Water Works Association; 2007 (ANSI/AWWA C701).
- AAA. AWWA C704 - Propeller-Type Meters for Waterworks Applications; American Water Works Association; 2003 (ANSI/AWWA C704).
- BBB. AWWA C800 - Underground Service Line Valves and Fittings; American Water Works Association; 2005 (ANSI/AWWA C800).
- CCC. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution; American Water Works Association; 2007 (ANSI/AWWA C900/C900a).
- DDD. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service; American Water Works Association; 2008.
- EEE. AWWA M11 - Steel Pipe - A Guide For Design and Installation; 2004
- FFF. AWWA C905 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution; American Water Works Association; 1997 (ANSI/AWWA C905).
- GGG. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission; American Water Works Association; 2007 (ANSI/AWWA C906)
- HHH. UL 246 - Hydrants for Fire-Protection Service; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS REQUIRED

- A. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- D. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with utility company requirements.

- B. Perform service connection work in accordance with the Uniform Plumbing Code and as specified.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.

1.08 FEDERAL REQUIREMENTS

- A. Contractor shall follow strict guidelines when AC Pipe is located and handled. Contractor shall perform work in accordance with Occupational Safety and Health Administration (OSHA) latest edition of 29 CFR 1926.
- B. All materials having water contact surfaces shall conform/certified to meet:
 - 1. Applicable AWWA standards
 - 2. NSF/ANSI 61, Annex G OR NSF/ANSI 61 and NSF/ANSI372.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 6000 - Product Requirements.
- B. Deliver and store valves in shipping containers with labeling in place.
- C. Store materials on site in enclosures or under protective covering. Long-term storage (in excess of 6 months) of PVC out of doors shall be accomplished with use of tarps to cover and protect the pipe exterior and especially the sealing ends from ultraviolet degradation caused by direct exposure to sunlight. Pipe stored for longer than this period shall be thoroughly inspected upon delivery and may be rejected by the owner. Contractor shall replace any rejected pipe at no expense to the Owner.
- D. Store rubber gaskets under cover out of direct sunlight.
- E. Do not store materials directly on the ground.
- F. Keep interior of pipe and fittings free of dirt and debris. If dirt and debris are found, Engineer may require cleaning prior to installation.
- G. Avoid injury to coatings and linings on pipe and fittings; make satisfactory repairs if coatings or linings are damaged.
- H. All pipe, fittings, valves and accessories shall be handled in such a manner as to prevent damage. Pipe shall not be dropped or thrown into the trench or onto the ground surface. Pipe that has been dropped shall be thoroughly inspected and replaced at the Contractor's expense of any damage found.
- I. Every shipment of pipe shall be accompanied by a statement from the manufacturer certifying that each length of pipe has been found to meet the requirements thereof. This certificate shall be filed with the on-site inspector prior to unloading of said material at the job site. All pipe shall be so tagged or marked by the manufacturer as to clearly indicate it has been subject to and meets the requirements. Said tags or marks shall be preserved by Contractor until inspection and approval from Engineer has been obtained.
- J. Tools and equipment used shall be designed for use with the typed of pipe being installed and found satisfactory by the on-site inspector shall be provided and used by the Contractor for the safe and efficient execution of the work.

PART 2 PRODUCTS

2.01 WATER PIPE

- A. Ductile Iron Pipe ANSI/AWWA C151/A21.5, Class 51:
 - 1. Fittings: Ductile iron, standard thickness, AWWA C110, ANSI B16.1.

2. Joints: Mechanical joint or flanged, AWWA C111, stainless steel hardware.
 3. Lining: Cement-Mortar lined and seal coated, ANSI/AWWA C104/A21.4.
 4. Coating: As specified by Engineer.
 5. Pressure Class: 150
 6. Jackets: AWWA C105/A21.5 polyethylene jacket.
- B. Copper Tubing: ASTM B88, Type K, annealed:
1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 2. Joints: Compression connection or AWS A5.8, BCuP silver braze.
- C. PVC Pipe: AWWA C900 DR 18 Push-on joint (4" to 12" diameter).
1. Fittings: AWWA C153 or C110, ductile iron.
 2. Joints: Elastomeric seal meeting ASTM F477 and Gasketed Joint Assembly meeting ASTM D3139.
 3. Pressure Class: 150
 4. Working Pressure for Testing: 100 psi
- D. HDPE Pipe: Refer to Section 33 1725 - High Density Polyethylene Pipe
- E. Polyethylene Pipe: AWWA C901:
1. Fittings: AWWA C901, molded or fabricated.
 2. Joints: Compression.
- F. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Pipeline ", or equivalent, in large letters.

2.02 VALVES

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Ball Valves Up To 2 Inches:
1. Brass body, teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, AWWA inlet end, compression outlet with electrical ground connector, with control rod, valve key, and extension box.
 2. Substitutions: See Section 01 6000 - Product Requirements.

2.03 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 2323.
- B. Cover: As specified in Section 31 2323.

2.04 ACCESSORIES

- A. Mechanical Thrust Restraints: Contractor shall install mechanical restraints on all joints within the distance specified on the plans from all fittings requiring thrust restraints (bends, tees, reducers). If specified restrained length cannot be achieved, Contractor shall notify Engineer. Engineer may require concrete thrust restraints in addition to mechanical thrust restraints at specific locations. Romac Grip Ring, EBAA Megalug, or Engineer approved equal.
- B. Trace Wire: Magnetic detectable copper conductor, 10 gage. Epoxy splice kit at all splices.
- C. Warning Tape: Blue, brightly colored, plastic covering, imprinted with "WATER" in large letters.

- D. Splice Kit: 3M Brand DBR Direct Bury Splice Kit

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.
- B. Verify that existing conditions are as indicated, including utility water main size, location, and invert.
- C. Exploratory excavation shall be performed prior to making any required tie-ins to existing waterlines and/or crossing large utilities (existing water, sewer, and storm lines). Contractor shall field verify existing pipe materials, sizes, locations, and elevations prior to beginning any tie-in.

3.02 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.03 WATER OUTAGE

- A. Contractor shall complete a water outage form and submit to the Engineer for approval at least 48 hours prior to the shutdown.
- B. The maximum allowable water outage shall not exceed 4 hours. Contractor shall provide temporary water connections as needed to meet this requirement. Outages will not be allowed on weekends or holidays.
- C. Contractor shall make written notification (door hanger or such) to each individual residence and business affected by the water shut down a minimum of 48 hours prior to the shutdown.
- D. Contractor is to submit a temporary water service plan to the Engineer for approval prior to any outage exceeding 4 hours.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. Notification: Contractor shall notify Engineer three days prior to any testing.
- C. Compaction testing will be performed in accordance with Section 31 2200 and Section 32 1123.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.05 TRENCHING AND BEDDING

- A. See the sections on excavation and fill for additional requirements.
- B. See Section 31 2316.13 for additional requirements.
- C. Hand trim excavation for accurate placement of pipe to elevations indicated.
- D. If the trench bottom is disturbed during excavation, compact to at least 95 percent of maximum density as measured by AASHTO T99 prior to placement of bedding materials.

- E. Bedding shall be placed 6 inches below and a minimum of 6 inches on either side of the pipe to the springline by hand shoveling and compacted with a T-handle tamper.
- F. Place Bedding Material (material specified in Section 31 2323) in three lifts as follows:
 - 1. Bedding under Pipe: Place bedding material in a continuous layer to the compacted depth as indicated on plans. Compact to 95 percent.
 - 2. Bedding for Pipe Cushion: After laying pipe, install bedding material at sides of pipe up to the center of pipe (springline) and compact to 95 percent to provide side support.
 - 3. Bedding for Pipe Cover: After compacting Bedding for Pipe Cushion, place pipe bedding from springline to the height over pipe and compact to 95 percent. (see plans for further details).
- G. Maintain moisture content of bedding material at optimum or above to attain required compaction density.
- H. The entire length of the pipe shall be bedded with Type III bedding or approved native materials to the centerline of the pipe, tamped well under and around the pipe. Once the initial backfill has been tamped, the pipe shall be covered with bedding to a minimum of twelve inches, minimum 24 inches in rocky soils, above the highest portion of the pipe level across the trench. The bedding material shall then be tamped around the pipe prior to additional lifts or backfill being placed in the trench.
- I. Where solid or large rock is encountered in a trench, the trench shall be over excavated at least 9 inches below the bottom of the pipe and shall have Type III bedding materials placed beneath the pipe, on the sides and a minimum of 24 inches above the pipe and evenly distributed prior to pipe installation. Contractor shall be responsible for notifying Engineer of this condition prior to installation.
- J. Asphalt grindings are NOT allowed as suitable fill in waterline trenches.

3.06 INSTALLATION - PIPE

- A. Installation shall follow AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
- B. Install pipe in accordance with the manufacturers recommendations.
- C. Install temporary site controls prior to beginning construction of water line.
- D. Maintain separation of water main from sewer piping in accordance with Idaho code.
- E. Group piping with other site piping work whenever practical.
- F. Establish elevations of buried piping to ensure not less than 4.5 ft of cover.
- G. Install ductile iron piping and fittings to AWWA C600.
- H. Route pipe in straight line.
- I. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- J. Install access fittings to permit disinfection of water system performed under Section 33 1300.
- K. Slope water pipe and position drains at low points.
- L. Install trace wire 6 inches above top of pipe; coordinate with Section 31 2316.13.
- M. Install trace wire on top of pipe and duct tape to pipe every 10 feet. Coordinate with Section 31 2323. Expose trace wire 4 inches below valve box lids at each valve box. Contractor shall test tracer wire for continuity prior to completion of surface restoration.

- N. The laying of pipe shall be accomplished only after the trench has been dewatered and bedding has been prepared in accordance with the specifications.
- O. Care shall be taken to avoid contamination, by dirt or any other foreign materials, of the pipe interior or joint surfaces. Trench water shall not be allowed to flow down the pipe. Pipe ends shall be capped/plugged in a watertight manner during installation and at the end of each workday. Open-ended pipe lengths shall not be allowed. Contractor shall inspect gasket following removal of pipe cap/plug prior to installation of adjacent pipe to ensure gasket is in proper working order.
- P. If groundwater is encountered during pipe lying, a dewatering plan shall be utilized to maintain the water level below the trench bottom before proceeding with lying of pipe. Water moving or seeping from side slopes shall not be permitted.
- Q. Maximum deflections at pipe joints for various types of pipe shall not exceed the applicable material and joint specification of AWWA nor shall they exceed the recommendations of the pipe manufacturer. In no case shall joint deflection exceed 3°.
- R. Backfill trench in accordance with Section 31 2323.
- S. Tracer wire shall be tested for continuity upon completion of installation and prior to final surface restoration.
- T. Necessary cutting shall be done neatly and true by means of an approved cutter. The minimum length of pipe that can be installed is 3 pipe diameters.

3.07 SEPARATION OF WATER AND SEWER LINES

- A. Parallel Installation: for the separation of water mains and sewer lines/appurtenances.
 - 1. Condition 1: A horizontal separation of greater than 10 feet shall be maintained between outside walls of the water lines and any non-potable water line.
 - 2. Condition 2: A horizontal separation of ten to six feet separation shall require separate trenches with potable main above non-potable main and non-potable main to be constructed with potable water class pipe.
 - 3. Condition 3: A horizontal separation of less than 6 feet shall require the design engineer to submit data to DEQ for review and approval showing that this installation will protect public health and the environment and non-potable main to be constructed of potable water class pipe.
 - 4. Potable and non-potable mains shall not be installed in the same trench.
 - 5. Separation of water mains from pressurized sewer lines requires Condition 1 separation. Condition 2 and 3 are not allowed.
- B. Crossings; the separation of water mains and sewer lines/appurtenances.
 - 1. Condition 1 - The bottom of the potable water main shall be a minimum of 18 inches above the non-potable main. The non-potable main joint shall be as far as possible from the potable main.
 - 2. Condition 2 - If there is less than 18 inches of vertical separation, the non-potable main shall be constructed with potable water class pipe and non-potable main joint shall be as far as possible from potable water main, or sleeve either potable or non-potable pipe with potable water class pipe for ten feet either side of crossing.
 - 3. Separation of water mains from pressurized sewer lines requires Condition 1 separation. Condition 2 is not allowed.

3.08 INSTALLATION - VALVES AND HYDRANTS

- A. Set valves on solid bearing.

- B. Center and plumb valve box over valve. Set box cover flush with finished grade.
- C. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.
- D. Set hydrants to grade, with nozzles at least 20 inches above ground.
- E. Locate hydrant control valve as shown on drawings.
- F. Locate control valve 4 inches away from hydrant.
- G. Provide a drainage pit 36 inches square by 24 inches deep filled with 2 inches washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to sewer.
- H. Provide a drainage pit 36 inches square by 24 inches deep filled with 2-inch washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to sewer.
- I. Hydrant Flanges shall not be greater than 8 inches or less than 2 inches above the finished grade of the adjacent area.
- J. Hydrant shall be painted in accordance with local fire authority requirements.

3.09 THRUST BLOCKS / RESTRAINTS

- A. Form and place concrete for pipe thrust restraints at each angled fitting, tee, cross, reducer, cap, plug, valve, and change of pipe direction, in accordance with the drawings.
 - 1. Concrete Thrust Blocks shall be cast in place. Precast thrust blocks are not to be used, except for temporary installations or as pre-approved by the Engineer.
 - 2. Place concrete to permit full access to pipe and pipe accessories.
 - 3. Wrap fittings with 6 mil polyethylene prior to placing concrete.
 - 4. Provide bearing area against undisturbed earth.
 - 5. Place concrete so that no concrete touches the nuts and bolts of the fitting or valve, and the nuts and bolts can be removed and replaced without removing any concrete.
 - 6. Place thrust blocks such that the fitting or valve may be removed at a later date without damage to the pipeline, valve, or fitting.
 - 7. Thrust Blocks shall be sized to provide no less than the minimum volume or bearing area as detailed in drawings.
- B. Contractor may elect to utilize mechanical thrust restraints in place of concrete thrust blocks.
 - 1. Contractor shall restrain additional pipe joints to achieve adequate restraint, as calculated by the Engineer.
 - 2. Concrete thrust restraints may be required in addition to mechanical thrust restraints at locations identified in the field by the Engineer.

3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with Section 33 1300 Disinfection of Water Utility Disinfection

3.11 WATER OUTAGE

- A. Contractor shall complete a water outage form and submit to the Engineer for approval at least 48 hours prior to the shutdown.

- B. The maximum water outage shall be 4 hours, unless otherwise approved by the Engineer and Owner. Outage shall be scheduled at the Owner's convenience.
- C. Owner shall make written notification to each individual residence and business affected by the water shut down a minimum of 48 hours prior to the shutdown.
- D. Contractor is to submit a temporary water service plan to the Engineer for approval prior to any outage exceeding 4 hours.

3.12 TESTING

- A. Contractor shall be responsible for all temporary valving, fittings, and thrust blocks required to complete pressure testing.
- B. Upon completion of pipe backfilling and compaction the Contractor shall test the piping system according to the following and AWWA C605:
- C. Test Pressure: Pipe shall be subjected to 1.25 times the working pressure of the pipe at the highest elevation. Engineer shall provide prior to the test. Test pressure should not exceed pipe or thrust restraint design pressures and twice the rated pressure of any valves or hydrants included in the test section.
- D. Testing period: Minimum 2 hours.
- E. Leakage Rate: Testing shall be performed using calibrated test gages and calibrated volumetric measuring equipment to determine leakage rates.
- F. Allowable Leakage: No pipe installation will be accepted if the leakage is greater than that determined by the following formula and as tabulated in Table A:

$$Q = (LD(\text{SqRt } P))/148,000$$

Q = quantity of makeup water, in gallons per hour (gph)

L = length of pipe section being tested, in feet

D = nominal diameter of the pipe, in inches

P = average test pressure during the hydrostatic test (psi)

- G. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

3.13 TABLE A - ALLOWABLE LEAKAGE

Nominal Pipe Size(inches)	Average Test Pressure in Pipe (psi)				
	50	100	150	200	250
	Allowable Leakage per 1000 ft. of pipe (gal/hr)				
4	.19	.27	.33	.38	.43
6	.29	.41	.50	.57	.64
8	.38	.54	.66	.76	.85
10	.48	.68	.83	.96	1.07
12	.57	.81	.99	1.15	1.28
16	.76	1.08	1.32	1.53	1.71
24	1.15	1.62	1.99	2.29	2.56

END OF SECTION

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**SECTION 33 1300
DISINFECTING OF WATER UTILITY DISTRIBUTION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Disinfection of site domestic water lines and site fire water lines specified in Section 33 1116.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Disinfection: Shall be incidental to other portions of the work. Includes preparing, disinfecting, testing, and reporting.

1.03 REFERENCE STANDARDS

- A. AWWA C651 - Disinfecting Water Mains; American Water Works Association; 2005 (ANSI/AWWA C651).

1.04 SUBMITTALS REQUIRED

- A. Test Reports: Indicate results comparative to specified requirements.
- B. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.
- C. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- D. Bacteriological report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.
 - 4. Test locations.
 - 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 - 6. Coliform bacteria test results for each outlet tested.
 - 7. Certification that water conforms, or fails to conform, to bacterial standards of State of Idaho.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C651.
- B. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three years documented experience.

- C. Testing Laboratory: Company specializing in testing potable water systems, certified by governing authorities of the State in which the Project is located.
- D. Submit bacteriologist's signature and authority associated with testing.

1.06 REQUIREMENTS

- A. Conform to applicable code or regulation for performing the work of this Section.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of water system.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Sodium-Hypochlorite, Calcium Hypochlorite, AWWA B301, and Liquid Chlorine.
- B. Liquid Chlorine - shall be used only when suitable equipment is available and only under the direct supervision of a person familiar with the physiological, chemical, and physical properties of this element and who is properly trained and equipped to handle any emergency that may arise. Introduction of chlorine gas directly from the supply cylinder is unsafe and shall not be permitted. Liquid chlorine contains 100 percent available chlorine.
 - 1. Note: the preferred disinfection equipment consists of a solution feed chlorinator in combination with a booster pump for injecting the chlorine-gas/water mixture into the main to be disinfected. Direct feed chlorinators are not recommended because their use is limited to situations where the water pressure is lower than the chlorine cylinder pressure.
- C. Calcium Hypochlorite - Calcium hypochlorite contains 70% available chlorine by weight. It is either available in granular or tabular in form. The tablets, 6-8 to the ounce, are designed to dissolve slowly in water. Calcium hypochlorite is packaged in containers of various types and sizes ranging from small plastic bottles to 100 pound drums.
 - 1. A chlorine/water solution is prepared by dissolving the granules in water in the proportion requisite for the desired concentration.
- D. Sodium Hypochlorite - is supplied in strengths from 5.25 to 16 percent available chlorine. It is packaged in one quart bottles to five gallon carboys. It may also be purchased in bulk for delivery by tank truck.

2.02 NEUTRALIZER

- A. Dechlor Demon.
- B. Manufacturer: Hydro Flow Products. Inc.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping system has been cleaned, inspected, and pressure tested.
- B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.02 BASIC PROCEDURE

- A. The basic procedure involves:

1. Preventing contaminating materials from entering the water mains during construction or repair and removing, by flushing, materials that may have entered the water main;
2. Disinfecting any residual contamination that may remain; and
3. Determining the bacteriologic quality by laboratory test after disinfection.
4. Contractor shall neutralize chlorinated water as it is flushed from the new waterline. Contractor shall not allow chlorinated water to come into contact with any surface water or enter culverts.

3.03 PRELIMINARY FLUSHING

- A. The main line shall be flushed prior to disinfection, except when the tablet method is used.
 1. The flushing velocity shall be not less than 2.5 feet/ second. The rate of flow required to produce this velocity in various diameters is shown in Table A. No site for flushing should be chosen unless it has been determined that drainage is adequate at that site.
 2. Flushing is no substitute for preventive measures taken before and during pipe laying. Certain contaminants, especially in caked deposits, resist flushing at any velocity. Furthermore, with pipe diameters of 16 inches or more, even the minimum flushing velocity of 2.5 feet/second is sometimes difficult to achieve.

Table A: Required Openings to Flush Pipelines

Pipe Size (Inches)	Flow Required to Produce 2.5 fps Velocity (gpm)	Orifice Size to Produce Flow at 40 psi (Inches)	Number of 2.5 inch Hydrant Outlets to Produce Flow at 40 psi
4	100	15/16	1
6	220	1-3/8	1
8	390	1-7/8	1
10	610	2-5/16	1
12	880	2-13/16	2
14	1200	3-1/4	2
16	1565	3-5/8	2
18	1980	4-3/16	
20	2450	4-5/8	
24	3500	5-1/2	

3. With 40 psi residual pressure, a 2.5 inch hydrant outlet nozzle will discharge approximately 1,000 gpm, and a 4.5 inch hydrant nozzle will discharge approximately 2,500 gpm.

3.04 METHODS OF CHLORINE APPLICATION

- A. The hypochlorite solutions shall be applied to the water main with a gasoline or electrically-powered chemical feed pump designed for feeding chlorine solutions. For small applications, the solutions may be fed with a hand pump; for example, a hydraulic test pump. Feed lines shall be of such material and strength as to safely withstand the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the hypochlorite solution is applied to the main.
- B. Continuous Feed Method - This method is suitable for general application.
 1. Water from the existing distribution system, or other approved sources of supply, shall be made to flow at a constant, measured rate into the newly-laid pipeline. The water shall receive a dose of chlorine, also fed at a constant, measured rate. The

two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 mg/l available chlorine. To assure that this concentration is maintained, the chlorine residual should be measured at regular intervals.

2. Note: In the absence of a meter, the rate may be determined either by placing a pivot gage at the discharge or by measuring the time to fill a container of known volume.
3. Table B - gives the amount of chlorine residual required for each 100 feet of pipe of various diameters. Solutions of 1% chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires approximately one pound of calcium hypochlorite per 8.5 gallons of water.
4. During the application of chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24-hours, during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24 hour period, the treated water shall contain no less than 25 mg/l chlorine throughout the length of the main.

Table B: Chlorine Required to Produce 50 mg/L Concentration in 100 Ft of Pipe

Pipe Diameter (Inches)	100 Percent Chlorine (lbs)	1 Percent Chlorine Solution (gal)
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88
16	0.434	5.20
20	0.675	8.00
24	0.973	11.68

- C. Slug Method - This method is suitable for use with mains of larger diameter where, because of the volume of water involved, the continuous feed method is not practical.
 1. Water from the existing distribution system or other improved source of supply shall be made to flow at a constant, measured rate in to the newly laid pipeline. The water shall receive a dose of chlorine, also fed at a constant, measured rate. The two rates shall be proportioned so that the concentration in the water entering the pipeline is maintained at no less than 300 mg/l. The chlorine shall be applied continuously and for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it passes along the line, expose all interior surfaces to a concentration of at least 300 mg/l for a least three hours. The application shall be checked at a tap near the upstream end of the line to determine chlorine residual measurements.
- D. Tablet Method - Tablet disinfection is best suited for short extensions (up to 2,500 feet) and smaller diameter mains (up to 12 inches).
 1. Because the preliminary flushing step must be eliminated, this method shall be used only when scrupulous cleanliness has been exercised. It shall not be used if trench water or foreign material has entered the main, or if the water is below 5 degrees C (41o F).
 2. Tablets are placed in each section of pipe and also in hydrants, hydrant branches, and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in hydrants and in the joints between the pipe section. All the tablets

within the main must be at the top of the main. If the tablets are fastened before the pipe section is placed in the trench, their position should be marked on the section to assure that there will be no rotation. In placing tablets in joints, they are either crushed or placed on the inside annular space, or, if the type of assembly does not permit, they are rubbed like chalk on the butt ends of the sections to coat them with calcium hypochlorite.

3. The adhesive may be Permatex Clear RTV Silicone Adhesive Sealant or any alternative approved by the Owner. There shall be no adhesive on the tablet except on the broad side next to the surface to which the tablet is attached. Adhesive must be NSF approved.
4. When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity of no greater than 1 ft/sec. Precautions shall be taken to ensure air pockets are eliminated. This water shall remain in the pipe for at least 24 hours. If the water temperature is less than 41 degrees F, the water shall remain in the pipe for at least 48 hours.

Table C: Number of 5-G Hypochlorite Tablets Required for Dose of 50 mg/L

Length of Pipe Section (ft)	2-inch Pipe	4-inch Pipe	6-inch Pipe	8-inch Pipe	10-inch Pipe	12-inch Pipe	16-inch Pipe	20-inch Pipe	24-inch Pipe
13 or less	1	1	2	2	4	5	8	13	19
18	1	1	2	3	5	7	12	18	26
20	1	1	2	4	5	7	13	20	29
30	1	2	3	5	8	11	19	30	44
40	1	2	4	7	10	14	25	40	58

3.05 FINAL FLUSHING

- A. After the applicable retention period has been achieved, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than one mg/l. A chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline.
- B. Flushed water shall be disposed of in such a manner that no erosion occurs. Under no circumstance shall the chlorinated water be come into contact with lakes, rivers, or streams.
- C. Contractor shall neutralize chlorinated water as it is flushed from the new waterline. Contractor shall not allow chlorinated water to come into contact with any surface water or enter culverts.

3.06 BACTERIOLOGIC TESTS

- A. After final flushing, and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quality and to show the absence of coliform organisms.
- B. Two (2) consecutive samples, taken a minimum of 24 hours apart, must have the result "coliform absent" prior to placing the line into service.
- C. Note: In the case of extremely long mains, it is desirable that samples be collected along the length of the line as well as the end of the line, in accordance with AWWA C651.
- D. Samples of bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulphate. No hose or fire hydrant shall be used to collect samples. A suggested sampling tap consists of a standard corporation cock installed in the main

with a copper tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

3.07 REPETITION OF PROCEDURE

- A. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The tablet method cannot be used in these subsequent disinfections. When the samples are satisfactory, the main may be placed in service.

3.08 PROCEDURE AFTER CUTTING INTO OR REPAIRING EXISTING MAINS

- A. The procedure outlined in this section applies primarily when mains are wholly or partially dewatered. Leaks or breaks that are repaired with clamping devices while the mains remain full of water under pressure present little danger of contamination and require no disinfection.
- B. Main Disinfection - The following procedure is considered as a minimum that may be used, after cutting into or repairing a main:
 - 1. Swabbing with Hypochlorite Solution - The interior of all pipe and fittings used in making the repair (particularly couplings and tapping sleeves) shall be swabbed with a 5% hypochlorite solution before they are installed.
 - 2. Flushing - Thorough flushing is the most practical means of removing contamination introduced during repairs. If valving and hydrant locations permit, flushing from both directions is recommended. Flushing shall be started as soon as the repairs are completed and continued until discolored water is eliminated.
 - 3. Slug Method - Where practicable, in addition to the procedures in Paragraph 1, "Swabbing with Hypochlorite Solution," a section of main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in "Methods of Chlorine Application - Slug Method", except that the dose may be increased to as much as 500 mg/l, and the contact time reduced to as little as one-half hour. After chlorination, flushing shall be resumed and continued until discolored water is eliminated.

3.09 SAMPLING

- A. Bacteriologic samples shall be taken after repairs to produce a record by which the effectiveness of the procedures used can be determined. If the direction of flow is unknown, samples shall be taken on each side of the main break.

3.10 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. Test samples in accordance with AWWA C651.

END OF SECTION

**SECTION 33 1725
HIGH DENSITY POLYETHYLENE PIPE**

PART 1 GENERAL

1.01 SECTIONS INCLUDES

- A. High Density Polyethylene Pipe.
- B. Fittings.

1.02 PRICE AND PAYMENT PROCEDURES

- A. HDPE pipe shall be considered incidental to other pay items.

1.03 RELATED SECTIONS

- A. Section 31 2323 - Fill
- B. Section 31 2316.13 - Trenching
- C. Section 33 1116 - Site Water Utility Distribution Piping
- D. Section 33 4111 - Site Storm Utility Drainage Piping

1.04 PIPE FUSION

- A. The Contractor shall make necessary arrangements with the HDPE pipe supplier to provide manufacturer certified fusion machine(s) and manufacturer certified operator(s) to perform the fusion.

1.05 REFERENCES

- A. ASTM D3350 - Polyethylene Pipe and Fittings.
- B. ASTM D1248 - Material Classification.
- C. ASTM F714-83 - Pipe Standards.
- D. ASTM D3035-83 - Polyethylene Pipe based on outside diameter.
- E. ASTM D 2321 - Underground installation of High Density Polyethylene Pipe.

1.06 SUBMITTALS REQUIRED

- A. Contractor shall supply submittals for Pipe and Fittings.
- B. Contractor shall supply the method and products anticipated for the field closures.
- C. Identify and describe unexpected variations in fittings that will affect the performance or life expectancy of pipe.
- D. Submit manufacture's certifications of fusion machine and operators.

PART 2 PRODUCTS

2.01 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

- A. HDPE Pipe: 1" to 16" Diameter, AWWA C906
 - 1. HDPE shall be of the size and SDR rating as indicated on the construction drawings, and shall conform to AWWA C901 or C906, as applicable. Pipe size specified are nominal diameter and pipe sizing tolerances shall be in accordance with ASTM F714 or ASTM D3035.

2. Pipe shall be extruded from premium High Density Polyethylene resin and listed by the Plastics Pipe Institute as a P.E. 3408/4710 resin.
3. HDPE pipe is to be fusion bonded.

2.02 FITTINGS

- A. Pressure rating shall be no less than adjacent pipe, conforming to AWWA C901 or C906 and shall meet the outside diameter and minimum wall thickness specifications of ASTM F714 for the same size of pipe and same manufacturer as the pipe. HDPE Fittings shall meet the manufacturer's requirements for use with HDPE pipe.
- B. Service Saddles: Saddles shall be compatible with HDPE pipe. Contractor shall submit to Engineer for approval proposed saddle compatible with HDPE pipe.
- C. Fitting Assembly for Connection to Non-HDPE pipe materials:
 1. Assembly shall consist of a polyethylene stub end, butt fused to the pipe, a back-up flange of ductile iron, made to Class 150, ANSI B16.1/B16.5 dimensional standards with exceptions, bolts of compatible material and a gasket of suitable neoprene, red rubber or asbestos-rubber compound CT to fit the joint. In all cases the bolts shall be drawn up evenly and in line.

2.03 PIPE ACCESSORIES

- A. Trace Wire: Refer to Section 33 1116 - Site Water Utility Distribution Piping and 33 4111 - Site Storm Utility Drainage Piping.
- B. Warning Tape: Refer to Section 33 1116 - Site Water Utility Distribution Piping and 33 4111 - Site Storm Utility Drainage Piping.

PART 3 EXECUTION

3.01 HDPE PIPE

- A. The Engineer and Contractor shall inspect pipe and fittings at the time of delivery.
- B. Storage and protection of the pipe and fittings shall be the responsibility of the Contractor. The Contractor shall be responsible for the proper unloading of the material and the care thereafter, which includes, but is not limited to risk of loss, damage and liability.
- C. Polyethylene pipe and fittings may be rejected in whole or in part by the Engineer for failure to meet any of the requirements of this specification. Fusion equipment and procedures shall be in accordance with all manufacture guidelines.

3.02 UNLOADING AND PLACEMENT OF MATERIAL

- A. Pipe and Fittings shall be handled in accordance with manufacture recommendations.

3.03 QUALITY CONTROL

- A. The Contractor shall preserve and protect pipe from scaring/gouging. Pipe with gouging in excess of 1/8" may be rejected in whole or in part by the Engineer.
- B. Engineer shall be present during the unloading and storage of pipe and fittings products.
- C. Engineer's representative shall be given the opportunity to inspect each fusion joint prior to burial.

3.04 INSTALLATION - HDPE

- A. Excavate pipe trench in accordance with Section 31 2316.13. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Provide pipe bedding in accordance with Section 31 2323.
- C. HDPE pipe shall be fused and installed per manufacturer's recommendations.
- D. Fusion machines and operator shall be certified in writing by the manufacture of the HDPE pipe as meeting all manufacturer's requirements.
- E. Fusion machine operator shall inspect and provide written certification that each joint was fused in accordance with the Manufacture's recommendation and certify that each joint was visually inspected and conforms to the manufacturer's installation recommendations.
- F. Care shall be taken to avoid contamination, by dirt or any other foreign materials, of the pipe interior or joint surfaces. Trench water shall not be allowed to flow down the pipe.
- G. Install traceable conductor as shown on the plans.
- H. Install plastic warning tape marked "Waterline" as indicated on plans.
- I. Contractor shall be responsible for any damage to the pipe during installation.
- J. Disinfect waterline in accordance with Section 33 1300.

3.05 PRESSURE TESTING

- A. Contractor shall be responsible for all temporary valving, fittings and thrust blocks required to complete pressure testing.
- B. Test in accordance with manufacturer recommendations and as described as follows:
 - 1. Initial Expansion Phase:
- C. Test Pressure shall be 1.5 times the working pressure for 3 hours. Makeup water shall be added to the system at hourly intervals for three hours to maintain test pressure.
- D. Maintain test pressure by periodically adding water to compensate for initial stretching of the pipe.
 - 1. Testing Phase:
 - a. Begin the Testing Phase at the end of the 4th hour.
 - b. Test pressure shall be 1.5 times the working pressure at the start of the test phase.
 - c. The Test Phase shall not exceed 3 hours.
 - d. At the end of the 3 hour Test Phase, the Contractor shall add and measure the amount of makeup water required to return to the test pressure and shall meet requirements in the following table:

U.S. Gals/100 Feet of Pipe				U.S. Gals/100 Feet of Pipe			
Nominal Pipe Size, Inches	1-Hour	2-Hour	3-Hour	Nominal Pipe Size, Inches	1-Hour	2-Hour	3-Hour
2	0.008	0.12	0.15	18	2.20	4.30	6.50
3	0.10	0.15	0.25	20	2.80	5.50	8.00
4	0.13	0.25	0.40	22	3.50	7.00	10.50
5	0.21	0.41	0.63	24	4.50	8.90	13.30
6	0.30	0.60	0.90	28	5.50	11.10	16.80
8	0.50	1.00	1.50	30	6.20	12.60	19.10
10	0.75	1.30	2.10	32	7.00	14.30	21.50
12	1.10	2.30	3.40	36	9.00	18.00	27.00
14	1.70	2.80	4.20	48	15.00	27.00	43.00
16	1.70	3.30	5.00	54	18.00	30.00	50.00

2. Alternative Leakage Test: Maintain test pressure as described above for a period of four hours and then drop the pressure 10 psi. If the pressure remains within 5% of the target value for one hour, the pipe will be considered acceptable OR as specified by the pipe manufacturer.
3. Under no circumstances shall the total time of the Initial Expansion Phase and Testing Phase exceed 8 hours at 1.5 times the working pressure. If the test pressure is not completed within the time limit, the test section shall be permitted to "relax" (release pressure) for eight hours prior to the next test.
4. Leakage Rate: Testing shall be performed using calibrated test gages and calibrated volumetric measuring equipment to determine leakage rates.

END OF SECTION

SECTION 33 3111 SITE SANITARY UTILITY SEWERAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sanitary sewerage drainage piping, fittings, and accessories.
- B. Connection of building sanitary drainage system to municipal sewers.
- C. Cleanout Access.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation: Excavating of trenches.
- B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.
- C. Section 31 2323 - Fill: Bedding and backfilling.
- D. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Sanitary Sewer Service Connection:
 - 1. Measurement Method: Linear Foot.
 - 2. Includes: All labor, equipment, and material necessary to complete the connection at the tie-in to the existing sewer line and extending the service to the new miox system as shown on the plans, including fittings and cleanouts. Also includes trench excavation, backfill, and bedding and other work necessary for an operational sewer connection as shown on the plans.
- C. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
333111.01	Sanitary Sewer Service Connection	LF

1.04 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 REFERENCE STANDARDS

- A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2013a.
- B. ASTM A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe; 2009.
- C. ASTM C12 - Standard Practice for Installing Vitrified Clay Pipe Lines; 2013.
- D. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe; 2015.
- E. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe [Metric]; 2015.
- F. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe; 2014.

- G. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric); 2014.
- H. ASTM C425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings; 2004 (Reapproved 2013).
- I. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2012.
- J. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric); 2011.
- K. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.
- L. ASTM C700 - Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated; 2013.
- M. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2012.
- N. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2011.
- O. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
- P. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings; 2005.
- Q. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2014.
- R. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material; 2012.
- S. AWWA C111/A21.11 - Rubber-Gasket Joints For Ductile-Iron Pressure Pipe and Fittings; 2012. (ANSI/AWWA C111/A21.11)

1.06 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.07 SUBMITTALS REQUIRED

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Product Data: Provide data indicating pipe, pipe accessories, and fittings.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Product Data: Provide data indicating pipe, pipe accessories, and service connection methods.
- E. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- F. Field Quality Control Submittals: Document results of field quality control testing.
- G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- H. Project Record Documents:

1. Record location of pipe runs, service connections, catch basins, cleanouts, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
3. Provide two copies of the sanitary sewer videotape and the corresponding log noting the distance from manholes where sanitary services enter the mainline.

1.08 REGULATORY REQUIREMENTS

- A. Conform to applicable code for materials and installation of the Work of this section.

1.09 PROJECT CONDITIONS

- A. Coordinate the Work with termination of sanitary sewer connection outside building, connection to municipal sewer utility service, and trenching.

1.10 QUALITY ASSURANCE

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Identify pipe marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 6000.
- B. Deliver and store valves in shipping containers with labelling in place.
- C. Store materials on site in enclosures or under protective covering.
- D. Store rubber gaskets under cover out of direct sunlight.
- E. Do not store materials directly on the ground.
- F. Keep inside of pipe and fittings free of dirt and debris.
- G. Take special care to avoid injury to coatings and linings on pipe and fittings; make satisfactory repairs if coatings or linings are damaged.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

- A. Gravity Pipe:
 1. Poly-Vinyl-Chloride (PVC): ASTM D3034, SDR 35 for pipe sizes 4" through 15", with elastomeric gasket joints with ASTM F477 elastomeric gaskets.
 2. Fittings: ASTM D3034 with elastomeric gasket, molded or formed to suit pipe size and end design, in require tee, bends, elbows, clean-outs, reducers, and other configurations required.
- B. Polyethylene Pipe: refer to Section 33 1725 – HDPE

2.02 PIPE ACCESSORIES

- A. Concrete for Thrust Restraints: Concrete meeting specifications in Section 03 3000.
- B. Trace Wire: Magnetic detectable copper conductor, 12 gage. Epoxy splice kit at all splices.
- C. Warning Tape: Magnetic detectable conductor, brightly colored, green, plastic covering, imprinted with "SEWER" in large letters.

- D. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Sewer Service " in large letters.

2.03 MECHANICAL RESTRAINT

- A. Romac Grip Ring: EBAA Megalug, or Engineer approved equal.

2.04 VALVE BOXES (UP TO 12 INCHES)

- A. Manufacturers:
 - 1. Olympic Foundry VB930 or equal.
 - 2. Substitutions: Refer to Section 01 6000 – Product Requirements.
- B. Valve Boxes shall be extension type, slip-type shaft.
- C. Top, bottom, and lid shall be provided.
- D. Lid: one piece lid stamped with word "Sewer".
- E. Material: Cast Iron.

2.05 COUPLERS

- A. For similar PVC pipe types, PVC: Conforming to ASTM 3034, equipped with elastomeric gaskets, thickness matching or exceeding pipes being joined.
- B. For non-similar PVC pipe types, Romac: Style 501 with epoxy lining or engineer approved equal.
- C. For PVC connection to existing clay tile sewer main, FERNCO or Engineer approved equal.
- D. PVC Service Coupler: ASTM D3034 with elastomeric gasket for connection to existing PVC services, molded or formed to suit pipe size and end design.
- E. Rubber Service Coupler: Shall be FERNCO or Engineer approved equal and used for connection to existing clay tile services.

2.06 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 2316.13.
- B. Pipe Cover Material: As specified in Section 31 2316.13.

PART 3 EXECUTION

3.01 GENERAL

- A. Perform work in accordance with applicable code(s).

3.02 PREPARATION

- A. Verify location of existing utilities and piping prior to beginning work. Notify Engineer if field conditions are different from the Contract Documents.
- B. Confirm locations of all existing lateral service connections prior to removing sewer pipe.
- C. Place construction traffic control devices in accordance with local jurisdiction and Section 01 5500.
- D. Maintain driveway access to the homes during pipe replacement operations.
- E. Maintain sewer service usage throughout the duration of the project. Implement a public notification program for contacting each home or business connected to the

sanitary sewer and informing them of the work to be conducted and when and how long the sewer will be off-line. Also provide to impacted entities:

1. Written notice to be delivered to each name or business the day prior to the beginning of work being conducted on the section.
 2. A local telephone number of the Contractor.
 3. Unless otherwise approved, limit service disruptions to between the hours of 9:00 AM and 3:00PM. Services shall be disconnected for no more than 6 hours.
 4. During the sewer pipe replacement process when service connections are plugged, provide separate portable toilets (exclusive of those used by the workers) for use by the residences.
- F. Install and test sewer bypass to the acceptance of the Engineer prior to beginning removal of existing sewer pipe.
1. Size the pump and bypass piping to adequately handle all bypass sewage flows.
 2. Pump the sewage back into the sanitary sewer system. Other alternatives will not be allowed.
 3. Levels in upstream sewers. If sewage backup occurs and enters a facility, provide clean-up repair, property damage costs, and claims at no cost to the Owner.

3.03 TRENCHING

- A. See Section 31 2316.13 for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Maintain Moisture content of bedding material, at optimum or above to attain required compaction density.
- D. Place Bedding Material (Section 31 2316.13) in three lifts as follows:
 1. Bedding under pipe: Place bedding material in a continuous layer to the depth indicated on the plans. Compact to 95 percent of Standard Proctor Density.
 2. Bedding for Pipe Cushion: After laying pipe, install bedding material at sides of pipe up to the center of pipe (or spring line) and compact to 95 percent of Standard Proctor Density, or provide side support.
 3. Bedding for Pipe Cover: After compacting Bedding for Pipe Cushion, place pipe bedding from spring line over the pipe to the depth indicated on the plans and compacted to 95 percent of Standard Proctor Density (see plans for further details).

3.04 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work; excavations, dimensions, and elevations are as indicated on layout drawings; bedding has been prepared in accordance with the specifications; and trench has been dewatered.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 1. Clay Pipe: Also comply with ASTM C12.
 2. Plastic Pipe: Also comply with ASTM D2321.
- C. Integral bell gasket joints with elastomeric gasket shall have gaskets affixed to the pipe. Pipe shall be installed within 28-days of delivery to the site, unless adequately protected against sunlight and contaminants.

- D. If groundwater is encountered during pipe laying, a dewatering plan shall be utilized to maintain the water level below the trench bottom before proceeding with laying of pipe. Water moving or seeping from slopes shall not be permitted.
- E. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 0.5 inch in 100 feet.
- F. All sewer pipes, unless otherwise approved by Engineer, shall be laid up-grade from the point of connection at the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or up-grad, unless approved otherwise.
- G. Connect to building sanitary sewer outlet, through installed sleeves.
- H. Install Warning Tape 1.5 foot above top of pipe.
- I. Install Trace Wire with all curvilinear sections of pipe. Trace wire shall be installed on top of pipe and securely taped to pipe every 10 feet.
- J. Install Trace Wire 0 inches above top of pipe coordinate with Section 31 2316.13.
- K. Form and place concrete thrust restraints at each elbow or change of direction of pipe main, as directed in plans for by Engineer. Construct in accordance with the detail on the plans.
- L. Care shall be taken to avoid contamination, by dirt or any other foreign materials, of the pipe interior or joint surfaces. Water shall not be allowed to flow down the pipe.
- M. Maximum deflections at pipe joints for various types of pipe shall not exceed the applicable material and joint specification of AWWA nor shall they exceed the recommendations of the pipe manufacturer. In no case shall joint deflection exceed 3".

3.05 INSTALLATION - SERVICES

- A. Provide a minimum slope of 0.02 foot/foot with all bends no greater than forty-five degrees (bell by bell connection) with a minimum of 2 feet between all bends.
- B. Sewer services shall be at right angles to the sewer main except in a cul-de-sac or street knuckle.

3.06 INSTALLATION - CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
- C. Establish elevations and pipe inverts for inlets and outlets as indicated.
- D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.07 INSTALLATION - VALVES

- A. Set valves on solid bearing.
- B. Center and plumb valve box over valve. Sex box cover flush with finished grade.

3.08 GROUNDWATER AND SEWER BYPASS PUMPING PLAN

- A. Contractor shall make written plans to pump groundwater and sewer and submit them to Engineer for approval. Contractor shall not commence construction without submittal approval.
- B. The Groundwater Pumping plan shall not allow groundwater to flow down the new sewer main at any time during construction but shall make provision for groundwater to be pumped from trench and disposed of at an approved off site location. If

groundwater flows into the new sewer main at any time during construction Contractor may be issued a stop work order, after groundwater is prevented from entering the sewer, until such a time that they can gain control over the work and implement the Groundwater Pumping Plan.

- C. The Sewer Bypass Plan shall allow for continuous sewer use by residents' uphill from construction and not allow sewage to flow into the trench. If sewage enters the trench at any time during construction Contractor may be issued a stop work order, after sewer is prevented from entering the trench, until such a time that Contractor can gain control over the work and implement the approved Sewer Bypass Pumping Plan.

3.09 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.10 SEPARATION OF WATER AND SEWER LINES

- A. Parallel Installation: for the separation of water mains and sewer lines/appurtenances.
 - 1. Condition 1: A horizontal separation of greater than 10 feet shall be maintained between outside walls of the water lines and any non-potable water line.
 - 2. Condition 2: A horizontal separation of ten to six feet shall require separate trenches with potable main above non-potable main and non-potable main to be constructed with potable water class pipe.
 - 3. Condition 3: A horizontal separation of less than 6 feet shall require the design engineer to submit data to DEQ for review and approval showing that this installation will protect public health and the environment and non-potable main to be constructed of potable water class pipe.
 - 4. Potable and non-potable mains shall not be installed in the same trench.
 - 5. Separation of water mains from pressurized sewer lines requires Condition 1 separation. Condition 2 and 3 are not allowed.
- B. Crossings; the separation of water mains and sewer lines/appurtenances.
 - 1. Condition 1 – The bottom of the potable water main shall be a minimum of 18 inches above the non-potable main. The non-potable main joint shall be as far as possible from the potable main.
 - 2. Condition 2 – If there is less than 18 inches of vertical separation, the non-potable main shall be constructed with potable water class pipe and non-potable main joint shall be as far as possible from potable water main, or sleeve either potable or non-potable pipe with potable water class pipe for ten feet either side of crossing.
 - 3. Separation of water mains from pressurized sewer lines requires Condition 1 separation. Condition 2 is not allowed.

3.11 CLEANING AND VIDEOTAPING

- A. All new sewer mains must be videotaped and submitted to Engineer for approval prior to acceptance. Owner does not provide Video inspection.
- B. Sewer mains are to be jetted and cleaned prior to videotaping.
- C. Minimum requirements for approval include:
 - 1. Two copies of each video in DVD or VHS format.
 - 2. A video log transmittal sheet, including:

- a. Manhole to Manhole stationing which corresponds with stationing on the utility engineering plans.
 - b. Stationing and direction (left or right) for all side sewer services.
 - c. Notations of any and all defects in the sewer line.
- D. Procedures: Upon receipt of the video and video log by the Engineer, a minimum of two days review time is required. Any defects with the sewer line, discovered during the video review which require correction and or repair, must be addressed prior to paving. Paving schedules should acknowledge this review time to avoid delays due to the review process.
- E. Sewer Line Approval: Following the Engineer's review of the videos, Engineer will send Contractor a memo detailing any defects that may have been found in the pipeline. The Contractor must submit a plan to the Engineer outlining proposed corrections and a schedule of repair for the noted deficiencies. On completion of repairs to the pipelines, re-videotaping is required at the Contractor's expense for review and approval by Engineer.
- F. Final Approval: Prior to paving and following the video review, a manhole inspection is required to check for debris and compliance with minimum man hole design standards. The Contractor shall schedule this inspection with the Owner and Engineer at least 48 hours in advance of paving. Following paving and prior to final approval another manhole inspection is required to check for paving debris in the manholes, adjustment rings defects, and ring and lid defects.
- G. Prior to final project approval by the Engineer, a final walk-through is required. Any remaining item of concern to the Owner are noted

3.12 ABOVE GROUND SANITARY SEWER LOCATE

- A. Complete work a minimum of 72 hours prior to commencing sewer pipe replacement in the area.
- B. Contractor shall schedule an on-site meeting with the subcontractor completing the work, if any, Engineer, and Owner a minimum of 24 hours prior to commencing locate work to review the extents of locate work at each location shown on the plans.
- C. Commence locate work at the 4" service cleanout for residence service to be located.
- D. Locate method shall be a minicam with locator head capable of locating the sewer within 4" horizontally and vertically or engineer approved method.
- E. Paint the sewer service line's horizontal alignment along the existing ground surface. Paint the depth of pipe at 20-foot intervals along the existing ground surface.
- F. Install lath along the located alignment and note depth of pipe on lath, or offset the alignment and the note the offset distance to the alignment on the lath and depth of pipe. Maintain lath throughout construction and remove after completing construction in the area.
- G. Keep a log of services connections along main, the direction (left or right) the service enters the main, and note their distance from the up or downstream manhole.

3.13 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

3.14 TESTING

- A. Perform testing in the presence of the Engineer.

B. Visual Inspection

1. Visually inspect the pipeline between manholes with mirrors or lights after the trench has been backfilled to check alignment and grade, and to check for pipe distortions, leaks, infiltration and other defects. Verify that a full diameter of pipe is visible from one manhole to the next. Uncover and repair leaks and defects in the pipeline. Do not reinstall damaged pipe.

C. Air Pressure Testing

1. Low pressure air test lines that are 24 inches and smaller in diameter.
2. Provide equipment including gauges and instrumentation and calibrate the equipment at the request of the Engineer.
3. Preliminary and Final Testing.
 - a. Preliminary Testing: At the discretion of the Contractor, preliminary testing may be done at any time prior to installation of other utilities.
 - b. Final Testing: Perform final testing after backfilling and compaction and following installation of other utilities, but prior to surface restoration.
4. Test Procedure.
 - a. Securely brace plugs to prevent unintentional release of the plug. Prohibit workers from entering a manhole where a plugged pipe is under pressure.
 - b. Locate pressure gauges, valves, and instrumentation required for the test and operation of the equipment at the ground surface.
 - c. Equip testing apparatus with a pressure release device such as a rupture disk or pressure relief valve to relieve pressure in the pipe being tested at 6 psi.
 - d. Measure static groundwater depth above the pipe at the low end of the pipe. If static groundwater level is below the centerline of the pipe, use the test pressures noted in this section. If the groundwater is above the centerline, add 0.5 psi to the test pressure for every foot of groundwater above the centerline of the pipe. If pressure will exceed 6 psi, use hydrostatic exfiltration testing.
 - e. Pressurize the pipe to 4.0 psi and maintain pipe pressure between 3.5 and 4.0 psi for at least 2 minutes.
 - f. With the pressure at exactly 3.5 psi, disconnect the air supply, start a stopwatch and record the time for pressure to drop to 3.0 psi.
 - g. If the pressure drops more than 0.5 psi in the pipe faster than the minimum holding time presented in the following table, make the necessary corrections to reduce the leakage to acceptable limits and retest the pipe.

Table1

TIME HOLDING CHART											
1 Pipe Dia. (in)	2 Min.Time (min:sec)	3 Length for Min. Time (ft)	4 Time for Longer Length (sec)	Specification Time for Length (L) Shown (min:sec)							
				100 ft	150 ft	200 ft	250 ft	300 ft	350ft	400 ft	450 ft
4	1:53	597	.190L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.760L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05	159	2.671L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	914	5.235L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.537L	11:24	17:47	22:48	28:30	34:11	39:53	45:35	51:17

D. Hydrostatic Exfiltration Testing

1. Hydrostatic exfiltration test pipes larger than 24 inches in diameter or pipes 24 inches and smaller in diameter with groundwater conditions above pipe invert.
2. Test Procedure:
 - a. If necessary, fill pipe with clean water 24 hours prior to the test to allow time for absorption into the pipe walls.
 - b. Conduct exfiltration testing with a test pressure of at least 6 feet of water column above the static water table or the crown of the pipe at the upper end of the pipe, whichever is higher.
 - c. If exfiltration exceeds 0.6 gallon/hour/inch of inside diameter of pipe per 100 feet of sewer main, lateral, service line and stub-out, make the necessary corrections to reduce leakage to acceptable limits and retest the pipe. If manholes are included in the test section, increase the allowable leakage by 0.1 gallon/hour/foot of manhole depth tested.
 - d. Minimum test time is four hours.
3. Preliminary and Final Testing:
 - a. Preliminary Testing: At the discretion of the Contractor, preliminary testing may be done at any time prior to installation of other utilities.
 - b. Final Testing: Perform final testing after backfilling and compaction and following installation of other utilities, but prior to surface restoration.

E. Hydrostatic Testing

1. Upon completion of pipe backfilling and compaction, the Contractor shall test the piping system according to the following and AWWA M23 or M55:
 - a. Test pressure: pipe shall be subjected to 1.25 times the working pressure of the pipe specified (see "Working Pressure for Testing" in pipe material specification above). Test pressure should not exceed pipe or thrust restraint design pressures and twice the rated pressure of any valves or hydrants included in the test section.

- b. Testing period: minimum 2 hours.
- c. Leakage Rate: Testing shall be performed using calibrated test gages and calibrated volumetric measuring equipment to determine leakage rates.
 - i. Allowable Leakage: no pipe installation will be accepted if the leakage is greater than that determined by the following formula and as tabulated in Table A.

$$L = \frac{(ND \sqrt{P})}{7400}$$

L = allowable leakage (gph)

N = number of joints in the length of pipeline tested

D = nominal diameter of the pipe

P = average test pressure during the leakage test (psi)

- 2. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

Table A – Allowable Leakage: Allowable Leakage per 1000 ft. or 50 joints (gal/hr)
(as calculated with the above formula)

Nominal Pipe Size			Average Test Pressure in Line (PSI)		
Inches	50	100	150	200	250
4	.19	.27	.33	.38	.43
6	.29	.41	.50	.57	.64
8	.38	.54	.66	.76	.85
10	.48	.68	.83	.96	1.07
12	.57	.81	.99	1.15	.28

END OF SECTION

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**SECTION 33 4111
SITE STORM UTILITY DRAINAGE PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Storm drainage piping, fittings, bedding, and accessories.
- B. Connection of drainage system to municipal sewers.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation: Excavating of trenches.
- B. Section 31 2323 - Fill: Bedding and backfilling.
- C. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Catch Basin:
 - 1. Measurement Method: By each.
 - 2. Includes: Frames, grates, adjustment rings, all labor, materials, and equipment to supply and install the catch basin according to the plans. Also includes connection of existing and new pipes to catch basin, excavation, dewatering, removal and disposal of excess material, backfill and compaction, crushed aggregate and grading required.
- B. Pump to Waste Basin:
 - 1. Measurement Method: Lump Sum.
 - 2. Includes: Frames, adjustment rings, all labor, materials, and equipment to supply and install the pump to waste basin according to the plans. Also includes excavation, dewatering, removal and disposal of excess material, removal and disposal of existing basin and piping, modification of pump to waste pipe as shown on the plans, backfill and compaction, crushed aggregate and grading required.
- C. 10" Ductile Iron Drain Pipe:
 - 1. Measurement Method: Per lineal foot.
 - 2. Includes: All labor materials and equipment to furnish and install pipe and fittings, connection to new catch basins and manholes (including grouting and sealing pipe)
 - 3. Excludes: Connection to existing storm sewer system shall be paid separately. Bedding, trenching, backfill shall be paid under other sections.
- D. Drywell:
 - 1. Measurement Method: By each.
 - 2. Includes: Fabric, drain rock, excavation, backfill and compaction. All labor, materials and equipment to supply and install the drywell, risers and lid according to the plans.
- E. 4-Inch Floor Drain and Pipe:
 - 1. Measurement Method: Per Lump Sum.
 - 2. Includes: All labor, equipment and material required to furnish and install floor drains, pipe, fittings, connection to drywell including grouting and sealing, or sidewalk underdrains, and other work necessary for completion of the item as

shown in the plans. This also includes all floor drains and necessary fittings to connect to pipe as indicated on plans.

- F. 4-Inch Footing Drain Discharge Pipe :
1. Measurement Method: Per lineal foot.
 2. Includes: All labor, material and equipment necessary to furnish and install new 4-inch discharge pipe from tie-in to footing drain to drywell. This shall include all fittings, grouting, and other parts necessary for this work. The 4" footing drain around the building shall be included in 061010.01.
- G. This section shall be paid under the following Pay Items:

Pay Item	Description	Pay Unit
334111.01	Catch Basin	EA
334111.02	Pump to Waste Basin	LS
334111.03	10" Ductile Iron Drain Pipe	LF
334111.04	Drywell	EA
334111.05	4-Inch Floor Drain and Pipe	LS
334111.06	4-Inch Footing Drain Discharge Pipe	LF

1.04 REFERENCE STANDARDS

- A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; American Association of State Highway and Transportation Officials; 2003.
- B. AASHTO T180 - Moisture-Density Relations of Soils using a 10lb (4.54 kg) Rammer and an 18-in (457 mm) Drop
- C. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2013a.
- D. ASTM C12 - Standard Practice for Installing Vitrified Clay Pipe Lines; 2013.
- E. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe; 2015.
- F. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe [Metric]; 2015.
- G. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe; 2014.
- H. ASTM C425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings; 2004 (Reapproved 2013).
- I. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2012.
- J. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.
- K. 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.
- L. ASTM F 714 Polyethylene Plastic Pipe (SDR-PR), 3 inch through 63 inch for storm sewer systems.
- M. 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.
- N. ASTM D1248 - Polyethylene Plastic Molding and Extrusion Materials.

- O. ASTM C700 - Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated; 2013.
- P. ASTM D2581 - Polybutylene Plastics Molding and Extrusion Materials.
- Q. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
- R. ASTM D2774 Recommended Practice for Underground Installation of Flexible Thermoplastic Pressure Pipe.
- S. ASTM D3033 Type PSP Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- T. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings; 2005.
- U. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2014.
- V. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material; 2012.
- W. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- X. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.05 SUBMITTALS REQUIRED

- A. Product Data: Provide data indicating pipe, pipe accessories, catch basins, drywells, grates, and frames.
- B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
 - 1. Project Record Documents:
 - a. Record location of pipe runs, connections, catch basins, cleanouts, and invert elevations.
 - b. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall inspect all pipe and accessories for shortages, loss, or damage upon receipt of the shipped material at the time of unloading, recording information directly on waybill received from the carrier. If later during the installation, some material is found to have defects, that material shall be rejected by the supervising Engineer or his authorized inspector. Defective material should be removed from the site and not used during the installation. With approval of the supervising engineer, pipe may be repaired by cutting out the damaged section and thermally fusing the remaining acceptable pipe.
- B. Pipe and fittings shall be handled carefully at all times to avoid damage. Straight lengths of pipe can be safely unloaded using mobile handling equipment capable of lifting the weight of the pipe to a height that will allow the complete pipe length to clear truck side racks. Wide bellyband slings are recommended.
- C. Under no circumstances shall hooks be inserted into the pipe to lift pipe. Dragging the pipe over gravel or rock shall be avoided, as this may cause cutting, whereas pulling over reasonable smooth terrain (e.g. sand or topsoil) will not damage the pipe.

- D. Storage of the pipe shall be in accordance with the pipe manufacturer's recommendations.
- E. Pipe shall be stored at the job site, kept free of debris and lifting equipment at all times.

1.07 PROJECT CONDITIONS

- A. Coordinate the Work with termination of storm sewer connection outside building, trenching, connection to municipal sewer utility service and outlet structures.

PART 2 PRODUCTS

2.01 STORM SEWER PIPE MATERIALS

- A. Product shall match existing type, material type, and size that will be tied into.
- B. Plastic Pipe (4" to 15"): ASTM D3034, Type PSM, Polyvinyl Chloride (PVC) material; bell and spigot style sealed joint end. Gaskets shall be in accordance with ASTM-F477
- C. Plastic Pipe (larger than 15"): ASTM F679. Gaskets shall be in accordance with ASTM F477.

2.02 PIPE ACCESSORIES

- A. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Storm Sewer Service " in large letters.
- B. Trace Wire: Magnetic detectable copper conductor, 12 gage. Epoxy splice kit at all splices.
- C. Warning Tape: Magnetic detectable conductor, brightly colored, green, plastic covering, imprinted with "STORM" in large letters.
- D. Existing inlet/outlet pipes on existing manholes shall be plugged using cdf at locations shown on the plans.

2.03 CATCH BASIN, TRENCH DRAIN, CLEANOUT, AND AREA DRAIN COMPONENTS

- A. Lids and Drain Covers: Cast iron, hinged to cast iron frame.
- B. Base Pad: Cast-in-place concrete of type specified in Section 03 3000, levelled top surface to receive concrete shaft sections, sleeved to receive sanitary sewer pipe sections.
- C. Type 1: Shall be constructed in accordance with ASTM C478 and ASTM C890. Shall be equipped with sediment trap.
- D. Custom Catch Basins: Shall be constructed in accordance with ASTM C478 and ASTM C890. Basin shall be constructed per construction drawings.

2.04 DRYWELLS

- A. Shall be constructed in accordance with ASTM C478.

2.05 BEDDING AND COVER MATERIALS

- A. Excavate pipe trench in accordance with Section 31 2316 for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Maintain moisture content of bedding material at optimum or above to attain required compaction density.
- C. Place Bedding Material (material specified in Section 31 2316.13) in two lifts as follows:

1. Bedding under Pipe: Place bedding material in a continuous layer to the depth indicated on the plans. Compact to 95 percent.
2. Bedding for Pipe Cover: After compacting bedding under pipe, place bedding over pipe to the depth indicated on the plans and compact to 95 percent.

PART 3 EXECUTION

3.01 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.02 INSTALLATION - PIPE

- A. The laying of storm sewer pipe shall be accomplished only after the trench has been dewatered and bedding has been prepared in accordance with the specifications.
- B. Care shall be taken to avoid contamination, by dirt or any other unapproved materials, of the pipe interior or joint surfaces. Water shall not be allowed to flow down the pipe unless approved as part of a dewatering plan.
- C. If groundwater is encountered during pipe lying, dewatering equipment shall be utilized to maintain the water level below the trench bottom before proceeding with lying of pipe.
- D. Seal joints watertight.
- E. Lay pipe to slope gradients noted on drawings with maximum variation from true grade of 1:100.
- F. All storm sewer pipes, unless otherwise approved by Engineer, shall be laid up-grade from the point of connection at the existing sewer or from a designated starting point. The storm sewer pipe shall be installed with the bell end forward or up-grade, unless approved otherwise.
- G. Install warning tape marked "STORM" 18 inches over top of pipe and trace wire on top of the pipe as shown on plans, coordinate with Section 31 2316.13.
- H. Connect existing side stormwater collection laterals to new storm system as indicated on plans or as directed by Engineer. Connection of existing laterals shall be incidental to the installation of the new storm system.
- I. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- J. Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.

3.03 INSTALLATION - CATCH BASINS, STORM MANHOLES, AND CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Place 6" of 3/4" Aggregate Type I material and compact to 95% density.
- C. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
- D. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.

- E. Grout stormwater pipe into catch basin.
- F. Establish elevations and pipe inverts for inlets and outlets as indicated.
- G. Mount lid and frame level in grout, secured to top cone section to elevation indicated. Sloped to match roadway cross slope or grade.

3.04 FIELD QUALITY CONTROL

- A. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- B. When checking the grade, the elevations shall be taken from the top of the pipe.

3.05 DRYWELL

- A. Drywells shall be installed at locations and as shown on the plans. Drywell rim shall be placed at the finished elevation shown on the plans.

3.06 TIE INTO EXISTING STORM SYSTEM

- A. New pipe shall be used to connect to existing storm systems unless otherwise stated in the plans. Connection between pipe and existing storm system shall be watertight and sealed with grout.
- B. Care shall be taken to avoid disturbing existing pipe connections, disturbing bases of catch basins and manholes
- C. Loose material including but not limited to concrete, plastic, and grout resulting from coring, hammer drilling, cutting or grouting the existing pipe into the existing storm system shall not be left in the storm system. It shall be removed from the system and disposed of.

3.07 DRAINAGE DITCH

- A. Drainage ditch shall be constructed as shown on the plans. Drainage ditch shall be lined with a 4" thick layer of 2" diameter river rock. The top of the layer shall be at the finished grade of the ditch.

3.08 BACKFILLING

- A. Install Initial Backfill and Final Backfill, as specified in Section 31 2316.13, and as indicated on the plans.
- B. All compaction requirements refer to Modified Proctor Density, ASTM D-1557.

3.09 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

3.10 CLEANING

- A. The contractor shall clean all debris from catch basins and grates at the completion of the project. A protective coating of coal tar epoxy shall be applied to all catch basin frames and grates that have had the original finish damaged or removed.

END OF SECTION



Trindera

2120 N. Lakewood Dr., Suite B
Coeur d'Alene, ID 83814
208|417-2967

SPECIFICATION STAMP PAGE

DATE: April 8, 2022

CLIENT: Welch Comer Engineers
330 E. Lakeside Avenue,
Suite 101
Coeur d'Alene, ID 83814

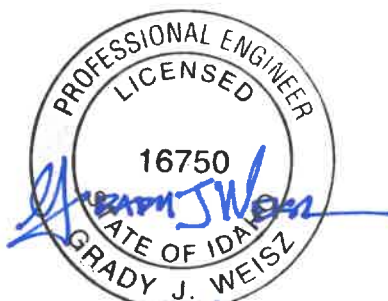
PROJECT: City of Moscow, Idaho
Well #6 Improvements

PROJECT#: 60010.004.01

ENGINEERS: Grady Weisz, P.E.
Terry Stulc, P.E.

<u>Section</u>	<u>Specification Description</u>
23 81 00	HEATING AND VENTILATION
26 00 00	ELECTRICAL GENERAL PROVISIONS
26 00 01	ELECTRICAL SCOPE OF WORK
26 00 02	BASIC MATERIAL AND METHODS
26 01 11	ELECTRICAL DEMOLITION
26 01 26	ELECTRICAL TESTING
26 05 19	WIRE AND CABLE
26 05 26	GROUNDING
26 05 33	RACEWAYS
26 22 00	LOW VOLTAGE TRANSFORMERS
26 24 16	PANELBOARDS
26 27 13	SERVICE AND METERING
26 28 00	OVERCURRENT PROTECTIVE DEVICES
26 28 16	SAFETY AND DISCONNECT SWITCHES
26 32 13	POWER GENERATION
26 70 00	MOTORS
26 90 25	CONTROL COMPONENTS

The technical specification sections listed above have been prepared under the direction of the Professional Engineer, registered in the State of Idaho, whose seal and signature appear below:



4/8/2022

SECTION 23 81 00 HEATING AND VENTILATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Electric heating and cooling equipment
 - 2. Temperature controls
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers the electrical coordination and installation of all mechanical heating and ventilation equipment including: heating and air conditioning units, temperature controls and thermostats.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods
 - 3. Section 26 05 19 – Wire and Cable
 - 4. Section 26 05 26 – Grounding
 - 5. Section 26 05 33 – Raceways
 - 6. Section 26 28 00 – Overcurrent Protective Devices
 - 7. Mechanical equipment specifications

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
23 81 00.01	Heating and Ventilation	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall be within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS**2.1 WALL MOUNTED HEAT/AC UNIT**

- A. Wall mounted heat/ac units shall include both AC and electric resistance heating capabilities and economizer vent package. Unit shall operate on 460 Volt, 3-Phase power as shown on the drawings. Units shall be supported per manufacturers recommendations. Wall openings shall be of sufficient size for the unit.
 - 1. Capacity: 2 Ton.
 - 2. Color/finish: Buckeye gray baked enamel.
 - 3. Furnish and install temperature controller if one is not factory supplied with the unit.
 - 4. Units shall be Bard, W24 series, or approved equal.

2.2 THERMOSTATS

- A. Provide thermostats as necessary for all control and alarming functions. Thermostats shall be industrial type with NEMA rating chosen for the area used. Thermostats shall be provided with markings and numbers showing set point of adjustment dial. Contacts shall be rated for 120V.
 - 1. Temperature range:
 - a) Thermostats for general purpose heating and cooling shall have a temperature range of 40 to 100 degrees F.
 - b) Thermostats to monitor freeze protection shall have a temperature range of -30 to 100 degrees F.
 - 2. PECO TH-109/TF-115, Chromalox WCRT-100, SUNNE T115, or equal.

PART 3 EXECUTION**3.1 COORDINATION**

- A. The Contractor is fully responsible for coordination of mechanical equipment and the electrical power and control requirements provided in this section and other sections of the specifications and drawings.
- B. Coordinate all equipment dimensions and installation requirements with other trades:
 - 1. Prior to selection of equipment.
 - 2. Prior to those trades commencing work which requires coordination of installed equipment: Carpenters, Masons, Mechanical Contractors, etc.
- C. Work not properly coordinated will result in replacement at no cost to the Owner.
- D. The Contractor shall provide power and control equipment, wiring, and raceways to meet the requirements of the mechanical equipment supplied.
 - 1. The Contractor shall verify as a minimum:
 - a) Correct voltage, phase and frequency
 - b) Correct motor starter type
 - c) Correct circuit breaker size(s)
 - d) The Contractor shall provide all necessary control wiring and components for any special requirements from an equipment manufacturer.

- E. Any discrepancies between the electrical and mechanical equipment shall be brought to the immediate attention of the Engineer.

3.2 WIRING

- A. Contractor shall provide and install all necessary power and control wiring and raceways for installation in accordance with the manufacturers requirements and the requirements of the contract drawings and specifications.
 - 1. Provide lockable disconnects for all power circuits in accordance with NEC.
 - 2. Provide control wiring and raceway to thermostats and other control devices.
 - 3. Raceway connections for equipment subject to vibration including unit heaters and fans: liquidtight flexible metal conduit

3.3 THERMOSTAT MOUNTING

- A. Unless otherwise shown, thermostats shall be wall mounted at 60 inches above finished floor. Wiring shall be routed in 3/4 inch conduit vertically from thermostat to wall heater.

END OF SECTION

SECTION 26 00 00

ELECTRICAL GENERAL PROVISIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contract requirements
- B. Codes, permits and fees
- C. Quality assurance and standards
- D. Site visit and familiarization
- E. Submittals
- F. Coordination of electrical work
- G. Material and workmanship
- H. Space requirements
- I. Safety regulations
- J. Delivery, storage and handling of materials

1.2 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. Division 1 - General Requirements.

1.3 STANDARDS AND REFERENCES

- A. Refer to Division 1 for general administrative/procedural requirements related to compliance with applicable standards.
- B. This Work and all materials shall meet the standards set forth in the applicable portions of the following recognized standards:
 - 1. NSI – American National Standards Institute.
 - 2. ASHRAE – American Society of Heating Refrigerating & Air-Conditioning Engineers.
 - 3. ASME – American Society of Mechanical Engineers.
 - 4. ASPE – American Society of Plumbing Engineers.
 - 5. ASTM – American Society for Testing and Materials.
 - 6. ETL – Electrical Testing Laboratory.
 - 7. FM – Factory Mutual Engineering Corporation.
 - 8. IEEE – Institute of Electrical and Electronics Engineers.
 - 9. NEC – National Electric Code (by NFPA).
 - 10. NEMA – National Electrical Manufacturers Association.
 - 11. NFPA – National Fire Protection Association.
 - 12. UL – Underwriters' Laboratories Inc.

1.4 SUBMITTALS

- A. General: Submittals required for this project shall include, but are not be limited to:
 - 1. Shop Drawings and Product Brochure Submittals.
 - 2. Record (as-installed) Drawings.
 - 3. Certifications and Test Reports.
 - 4. Operating and Maintenance Manuals.
 - 5. Warranties (Guarantees).
- B. Shop Drawings and Product Brochure Submittals:
 - 1. The terms "Submittal" and "Shop Drawing" in this Specification are defined as either product literature, samples of equipment, or actual Shop Drawings.
 - 2. The Contractor shall submit a minimum of six (6) complete bound sets of Shop Drawings and complete data covering each item or equipment or material. The Owner and Engineer will each retain one (1) copy of all Shop Drawing submittals for their files. Where full size Drawings are involved, submit two (2) prints and one (1) reproducible in lieu of six (6) sets.
 - 3. Submittals shall be provided with a cover sheet with the names and addresses of the Project, Engineer, General Contractor, and the Subcontractor making the submittal. The cover sheet shall also contain the Specification section number applicable to the item or items submitted, the item nomenclature and description and a submittal number. Electrical submittals shall be numbered sequentially by Specification section with a sequence suffix (e.g. 26 05 19-1, 26 06 33-2, etc.). Re-submittals shall be numbered with the original submittal number plus an "R" in the sequence suffix (e.g. the re-submittals of submittal 26 05 19-1 would be 26 05 19-1R1, 26 05 19-1R2).
 - 4. Submittals shall be provided with an index page with a listing of all data included in the submittal.
 - 5. Submittals shall be provided with a list of variations, including unfurnished or additional items or features between the submitted equipment and the specified equipment. If there are no variations, then this page shall state "No Variations". Where variations affect the work of other contractors, then the contractor shall certify on this page that these variations have been fully coordinated with the affected contractors and that the submitting contractor shall pay all additional costs to the affected contractors associated with the variations.
 - 6. Submittals shall provide equipment information including manufacturer's name and designation, size, performance and capacity data. All applicable listings, labels, approvals and standards shall be clearly indicated.
 - 7. Submittals shall provide dimensional data and actual sketches as applicable to show that the submitted equipment will fit the space available with all required Code and maintenance clearances.
 - 8. Submittals shall include an identification of each item of material or equipment matching that indicated on the Drawings.
 - 9. Submittals shall provide sufficient pictorial, descriptive and diagrammatic data on each item to show its conformance with the Drawings and Specifications. Any options or special requirements shall be so indicated. All applicable information shall be clearly indicated with arrows or another approved method. Any non-applicable information shall be crossed out.
 - 10. Submittals shall include additional information as required in other sections of this Division.
 - 11. Submittals shall include certification by the General Contractor and Subcontractor that the material submitted is in accordance with the Contract Documents signed and dated.

12. Reports or information requiring certification shall be certified by an authorized officer of the manufacturer or testing agency.
 13. Submittals shall include Certified Shop Drawings showing dimensions, loading details, anchor bolt locations, and inserts required for each piece of equipment set on concrete in sufficient time to cause no delay in the Work.
 14. Equipment and material submittals shall show sufficient data including all performance data, recommended installation details, and sufficient data to indicate complete compliance with the Contract Documents, including proper sizes, clearances, capacities, materials, and finishes.
- C. Required Shop Drawing Submittals:
1. Submittal Shop Drawings, including, but not limited to the following items:
 - a) All section 26 divisions.
 - b) Coordination Drawings as required by this Section.
 - c) As-Built Drawings.
- D. Shop Drawing Submittal Review:
1. Shop Drawings will be reviewed for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown in review comments is subject to the requirements of the Contract Documents. The submitting Contractor is responsible for: dimensions that shall be confirmed at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.
- E. Certifications and Test Reports:
1. The Engineer may, at their discretion, witness any or all on and off site acceptance and operational testing. Submit a detailed listing of certification and testing for each system indicating estimated dates for completion of system installation.
 2. Test procedures and test result reporting forms shall be submitted for review no later than the date of the certification and testing listing submittal.
 3. Submit four copies (coordinate with commissioning requirements) of all certifications and test reports to the Engineer for review adequately in advance of completion of the Work to allow for remedial action as required to correct deficiencies discovered in equipment and systems.
 4. Certifications and test reports to be submitted shall include, but not be limited to those items outlined in Section 26 01 26 - Electrical Testing.
 5. Notify the Engineer in writing one week prior to all scheduled testing to allow time for Engineer to schedule witnessing of testing, where elected by the Engineer.

1.5 OPERATING AND MAINTENANCE MANUALS

- A. Submit two copies of Operating and Maintenance Manuals to the Engineer for approval prior to the beginning of operator training. Provide four (one bound and three electronic) approved Operating and Maintenance Manuals for use in operator training. Bound manuals shall be bound in rigid cover, 3-ring binders with spine and cover labels and shall provide operating and maintenance information for every piece of equipment furnished under this Specification. All sections shall be typed and indexed into sections and labeled for easy reference. Bulletins containing information about equipment that is not installed on the project shall be properly marked up or stripped and reassembled. All pertinent information required by the Owner for proper operation and maintenance of equipment supplied shall be clearly and legibly set forth in memoranda which shall, likewise, be bound with bulletins. As a minimum, the following information shall be provided as applicable:

1. Complete description of each system, item of equipment, and apparatus provided under this Division, including ratings, capacities, performances, data and curves, characteristics identifying name and number, locations, and wiring diagrams, including sources for all parts.
 2. Fully detailed parts lists, including all numbered parts and recommended spare parts, of each item of equipment and apparatus provided under this Division.
 3. Manufacturer's printed instructions describing operation, service, maintenance, and repair of each item of equipment and apparatus.
 4. Typewritten record of tests made of materials, equipment, and systems included under this Division. Such records shall state the dates the tests were conducted, name(s) of person(s) making and witnessing the tests, and citing any unusual conditions relevant to the tests.
 5. Identifying names, name tags designations and locations for all equipment.
 6. Equipment and motor nameplate data.
 7. Copies of all approved Shop Drawing submittals.
 8. Fabrication drawings.
 9. Equipment and device bulletins and cut sheets clearly highlighted to show equipment installed on the project and including performance curves and data as applicable.
 10. Maintenance instructions clearly highlighted to show all required periodic maintenance and lubrication.
 11. As-Built Wiring diagrams.
 12. Operating instructions clearly highlighted to show proper operating procedures for all equipment.
 13. Location and listing of all spare parts and special keys and tools furnished to the Owner.
- B. Tools: Provide and deliver to the Owner's authorized representative any special tools required for maintenance of systems, equipment, and apparatus installed under this Division prior to requesting final acceptance of the installation.
- C. Commissioning requirements are part of this contract.

1.6 CODES, PERMITS AND FEES

- A. General:
1. Comply with the most recently revised versions of applicable laws, rules, regulations, and ordinances of federal, state, and local utilities and authorities. Where alterations to and deviations from the Contract Documents are required by said authority, report the requirements and secure approval before starting work. Obtain all applicable permits, licenses and inspections and pay all fees charged by above authorities.
- B. Code Design Basis:
1. The following codes and ordinances were used in the design of the project and shall be complied with during construction of the project.
 - a) Electrical Code – NEC, most recent edition enforced.
- C. Precedence:
1. Where Contract Document requirements are in excess of Code requirements and are permitted under the Code, the Contract Documents shall govern. None of the terms or provisions of the drawings or specification shall be construed as waiving any of the rules, regulations or requirements of these authorities. In the event of conflict between the Contract Documents and the local enforcing authority, the latter shall rule. Any modifications resulting there from shall be made without additional cost to the Owner or Engineer. This Contractor shall report any such modifications to the Engineer and secure his approval before proceeding.

1.7 QUALITY ASSURANCE

A. Materials/Methods:

1. Manufacturers, materials and methods described in the various sections of the Specifications, and indicated on the Drawings are intended to establish a standard of quality only. It is not the intention of the Engineer to discriminate against any product, material or method that is equal to the standards as indicated and/or specified, nor is it intended to preclude open, competitive bidding. The fact that a specific manufacturer is listed as an acceptable manufacturer should not be interpreted to mean that the manufacturers standard product would meet the requirements of the project design, Specifications and space constraints.

B. Alternative Products/Materials/Methods:

1. Products by other reliable manufacturers, other materials, and other methods may be accepted provided they have equivalent capacity, construction, and performance. Under no circumstances shall any substitution be made without the prior written approval of the Engineer.
2. Wherever a definite product, material or method is specified and there is not a statement that another product, material or method will be acceptable, it is the intention of the Engineer that the specified product, material or method is the only one that shall be used without prior approval.

C. Alternative Equipment:

1. Where substituted or alternative equipment is used on the project, it shall be the responsibility of the Contractor or Subcontractor involved to verify that the equipment will fit in the space available, including all required Code and maintenance clearances, and to coordinate all equipment requirements and provisions with the Electrical Design and all other Contractors.

D. Compatibility:

1. Provide products that are compatible with other products of the electrical work, and with other work requiring interface with the electrical work, including electrical connections and control devices. For exposed electrical work, coordinate colors and finishes with other work. Determine in advance of purchase that equipment and materials proposed for installation will fit into the confines indicated, leaving adequate clearance as required by applicable codes and for adjustment, repair, and replacement.

1.8 SITE VISIT AND FAMILIARIZATION

A. General:

1. Become familiar with the Drawings and Specifications, examine the premises, and understand the conditions under which the Contract shall be performed, prior to submitting a bid. Contact the Owner 48 hours prior to site visits to coordinate meeting time.

B. Site:

1. Be informed of the site conditions, verify locations of new and existing equipment and determine exact requirements for connections.

C. Coordination:

1. Submission of a bid for this project infers that the Electrical Contractor has visited the site and has become familiar with the Drawings and site conditions and has included in his proposal, all work necessary to properly install the systems on the project.

1.9 DRAWINGS AND SPECIFICATIONS

A. General:

1. The Drawings are schematic in nature and indicate approximate locations of the electrical systems, equipment, fixtures and devices, except where specific locations are noted and dimensioned on the Drawings. All items are shown approximately to scale. The intent is to show how these items shall be integrated into the project site. Locate all items by on the job measurements and in accordance with the Contract Documents. Cooperate with other trades to ensure project completion as indicated.
- B. Location:
1. Prior to locating electrical devices, light fixtures, and other items, obtain the Engineer's approval as to exact location. Locations shall not be determined by scaling Drawings. Mount lighting fixtures and electrical devices at the heights directed by the Engineer. Contractor shall be responsible for costs of redoing work of trades necessitated by failure to comply with this requirement.
 2. All electrical devices, lighting fixtures, and other devices shall be referenced to coordinated, established data points and shall be located to present symmetrical arrangements with these points and to facilitate the proper arrangements of acoustical tile panels and other similar panels with respect to the mechanical and electrical outlets and devices. Electrical devices, fixtures, and outlets shall be referenced to such features as wall and ceiling furring, balance, border widths, masonry joints, etc. Outlets in acoustical tile shall occur symmetrically in tile joints or in the centers of whole tiles and the exact location of each outlet and the arrangements to be followed shall be acceptable to the Engineer. Outlets in wall tile or masonry construction shall occur symmetrically in the centers of whole tiles, bricks, or blocks and the exact location of each outlet and the arrangement to be followed shall be acceptable to the Engineer.
 3. The Drawings show diagrammatically the location of the various outlets and apparatus. Exact locations of these outlets and apparatus shall be determined by reference to the general Drawings and to all detail Drawings, equipment Drawings, rough-in Drawings, etc., by measurements at the building, and in cooperation with the other trades. The Owner and Engineer reserve the right to make any reasonable change in location of any outlet or apparatus before installation, without additional cost to the Owner.
- C. Specifications:
1. The Specifications are intended to supplement the Drawings and it is not in the scope of the specifications to mention any part of the work that the Drawings are competent to fully explain. Conversely, any part of the work that the specification is competent to fully explain may not be mentioned on the Drawings.

1.10 DISCREPANCIES

- A. Clarification:
1. Clarification shall be obtained before submitting a proposal for the Work under this Division as to discrepancies or omissions from the Contract Documents or questions as to the intent thereof.
- B. Detailed Instructions:
1. Should it appear that the work hereby intended to be done or any of the materials relative thereto is not sufficiently detailed or explained in the Drawings or Specifications, then the Contractor shall apply to the Engineer for such further Drawings or explanations as may be necessary, allowing a 10 working day time period for the Engineer to respond.
- C. Interpretations:
1. Should any doubt or question arise respecting the true meaning of Drawings or Specifications, reference shall be made to the Engineer, whose written decision shall be final and conclusive.
- D. Contractor Agreement:

1. Consideration will not be granted for misunderstanding of the amount of work to be performed. Submission of a bid conveys full Contractor agreement of the items and conditions specified, shown, scheduled, or required by the nature of the project.

1.11 UTILITIES

A. General:

1. Utility information shown on the Drawings has been shown based upon data obtained from the site survey and the agencies having jurisdiction and are accurate to the best of the knowledge of the Engineer.

B. Coordination:

1. The Contractor shall be responsible for field verification of the actual location of site and/or building utilities and shall make modifications necessary for connection to or construction around those utilities at no additional cost to the Owner or Engineer.

1.12 TEMPORARY FACILITIES

A. General:

1. Contractor shall coordinate with owner.

1.13 SITE OBSERVATION

A. General:

1. Observations at the site to verify general compliance with Contract Documents shall be made periodically by the Engineer or his representative. Written observation comments shall be submitted to the General Contractor for review and a written response.

1.14 COORDINATION OF ELECTRICAL WORK

A. General:

1. It is recognized that the Contract Documents are diagrammatic in showing certain physical relationships that must be established within the electrical work and in its interface with other work, including utilities and mechanical work, and that such establishment is the exclusive responsibility of the Contractor. The Drawings show diagrammatically the sizes and locations of the various conduit and raceway systems and equipment items along with the sizes of the major interconnecting distribution, without showing exact details as to elevations, offsets, control lines, and installation details.
2. Arrange electrical work in a neat, well organized manner with services running parallel with primary lines of the building construction and with a minimum of 7' overhead clearance where possible.
3. The Contractor shall carefully lay out his work at the site to conform to the structural conditions, to avoid obstructions and to provide proper grading of lines. Exact locations of outlets, apparatus and connections thereto shall be determined by reference to detail Drawings, equipment Drawings, roughing-in Drawings, etc., by measurements at the building and in cooperation with other Contractors and, in all cases, shall be subject to the approval of the Engineer. Relocations necessitated by the conditions at the site or directed by the Engineer shall be made without any additional cost to the Owner or Engineer.

4. All conduit and boxes except those in the various equipment rooms, in unfurnished spaces or where specifically designated herein or on the Drawings shall be run concealed in furring, plenums, and chases. Wherever conditions exist which would cause any of these items to be exposed in finished spaces, the Contractor whose work is involved shall immediately call the situation to the attention of the Engineer and shall stop work in those areas until the Owner's Representative or General Contractor directs the resumption of the work. Submit for approval a Shop Drawing for any change in equipment placement, etc.
5. Equipment has been chosen to fit within the available space with all required Code and maintenance clearances and shall be installed as shown. Every effort has been made to also accommodate equipment of other approved manufacturers; however, since equipment and access space requirements vary, the final responsibility for installation access and proper fit of substituted equipment rests with the Contractor.
6. System interferences shall be handled by giving precedence to pipe lines that require a stated grade for proper operation. Where space requirements conflict, the following order of precedence shall, in general, be observed:
 - a. Building Lines,
 - b. Structural members,
 - c. Soil and drain piping,
 - d. Utility water piping,
 - e. Electrical conduit.
7. Locate electrical equipment properly to provide easy access. Arrange entire electrical work with adequate code access for operation and maintenance.
8. Advise other trades of openings required in their work for the subsequent move in of large units of electrical work (equipment).
9. Coordinate all items that will affect the installation of the work of this Division. This coordination shall include, but not be limited to: Voltage, ampacity, capacity, electrical connections, space requirements, sequence of construction, building requirements and special conditions.
10. When submitting Shop Drawings on the project, this Contractor is indicating that all necessary coordination has been completed and that the systems, products and equipment submitted can be installed in the building and will operate as specified and intended, in full coordination with all other Contractors and Subcontractors.

1.15 MATERIAL AND WORKMANSHIP

- A. General:
 1. Materials and equipment shall be new, of best grade and quality, and standard products of reputable manufacturers regularly engaged in the production of such materials and equipment.
- B. Workmanship:
 1. Work shall be executed and materials installed in accordance with the best practice of the trades in a thorough, substantial, workmanlike manner by competent workmen, presenting a neat appearance when completed.
- C. Manufacturer's Recommendations:
 1. With exceptions as specified or indicated on the Drawings or in the Specifications, apply, install, connect, erect, use, clean, and condition manufactured articles, materials, and equipment per manufacturer's current printed recommendations. Copies of such printed recommendations shall be kept at the job site and made available as required.

1.16 SPACE REQUIREMENTS

- A. General:
 - 1. Determine in advance of purchase that the equipment and materials proposed for installation will fit into the confines indicated, leaving adequate code clearances for adjustments, repair, or replacement.
- B. Clearance:
 - 1. Allow adequate space for clearance in accordance with requirements of the Code and local inspection department.
- C. Scheduled Equipment:
 - 1. The design shown on the Drawings is based on the equipment scheduled.
- D. Responsibility:
 - 1. Since space requirements and equipment arrangement vary for each manufacturer, the responsibility for initial access and proper fit rests with the Contractor.
- E. Review:
 - 1. Final arrangement of equipment to be installed shall be subject to the Engineer's review.

1.17 SAFETY REGULATIONS

- A. All electrical work shall be performed in compliance with all applicable and governing safety regulations. All safety lights, guards, signs, and other safety materials and provisions required for the performance of the electrical work shall be provided by and operated by the Electrical contractor.

1.18 DELIVERY, STORAGE AND HANDLING OF MATERIALS

- A. General:
 - 1. Protect all materials and equipment to be installed under this Division from physical and weather damage.
- B. Scope:
 - 1. Work under this Division shall include, but not limited to:
 - a) Shipping from point of manufacture to job site,
 - b) Unloading, moving, and storage on site with appropriate protection as required to properly protect equipment from rust, drip, humidity, dust, or physical damage,
 - c) Hoisting and scaffolding of materials and equipment included in this Division,
 - d) Ensuring safety of employees, materials, and equipment using such hoisting equipment and scaffolding as is required for safety.
- C. Coordination:
 - 1. All large pieces of apparatus which are to be installed in the building and which are too large to permit access through doorways, stairways or shafts shall be brought to the job by the Contractor and shall be placed in the spaces before enclosing partitions and structure are completed. All apparatus shall be cribbed up from the floor by Contractor and shall be covered with tarpaulins or other protective covering where required for protection.

1.19 NOISE AND VIBRATION

- A. General:
 - 1. One year warrants the electrical systems, and their component parts to operate without objectionable noise or vibration. Objectionable noise, vibration, or transmission thereof to the building shall be corrected.

1.20 CLEANING, ADJUSTING, AND START-UP

- A. Clean up:
 - 1. The Contractor shall clean away from the job site all debris, surplus material, and similar items, resulting from his work or operations, leaving the job and equipment in a clean condition. The Contractor shall thoroughly clean all pieces of equipment, conduit, boxes, fixtures, and similar items, leaving the installation in a first class condition.
- B. Start-up Services:
 - 1. Where specified for any individual item of electrical equipment, provide a factory-authorized representative for testing, start-up of equipment, and instruction of Owner's operating personnel. Certify that these services have been performed by including a properly executed invoice for these services, or a letter from the manufacturer.
- C. Lubrication:
 - 1. Provide means for lubricating all bearings and other machine parts. Extend a lubrication tube with suitable fitting to an accessible location and identify it where lubrication fittings are concealed or inaccessible. Lubricate all parts requiring lubrication and keep them adequately lubricated until final acceptance by the Owner.
- D. Testing:
 - 1. See Section 26 01 26 – Electrical Testing.
- E. Operation Prior to Completion:
 - 1. When any piece of electrical equipment is operable and it is to the advantage of the Contractor to operate the equipment, he may do so, providing that he properly supervises the operation, and has the Engineer's written permission to do so. The warranty period shall, however, not commence until such time as the equipment is operated for the beneficial use of the Owner, or date of substantial completion, whichever occurs first. Regardless of whether or not the equipment has or has not been operated, the Contractor shall properly clean the equipment, properly adjust, and complete all deficiency list items before final acceptance by the Owner. The date of final acceptance and the start of the warranty may not be the same date.

1.21 FINAL REVIEW

- A. General:
 - 1. Upon completion of the Work, perform a final test of the entire system.
 - 2. The system shall be operating properly and meet commissioning requirements.
 - 3. After the final test, any changes or corrections noted as necessary for the Work to comply with these Specifications or the Drawings shall be accomplished without delay in order to secure final acceptance of the Work.
 - 4. The date for the final test shall be sufficiently in advance of the Contract completion date to permit execution, before expiration of the Contract, of any adjustments or alterations that the final acceptance tests indicate as necessary for the proper functioning of all equipment. Any such modifications shall be completed within the time allotted for completion of the Contract. Retests shall be conducted as directed and shall be of such time duration as necessary to ensure proper functioning of adjusted and altered items. Retests shall not relieve the Contractor of completion date responsibility.
 - 5. Certificates, including certificates of occupancy from local authorities and documents required herein, shall be completely in order and presented to the Engineer at least one week prior to the review.
 - 6. Individuals knowledgeable of the systems and persons approved by the Engineer shall be present at this final inspection to demonstrate the system and prove the performance of the equipment.

1.22 OPERATION AND MAINTENANCE TRAINING (OWNER INSTRUCTION)**A. General:**

1. The Contractor and appropriate factory-trained representatives shall instruct the Owner's representative in the proper operation and maintenance of all electrical and control systems and equipment, and shall explain all warranties.

B. Training Agenda Outline:

1. Prior to instruction of Owner Personnel, the Contractor shall prepare a typed outline, listing the subjects that will be included in this instruction, and shall submit the outline for review by the Engineer at least 2 weeks prior to the time of the training.

C. Training Requirements:

1. Training shall be provided per the specific requirements in other sections of these specifications. In addition to training required in other sections of the specifications, the Contractor shall conduct specifically organized training sessions in the overall operation and maintenance of the electrical and control system for personnel employed by the Owner. The training sessions shall be conducted to educate and train the personnel in operations and maintenance of all components of the electrical system outside the training requirements in the other Sections.
2. Training shall include, but not be limited to, the following:
 - a) Preventative maintenance procedures,
 - b) Trouble-shooting,
 - c) Calibration,
 - d) Testing,
 - e) Replacement of components,
 - f) Equipment operation.
3. At a minimum, one training session, at least 2 hours in duration, shall be conducted at the facility after start-up of the electrical and control systems. The Contractor shall prepare and assemble specific instruction materials for each training session and shall supply such materials to the Owner at least 2 weeks prior to the time of the training.

D. Certification:

1. At the conclusion of the instruction period, the Contractor shall obtain the signature of each person being instructed on each copy of the approved training outline to signify that the personnel has a proper understanding of the operation and maintenance of the systems, and resubmit the signed outlines.

E. Other Requirements:

1. Refer to other Division 26 Sections for additional Operator Training requirements for specific pieces of equipment or specific systems.
2. The Contractor shall coordinate the Operator Training requirements listed above with the Owner Instruction requirements of Division 1.

1.23 CONTRACTOR WARRANTIES AND GUARANTEES**A. General:**

1. Contractor shall guarantee all material and equipment installed by him against defects in workmanship and material for a period of 12 months after final acceptance of the work by the Owner. He shall repair or replace any materials or equipment developing such defects within that time promptly on due notice given him by the Owner and at Contractor's sole cost and expense.

B. Equipment:

ELECTRICAL GENERAL PROVISIONS

1. All equipment bearing a manufacturer's guarantee, such as electrical equipment, devices, components, and similar items, shall be construed to have an extended guarantee to the Owner by the manufacturer. Any such equipment that proves defective in materials or workmanship within the guarantee period is to be replaced by the Contractor in accordance with the manufacturer's guarantee.

PART 2 PRODUCTS

2.1 NOT USED.

PART 3 EXECUTION

3.1 NOT USED.

END OF SECTION

SECTION 26 00 01
ELECTRICAL SCOPE OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Description
- B. Electrical Scope of Work
- C. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. Installation of one (1) new service entrance rated disconnect, CT cabinet, and utility meter with revisions to the existing service location as to provide one (1) new service to the City of Moscow, Well # 6 Pump House facility.
- B. Install conduit, conductors, and appurtenances as to interconnect new Automatic Transfer Switches (ATS) and standby generator system to provide standby power to one (1) existing well pump station (pump motor controller) and one (1) existing fleet shop building.
- C. Relocation of one (1) existing well pump motor controller (VFD) and association power distribution equipment.
- D. Relocation of one (1) existing telemetry control panel and revisions to said as show on the drawings.
- E. New step-down transformer and low voltage power distribution panels and appurtenances as shown on the drawings.
- F. Contractor to install conduit and conductors as shown on the drawings for a complete and operational power distribution system.
- G. Contractor to install conduit and conductors as shown on the drawings for a complete and operational instrumentation and control system.
- H. Provide labor, materials, tools, machinery, equipment, fixtures, devices, and services necessary to complete the specified work of this and all other Divisions. Coordinate work with other trades to prevent conflicts without impeding job progress.
- I. Electrical provisions to install a relocated MIOX chlorination system.
- J. Installation of control wiring from relocated telemetry control panel to relocated MIOX chlorination system.
- K. Project work includes, but is not limited to:
 - 1. A complete standby power system including, but not limited to:
 - a) Utility service revisions.
 - b) Service entrance equipment.
 - c) Wire and raceways.
 - d) Controls wiring:
 - Generator to automatic transfer switches
 - Generator to Telemetry Panel
 - Automatic transfer switch to Telemetry Panel
 - Power metering to Telemetry Panel
 - e) Power distribution.

- f) All other components shown on the Drawings, specified or required for a fully operational system.
- 2. A complete system of miscellaneous electric controls and control wiring as shown on the Drawings and specified.
- 3. Electrical testing and certification as specified.
 - a) Generator and transfer switch functionality testing
 - b) Assistance with generator and transfer switch monitoring testing to SCADA
- 4. Concrete housekeeping pads, concrete ductbank cover and other supports as required for electrical equipment and components.
- 5. Connections to equipment furnished by the General Contractor or other Divisions.
- 6. Connections for Owner-furnished equipment where shown on the Drawings or specified.
- 7. Additional items as shown on the Drawings or specified.
- 8. PLC and SCADA programming will be Owner furnished.

1.3 RELATED SECTIONS

- A. All division 26 sections.

1.4 MEASUREMENT AND PAYMENT

- A. General Electrical: Includes all parts, labor, and materials needed to complete the electrical work as detailed in the plans and specifications with the exception of the following items that will be included in other pay items:

- 1. Chlorine residual analyzer.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

- B. Bid Additive Alternate #1: Includes all parts, labor, and materials needed to complete the electrical work associated with the standby power system as detailed in the plans and specifications with the exception of the following items that will be included in the General Electrical pay item:

- 1. Underground conduits to/from the well house, standby generator location, and existing shop.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
Bid Additive Alt #1	Standby Power System	LS

PART 2 PRODUCTS

2.1 GENERAL

- A. Refer to specific Sections of the Specification for equipment.

PART 3 EXECUTION

3.1 GENERAL

- A. Installation shall be in accordance with the Specification section pertaining to the individual Equipment.

END OF SECTION

SECTION 26 00 02

BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Basic requirements for electrical systems, including but not limited to:
 - 1. Manner of running conduits,
 - 2. Hangers and supports,
 - 3. Attachment,
 - 4. Openings, cutting, and patching,
 - 5. Excavation, trenching, and backfilling,
 - 6. Flame spread properties of materials,
 - 7. Penetration flashing and seals,
 - 8. Cleaning and painting of electrical work,
 - 9. Electrical system identification,
 - 10. Warning signs and operational tags,
 - 11. Prohibited markings,
 - 12. Equipment housekeeping pads and anchor bolts,
 - 13. Wiring device and equipment mounting heights.

1.2 DESCRIPTION OF WORK

- A. This section covers the basic materials and methods of electrical construction as shown, scheduled, indicated, and specified.

1.3 DEFINITIONS

- A. For the purposes of providing materials and installing electrical work, the following definitions shall be used:
 - 1. Outdoor Area: Exterior locations where the equipment is normally exposed to the weather and including below grade structures, such as vaults, manholes, handholes and in-ground pump stations.
 - 2. Non-architecturally Finished Area: Pump, chemical, mechanical, electrical rooms and other similar process-type rooms.
 - 3. Highly Corrosive and Corrosive Areas: Rooms or areas identified on the Drawings where there is a varying degree of spillage or splashing of corrosive materials such as water, wastewater or chemical solutions; or chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes or chemical mixtures.
 - 4. Shop Fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.

1.4 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 05 33 – Raceways
 - 2. Section 26 00 00 – Electrical General Provisions

1.5 STANDARDS AND REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. C2, National Electrical Safety Code
 - 2. Z535.1, Safety Color Code
 - 3. Z535.2, Environmental and Facility Safety Signs
 - 4. Z535.3, Criteria for Safety Symbols
 - 5. Z535.4, Product Safety Signs and Labels.
- B. National Fire Protection Association (NFPA):
 - 1. 70, National Electrical Code (NEC)
 - 2. 79, Electrical Standard for Industrial Machinery
- C. Occupational, Health and Safety Administration (OSHA):
 - 1. 1910.145, Specification for Accident Prevention Signs and Tags
- D. All materials and equipment specified herein shall within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
 - 2. The Contractor shall submit to the Engineer, for review, a list of proposed manufacturers and product data on hangers, supports, and methods of attachment to the structure.
 - 3. Excavation and trenching plan, designed and sealed by a registered professional engineer.
 - 4. Cut sheets and samples of Electrical System Identification products.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS**2.1 ACCEPTABLE MANUFACTURERS**

- A. Refer to specific Division 26 sections and specific material paragraphs below.
- B. Provide all components of a similar type by one manufacturer.

2.2 ELECTRICAL EQUIPMENT SUPPORTS

- A. Approved manufacturers:
 - 1. Unistrut Building Systems
 - 2. B-Line
 - 3. Globe Strut
- B. Material requirements:
 - 1. Galvanized steel: ASTM A123 or ASTM A153
 - 2. Stainless steel: AISI Type 316
 - 3. PVC coat galvanized steel: ASTM A123 or ASTM A153 and 20 mil PVC coating
 - 4. Fiberglass: Fire-retardant polyester or vinylester resin, ASTM E84, UL 94

2.3 NAMEPLATES

- A. For labeling equipment enclosures and equipment that is visible with the enclosure door closed:
 - 1. Approved manufacturers catalog numbers:
 - a) W. H. Brady Co., #B-1.
 - b) Seton, "Setonply".
 - 2. Materials: Phenolic, 2-ply engraved.
 - 3. Size:
 - a) Surface: As required for the text.
 - b) Thickness: 1/16 IN.
 - 4. Fabrication:
 - a) Two layer laminated.
 - b) Legend engraved through top lamination into bottom lamination.
 - c) Drilled holes in each corner, for screw mounting.
 - 5. Colors: Black top surface, white core, unless otherwise indicated.
 - 6. Fasteners: Self-tapping stainless steel screws.
- B. For labeling components inside equipment enclosures:
 - 1. Approved manufacturers catalog numbers:
 - a) W. H. Brady Co., "Industrial Strength Tape" #42018
 - b) Seton, "Component and General Identification Labels" #45553
 - c) Panduit, "Standard Labeling Tape" LS4-33
 - 2. Materials: vinyl tape or vinyl cloth with printable topcoat.
 - 3. Colors: White background, black printing.

2.4 WIRE MARKERS

- A. For control panels, electrical gear, pull and junction boxes:
 - 1. Material: vinyl or polyester tape.
 - 2. Approved manufacturer's catalog numbers:
 - a) W. H. Brady Co., Indoor/Outdoor Vinyl Tape, B-580
 - b) Seton, "Self-Laminating Wire Marker Labels" M7340
 - c) Panduit, LS4M "Industrial Labeling Tape"
 - 3. Material: Heat shrinkable polyolefin.
 - 4. Approved manufacturer's catalog numbers:
 - a) Seton, Welded Wire Marking Sleeves
 - 5. Colors: White background, black printing.
- B. For conduit tags, manholes, handholes and exterior pad mounted electrical gear:
 - 1. Material: Aluminum or stainless steel.
 - 2. Approved manufacturer's catalog numbers:
 - a) Panduit META-X or META54-X
 - 3. Legend: Embossed.
 - 4. Fasteners: Nylon, urethane or polypropylene strap.

2.5 SAFETY SIGNS

- A. Approved manufacturers catalog numbers:
 - 1. W. H. Brady Co., #B-302 or #B-120

2. Seton, Pressure Sensitive Vinyl or Tedlar Coated Plastic
 3. Panduit, GMM Polyester Film (Type PPS) or GMPE1 Rigid Polyethylene (Type PRS)
- B. Materials, size and fabrication:
1. For indoor use: Polyester or vinyl, surface area as required by the text, 4 mil minimum thickness, self-adhesive.
 2. For outdoor use and on entrances to electrical rooms or stations: Fiberglass or coated plastic, surface area as required by the text, minimum area 7 x 10 IN, 60 mil thickness, drilled holes for screw mounting .
- C. Color in accordance with ASME (ANSI Z535.1, .2, .3 and .4) and OSHA 1910.145.
- D. Minimum letter size on indoor signs, 3/16 in.
- E. Maximize the letter size on outdoor signs to sufficiently fill the printable area on the sign.
- F. Standards: ASME/ANSI Z535.1, Z535.2, Z535.3 and Z535.4, OSHA 1910.145.

PART 3 EXECUTION

3.1 MANNER OF RUNNING CONDUITS

- A. All exposed conduit shall be run in the neatest, most inconspicuous manner, and parallel or perpendicular to the building lines.
- B. All conduit and surface raceways shall be adequately and properly supported from the building structure by means recommended by the manufacturer, or by the use of hanger rods or clamps as herein specified.
- C. No sleeves shall be installed through any concrete beam or other deep projection without written approval of the Engineer.
- D. Run conduit to avoid proximity to heat producing equipment, keeping a minimum of 8" clear.
- E. Whenever possible, install horizontal conduit runs above water piping.
- F. Install all conduit to allow for adequate maintenance and access clearances to all equipment and so as to not inhibit removal of ceiling tiles.
- G. The Contractor shall study all construction documents and carefully lay out all work in advance of fabrication and erection in order to meet the requirements of limited spaces. Where conflicts occur, the Contractor shall meet with all involved trades and the Construction Inspector and resolve the conflict prior to erection of any work in the area involved.
- H. Conduit and raceway connections, rough-in, and stub-up locations for equipment shall be coordinated by the Contractor to provide raceways in locations indicated on approved manufacturers equipment shop drawings. Connection, rough-in and stub-up locations shown on the Drawings are diagrammatic for general reference only.

3.2 HANGERS AND SUPPORTS

- A. All supports required for the proper installation of equipment, wire-way, and conduit shall be provided as hereinafter specified unless otherwise indicated on the Drawings.
- B. All conduits throughout the building shall be supported as specified in Section 26 05 33, unless specifically noted differently on the Drawings or in the Specifications, but in every case shall be adequate to support the raceway being suspended. The supports shall be from the structure to line of grade, with proper provision for expansion, contraction, vibration elimination, and anchorage.

- C. Vertical conduits shall be supported from floor lines with riser clamps sized to fit the conduit and to adequately support their weight, with allowance for expansion and contraction. At the bases of conduit, where required for proper support, provide anchor base fittings or other approved supports.
- D. Conduit shall not be supported from ductwork, piping, or equipment.
- E. All electrical conduits and surface raceways exposed to view shall be run parallel to the adjacent building construction. All hangers shall be fastened to the building structure in a manner as hereinafter specified under "Attachment".
- F. Conduits running horizontally shall be supported by Caddy, Minerallac, or approved equal; adjustable conduit hangers from adequately sized rods (minimum 1/8") from the building structure. Refer to Section 26 05 33 for additional requirements.
- G. Vertical conduits, both concealed and exposed, shall be supported by clamping to vertical surfaces or by means of clamps resting on adjacent beams, or floor slabs, or both as required by the installation. Refer to Section 26 05 33 for additional requirements.
- H. Conduits and raceways run against building surfaces shall be supported by means recommended by the manufacturer, or by means of single or two hole rigid conduit clamps. Two-hole clamps shall be provided where size of conduit and installation conditions warrant. Refer to Section 26 05 33 for additional requirements.
- I. All auxiliary steel required for conduit, and wire-way supports, etc. shall be provided by the Electrical Trades unless specifically indicated to be provided by others. All support steel and fasteners shall be galvanized.
- J. Contractor shall review all Drawings, including Structural Drawings, for details regarding supports.
- K. All supports shall be of type and arrangement to prevent excessive deflection, to avoid excessive bending stresses between supports, and to eliminate transmission of vibration.
- L. Perforated strap shall not be used as a hanger material.

3.3 ATTACHMENT

- A. The load and spacing on each hanger and/or insert shall not exceed the safe allowable load for any component of the support system, including the concrete that holds the inserts. Reinforcement at inserts shall be provided as required to develop the strength required.
- B. All conduits not embedded in concrete or masonry shall be securely and independently supported so that no strain will be transmitted to outlet box and pull box supports, etc. Supports shall be rigid enough to prevent distortion of conduits during wire pulling.
- C. Inserts shall be of a type which will not interfere with reinforcing, as indicated on the Structural Drawings, and which will not displace excessive amounts of structural concrete. All methods of attachment to the structure and the use of after-set inserts shall be approved in writing by the Engineer.
- D. All conduit supports shall be designed and installed to avoid interference with other piping, hangers, ducts, conduit, supports, building structures, equipment, etc. All conduit, cable tray, and wire-way shall be installed with due regard to expansion and contraction and the type of hanger method of support, location of support, etc. shall be governed in part by this Specification.
- E. Hangers shall be attached to structure as follows:
 - 1. Poured-in-place Concrete:

- a) Where conduits, equipment, etc., are supported under poured-in-place concrete construction, each hanger rod shall be fitted with a nut at its upper end, which shall be set into a UL-listed universal concrete insert placed in the form work before concrete is poured.
 - b) Where inserts are placed in the bottom faces of concrete joists which are too narrow to provide adequate strength of concrete to hold the insert properly, or where a larger insert would require displacement of a bottom joist steel, the hanger rod shall be suspended from the center of a horizontal angle iron, channel iron, I-beam, etc., spanning across to adjacent joist. The angle iron shall be bolted to nonadjustable concrete inserts of the "spot" type, of physical size small enough to avoid the bottom joist steel.
- 2. Steel Bar Joist:
 - a) Where light loads are supported under bar joists, hanger rods may be run with a washer and two nuts.
 - b) Where larger loads are supported beneath bar joists, hanger rods shall be secured to angle irons of adequate size; each angle shall span across two or more joists as required to distribute the weight properly and shall be welded to the joists or otherwise permanently fixed thereto.
- 3. Steel Beams: Where loads are supported under steel beams, approved type beam clamps shall be used.
- 4. Wood Framing: Where loads are supported from wood framing, hanger rods shall be attached to framing with side beam brackets or angle clips.
- 5. Miscellaneous Steel: All miscellaneous steel members, angles, rods, supports, and similar items specified or required for this project shall be galvanized for indoor use or hot dipped galvanized for exterior use and where exposed to ambient conditions. All required miscellaneous steel shall be provided by this Division.
- F. Fastening of conduits, etc., in the building shall be as follows: To wood members - by wood screws; to masonry - by threaded metal inserts, metal expansion screws, or toggle bolts, whichever is appropriate for the particular type of masonry; to steel - machine - screws or welding (when specifically permitted or directed), or bolts, and to concrete by suitable inserts anchored to reinforcing steel, and poured in place unless other means are indicated on the plans. Power-actuated fasteners (shooting) will not be acceptable under any circumstances unless approved by the Engineer in writing.

3.4 OPENINGS, CUTTING AND PATCHING

- A. General:
 - 1. The Contractor shall be responsible for coordinating openings in the building construction for installation of electrical systems. Comply with the requirements of Division 1 for the cutting and patching of other work to accommodate the installation or electrical work. Except as individually authorized by the Engineer, cutting and patching of electrical work to accommodate the installation of other work is not permitted.
- B. Cut and Patch:
 - 1. Cut and patch walls, floors, etc., resulting from work in existing construction or by failure to provide proper openings or recesses in new construction.
- C. Methods of Cutting:
 - 1. Openings cut through concrete and masonry shall be made with masonry saws and/or core drills and at such locations acceptable to the Engineer. Impact-type equipment may be used upon written approval of the Engineer. Openings in pre-cast concrete slabs for conduits, outlet boxes, etc., shall be core drilled to exact size.
- D. Approval:

1. If holes or sleeves are properly installed and cutting and patching becomes necessary, it shall be done at no change in Contract amount. Undertake no cutting or patching without first securing written approval from the Engineer. Patching shall create a surface which is structurally and aesthetically equal to the surface surrounding the area patched and shall be performed by the trade whose work is involved at no change in the Contract amount.
- E. Protection:
1. Openings through exterior walls or roofs shall be provided with suitable covers while they are left open to protect the property or materials involved. Any openings through walls below grade shall be properly protected to prevent entrance of water or other damaging elements.
- F. Restoration:
1. All openings shall be restored to "as-new" condition under the appropriate Specification Section for the materials involved, and shall match remaining surrounding materials and/or finishes. Restoration work shall be performed by the trades who originally installed the work being restored and shall be performed at no cost to the Owner or Engineer.
- G. Masonry:
1. Where openings are cut through masonry walls, provide and install lintels or other structural supports to protect the remaining masonry. Adequate supports shall be provided during the cutting operation to prevent any damage to the masonry occasioned by the operation. All structural members, supports, etc., shall be of the proper size and shape, and shall be installed in a manner acceptable to the Engineer.
- H. Plaster:
1. All electrical work in areas containing plaster shall be completed prior to the application of the finish plaster coat. Cutting of finish plaster coat will not be permitted.
- I. Special Note:
1. No coring, boring, or excavating which will weaken the structure shall be undertaken.

3.5 EXCAVATING, TRENCHING AND BACKFILLING

- A. General:
1. The work hereunder includes whatever excavating and backfilling is necessary to install the electrical work. Coordinate the electrical work in the same area, including excavating and backfilling, dewatering, floor protection provisions, other temporary facilities needed for protection and proper performance of excavating and backfilling.
- B. Standards:
1. Except as otherwise indicated, comply with the applicable provisions of Division 2 for electrical work excavating and backfilling. Refer instances of uncertain applicability to the Engineer for resolution before proceeding with the Work.
- C. The bottoms of trenches shall be excavated to required depths, slope and grade. The bottom of the trench shall be accurately excavated to provide firm, uniform bearing for the bottom of the raceways and duct-banks. Where mud or unstable soil is encountered in bottom of trench, it shall be removed to firm-bearing and the trench shall be back filled with bedding sand to proper grade and tamped to provide uniform firm support.
- D. The bottom of trenches shall be accurately graded to provide proper fall and uniform bearing and support for each section of the conduit on undisturbed soil or 2" of sand fill at every point along its entire length. In general, grading for electrical duct-banks and conduits shall be from building to manhole, and from a high point between manholes to each manhole.

- E. Exercise care not to excavate below required depth, leaving a flat bed of undisturbed earth; firm and secure before laying cable and duct-banks. In the event rock is encountered, excavate 6" below required depth and backfill to required depth with bedding sand, and compact to minimum 95% compaction.
- F. All grading in the vicinity of excavation shall be controlled to prevent surface ground water from flowing into the excavations. Any water accumulated in the excavations shall be removed by pumping or other acceptable method. During excavation, material suitable for backfilling shall be stacked in an orderly manner a sufficient distance back from edges of trenches to avoid overloading and prevent slides or cave-ins. Material unsuitable for backfilling shall be wasted and removed from the site and properly disposed of.
- G. The Contractor shall be fully responsible for the safety of persons, materials and equipment in or near trenches or other excavations and provide all required sloping, shoring, railings and other protective provisions. The Contractor shall provide a trench shoring plan and design that is sealed by a registered professional engineer. Refer to Divisions 1 and 2 for additional requirements.
- H. If any unknown and/or uncharted utilities are encountered during excavation, promptly notify Engineer and wait for his/her instruction before proceeding,
- I. If such unknown utilities are encountered and work is continued without contacting the Engineer for instructions, and damage is caused to said utilities, the Contractor shall repair at his own expense, such damage to the satisfaction of the owner or utility company concerned.
- J. Trenches shall not be backfilled until all required tests have been made by the Contractor and approved by the Engineer and any local authorities having jurisdiction.
- K. Backfill shall be compacted or cement stabilized sand up to 6" above the top of conduit or duct-bank. Backfill up to grade shall be in maximum 6" lifts with minimum 95% compaction of lifts. Refer to Division 2 or elsewhere in Contract Documents for additional trenching and backfill requirements.
- L. Opening and Reclosing Pavement, Landscape Areas and Lawns: Where excavation requires the opening of existing walks, street, drives, other existing pavement or lawns; such surfaces shall be cut as required to install new conduit and to make new connections to existing conduits. The sizes of the cut shall be held to a minimum, consistent with the work to be accomplished. After the installation of the new work is completed and the excavation has been backfilled and flooded, the area shall be patched or replaced, using materials to match those cut out or removed. Patches shall thoroughly bond with the original surfaces; these shall be level with them and shall meet all the requirements established by the authorities having jurisdiction over such areas. All removed work shall be replaced by craftsmen who regularly install the types of work being replaced.
- M. Excavation in Vicinity of Trees:
 - 1. All trees, including low hanging limbs within the immediate area of construction, shall be adequately protected to a height of at least 5' to prevent damage from the construction operations and/or equipment. All excavation within the outermost limb radius of all trees shall be accomplished with extreme care. All roots located within this outermost limb radius shall be brought to the attention of the Engineer before they are cut or damaged in any way. The Engineer will give immediate instructions for the disposition of same. All stumps and roots encountered in the excavation that are not within the outermost limb radius of existing trees shall be cut back to a distance of not less than 18" from the outside of any concrete structure or pipeline. No chips, parts of stumps, or loose rock shall be left in the excavation. Where stumps and roots have been cut out of the excavation, clean, compacted, dry bank sand shall be backfilled and tamped.

3.6 PENETRATION FLASHING AND SEALS

- A. Conduit sleeves, pitch pockets, and flashings compatible with the roofing and waterproofing installation shall be provided for all roof and wall penetrations and roof-mounted equipment and supports. Coordinate flashing details with the Architectural details and the roofing/waterproofing contractors.
- B. Conduits passing through walls where exposed to weather or below grade shall pass through water-stop sleeves (new construction) or core-drilled openings (existing construction). The space between the conduit and sleeve/opening shall be sealed using segmented annular seals to prevent the entry of water or foreign materials. Segmented annular seals shall be Thunderline Incorporated; Type LS Series, Style C insulating type link seals for temperatures up to 250 degrees Fahrenheit, or approved equal. Water-stop sleeves shall be Thunderline Corporation, Century-Line or equal non-corroding thermoplastic sleeves with a molded in water stop.

3.7 CLEANING AND PAINTING OF ELECTRICAL WORK

- A. Prime, protective touch-up painting is included in the Work of this Division. Finish painting in equipment spaces, concealed locations, and other locations not exposed to the view of building occupants is included in the work of this Division. Finished painting in areas exposed to the view of building occupants is specified under Division 9.
- B. All equipment and materials furnished by the electrical subcontractor shall be delivered to the job with suitable factory finish.
- C. Electrical switchgear, disconnect switches, contactors, etc., with suitable factory-applied finishes shall not be repainted; except for aesthetic reasons where located in finished areas as directed by the Engineer and in a color selected by the Engineer. Where factory-applied finishes are damaged in transit, storage or installation; or before final acceptance, they shall be restored to factory-fresh condition by competent refinishers using the spray process.
- D. All equipment not finished at the factory shall be given a prime coat and then finish painted with two coats of enamel in color as directed by the Engineer. No nameplates on equipment shall be painted, and suitable protection shall be afforded such plates to prevent their being rendered illegible during the painting operations.
- E. The surfaces finish-painted shall first be prepared as follows:
 - 1. Galvanized and black steel surfaces shall first be painted with one coat of galvanized metal primer.
 - 2. Aluminum surfaces shall first be painted with one coat of zinc chromate primer.
- F. All ferrous metal surfaces without protective finish and not galvanized, in exposed and concealed areas including chases, under floor and above ceilings, shall be painted with two coats of zinc chromate primer as the construction progresses to protect against deterioration.
- G. All conduit exposed to view shall be finish painted as directed by the Engineer.
- H. Before painting, all surfaces to be painted shall be suitably prepared. This shall include removing all oil, rust, scale, dirt, and other foreign material. Surfaces shall be made smooth by grinding, filing, brushing, or other approved method. In the painting operations, the primer for metal surfaces shall be of the zinc dust type unless specified otherwise, and where finish painting is specified, it shall be painted using materials and colors selected and approved by the Engineer. Refer to front end specifications for additional requirements.

3.8 WARNING SIGNS AND OPERATIONAL TAGS

- A. Warning Signs: Provide warning signs where there is hazardous exposure associated with access to or operation of electrical facilities. Provide text of sufficient clarity and lettering of sufficient size to convey adequate information at each location; mount permanently in an appropriate and effective location. Comply with recognized industry standards for color and design.
- B. Operational Tags: Where needed for proper and adequate information on operation and maintenance of electrical systems, provide tags of plasticized card stock, either preprinted or hand printed. Tags shall convey the message, example: "DO NOT OPEN THIS SWITCH WHEN PUMP IS OPERATING".

3.9 EQUIPMENT HOUSEKEEPING PADS AND ANCHOR BOLTS

- A. Concrete pads for electrical equipment (Housekeeping Pads) will be furnished under this Division.
 - 1. All concrete used all be 6 sack mix with 3/8" maximum aggregate and 4000 psi compressive strength when tested after 28 days in accordance with ASTM 039-44, "Standard Method of Test for Compressive Strength of Concrete" and Idaho Transportation Department Class 40B. Refer to front end specifications for additional requirements.
 - 2. Use forms except where the earth is firm enough to support the concrete.
 - 3. Keep concrete wet at least 48 hours after forms are removed to ensure proper curing.
 - 4. Concrete shall be reinforced where noted on the Drawings.
 - 5. Concrete shall be carefully spaded during the pouring to eliminate all voids under and between the ducts and to prevent honeycombing of the exterior surfaces. Power driven tampers or agitators shall not be used unless specifically designed for the application.
 - 6. Concrete shall be poured in one continuous operation.
- B. Pads shall be nominal 3-1/2" high and shall extend a minimum of 3" beyond all equipment and supports while generally conforming to the shape of the equipment.
- C. Furnish galvanized anchor bolts with layout templates for installation in equipment pads. Bolts shall be of the size and quantity recommended by the manufacturer and where vibration isolators are used, they will be anchor bolted to the equipment pad.

END OF SECTION

SECTION 26 01 11 ELECTRICAL – DEMOLITION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. This section covers the removal of all electrical devices, equipment, lighting fixtures, conduit and wiring from the pump-house.
- B. Existing conditions shown on drawings have been prepared from previous construction documents and site visits. The Contractor shall visit the job site and verify the existing conditions to his satisfaction; allow adequate monies to cover additional demolition work required as a result of existing conditions.

1.2 DISPOSAL OF DEMOLITION PRODUCTS

- A. Non-hazardous materials and equipment removed during demolition shall be transported to disposal site at contractor's expense. Materials noted on drawings to be retained, shall be given to the owner upon removal.
- B. Hazardous materials and equipment shall be identified to the owner prior to removal by the contractor. Removal of the material shall be done by the contractor and cost of disposal shall be paid for by the owner.

1.3 RELATED SECTIONS

- 1. Section 26 00 02 – Basic Materials and Methods

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

Pay Item	Description	Pay Unit
26 00 01.01	Electrical (General)	LS

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 REMOVAL

- A. Remove all electrical devices, lighting fixtures, etc. noted on drawings. This includes removal of conduit and wire back to panel or nearest device/fixture supplying power.
- B. Coordinate with Owner for equipment to be salvaged.
- C. Remove conduit and wire back to circuit breaker in panelboard for existing circuits to be removed.
- D. Preserve and protect equipment indicated on the drawings for re-use or reconnection.

3.2 CLEAN-UP

- A. The premises shall be cleared of all accumulated materials, rubbish and debris at the end of each day. Any existing equipment or furniture shall be protected from dust and debris during demolition. Damage to existing equipment shall be the responsibility of the electrical contractor.

END OF SECTION

SECTION 26 01 26 ELECTRICAL TESTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Testing of Electrical Systems
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. Provide testing of electrical work installed under Division 26, as specified herein and in other Division 26 sections. Feeders and equipment shall not be placed in service until they have been checked and tested, as applicable.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 01 – Electrical Scope of Work
 - 3. Section 26 00 02 – Basic Materials and Methods
 - 4. Section 26 05 19 – Wire and Cable

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
- B. Testing Procedures: Submit four copies of all proposed testing procedures to the Engineer for review at least 10 working days prior to conducting any testing on the project.
- C. Reporting Forms: Submit four copies of the proposed forms to be used in recording testing data and results to the Engineer for review at least 10 working days prior to conducting any testing on the project.

- D. Test Data and Results: Submit four copies of complete data and certified test results for each test performed, including, but not limited to:
 - 1. Test performed,
 - 2. Test procedure,
 - 3. System and area tested,
 - 4. Date(s) and time(s) of test,
 - 5. Weather conditions,
 - 6. Test criteria,
 - 7. Test results,
 - 8. Additional pertinent information.
- E. Operational Certification: Submit four certified copies of an operational certification which documents that all equipment and systems have been fully tested to verify proper operation in accordance with the design shown in the Contract documents and manufacturer's recommendations.
- F. Certification: Certifications stating that submitted test data and results are true and correct shall be provided for all submittals under this section. Certification shall be executed by an authorized officer if the Contractor is a corporation, by a partner if the Contractor is a partnership, by the owner if the Contractor is a sole proprietorship or by the authorized representative if the Contractor is a joint venture.
- G. Calibration List: Submit four copies of a listing of testing devices to be used for the project to the Engineer for approval. Listing shall include documentation that the devices are properly calibrated.
- H. Test Log: The Contractor shall maintain a test log at the site to document the results of all successful and unsuccessful testing as it is performed. This log shall be available for review by the Engineer and a copy of the log shall be submitted to the Engineer prior to the Substantial Completion inspection. A space shall be provided on the test log signoff by the Engineer or Owners representative.

1.7 NOTICE

- A. Notify the Engineer in writing 10 working days prior to all scheduled testing to allow time for Engineer to schedule witnessing of testing, where elected by Engineer.

PART 2 PRODUCTS

2.1 TESTING MATERIALS

- A. General: Provide all materials and test equipment required for testing of specified electrical systems, including re-testing until acceptable results are obtained.
- B. Products: Tested products which fail to provide acceptable test results shall be repaired or replaced with suitable materials as required to obtain acceptable results.

PART 3 EXECUTION

3.1 TESTING

- A. General: Test shall be made, in the presence of the Engineer or his/her representative if requested, during the course of the construction as specified and as required by authorities having jurisdiction. Such test shall be conducted by this Division as part of the Work and shall include all personnel, material, and equipment required to perform test until satisfactory results are obtained. Any defects detected during testing shall be satisfactorily repaired or the equipment involved shall be replaced and the test re-executed.

ELECTRICAL TESTING

- B. Testing shall include but not be limited to all items in other Sections of this Division and the following:
 - 1. Feeders: Refer to Section 26 05 19.
 - 2. Ground Rods: Refer to Section 26 05 26.
- C. Test Reports (Attached)
 - 1. ELECTRICAL SYSTEM TEST REPORT - 600V CABLE
 - 2. ELECTRICAL GROUND ROD TEST REPORT

END OF SECTION

26 01 26 ELECTRICAL SYSTEM TEST REPORT - 600V CABLE

ELECTRICAL SYSTEM
DESCRIPTION DATA

SERVICE DESCRIPTION:

nominal voltage, phase to phase
 phase to neutral - single or three phase-
 number of conductors

SERVICE CONDUCTORS:

phase size and insulation type
 neutral size and insulation type
 ground size and insulation type

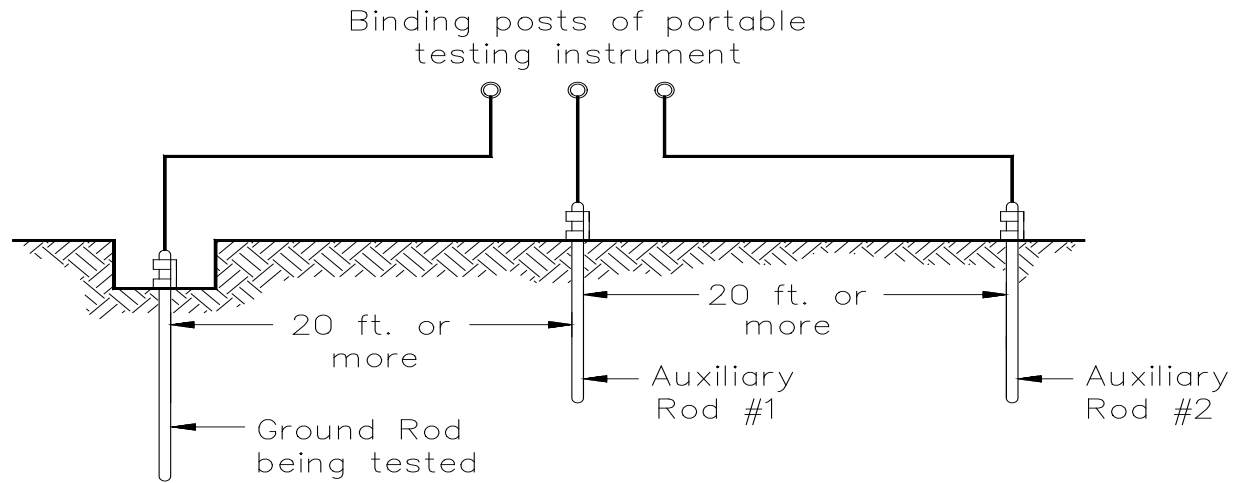
SERVICE DISCONNECT DESCRIPTION:

circuit breaker or disconnect switch
 size (amps)
 fuse (amps)

MEASURED CONDITIONS		DATA
Operating Load Voltage	Volts	Vab_____Vbc_____Vca_____
		Van_____Vbn_____Vcn_____
Operating Load Feeder Current	Amps	Ia_____Ib_____Ic_____
Conductor Insulation Resistance (record the indicated measurement for each of the following circuits:)	Megohms	a-b_____b-c_____c-a_____
	Megohms	a-g_____b-g_____c-g_____

1. CT Cabinet to Service Entrance Rate Disconnect
2. Service Entrance Rated Disconnect to ATS
3. ATS to MDP
4. Generator to ATS

26 01 26 - ELECTRICAL GROUND ROD TEST REPORT



GROUND ROD RESISTANCE TESTING

PROCEDURE:

To measure ground resistance, two additional temporary grounds, consisting of short rods 2 or 3 feet long, shall be driven in the ground at least 20 feet away from the rod being tested. A direct-reading ground resistance tester shall then be connected to the three ground rods by means of insulated leads. The battery operated ground resistance tester reads the resistance of the ground rod being tested directly in ohms. The ground rod location / designation and its measured ohm value shall be recorded in chart below.

GROUND ROD LOCATION / DESIGNATION	OHM VALUE
1.	*
2.	*
3.	*
COMPOSITE GROUND	*

*Ohm value of a single ground rod shall not exceed 25 Ohms. If additional ground rod(s) are added, the "composite" ground electrode shall have a maximum acceptable reading of 15 Ohms which shall be recorded in chart above.

SECTION 26 05 19 WIRE AND CABLE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Building wire
 - 2. Power and control cable
 - 3. Wire connectors
 - 4. Insulating tape
 - 5. Pulling lubricant
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installation of all wiring and connections used in the construction of this facility.
- B. All wiring shall be in raceways.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 01 26 – Electrical Testing
 - 2. Section 26 05 33 – Raceways
 - 3. Section 26 00 00 – Electrical General Provisions
 - 4. Section 26 00 02 – Basic Materials and Methods

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products shall be designed, manufactured, tested, and installed in compliance with the following standards:
 - 1. Insulated Cable Engineers Association:
 - a) S-58-679, Control Cable Conductor Identification
 - 2. National Electrical Manufacturers Association (NEMA):
 - a) ICS 4, Terminal Blocks for Industrial Use
 - 3. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):

- a) WC 70/ICEA S-95-658, Standard for Nonshielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy
- 4. National Fire Protection Association (NFPA):
 - a) 70, National Electrical Code (NEC)
 - b) 262, Method of Test for Fire and Smoke Characteristics of Wires and Cables.
- 5. Underwriters Laboratories, Inc. (UL):
 - a) 44, Thermoset-Insulated Wires and Cables
 - b) 83, Thermoplastic-Insulated Wires and Cables
 - c) 467, Grounding and Bonding Equipment
 - d) 486A, Wire Connectors and Soldering Lugs for use with Copper Conductors
 - e) 486C, Splicing Wire Connectors
 - f) 510, Insulating Tape
 - g) 1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 DEFINITIONS

- A. Cable: Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.
- B. Power Cable: Multi-conductor, insulated, with outer sheath containing building wire, AWG No. 8 and larger.
- C. Control Cable: Multi-conductor, insulated, with outer sheath containing building wires, AWG No. 16, AWG No. 14, AWG No. 12 or AWG No. 10.
- D. Building Wire: Single conductor, insulated, with or without outer jacket depending upon type.
- E. Instrumentation Cable: Multiple conductor, insulated, twisted or untwisted, with outer sheath. The following are specific types of instrumentation cables:
 - 1. Analog signal cable: Used for the transmission of low current (e.g., 4-20mA DC) or low voltage (e.g., 0-10 V DC) signals, using No. 16 AWG and smaller conductors. Commonly used types are defined in the following:
 - a) UTP: Unshielded twisted pair,
 - b) TSP: Twisted shielded pair, (or STP: Shielded twisted pair),

1.7 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

PART 2 PRODUCTS

2.1 CONDUCTORS

- A. Conductors shall be stranded copper. Sizes AWG No. 14, 12 and 10 for general purpose lighting and receptacle wiring and all wiring within circuit breaker panels may be solid. All other conductors shall be stranded. Insulation shall be THW-2, THWN-2, or THHN, (90°F) chosen to satisfy environmental conditions. Conductors used for power circuits shall not be smaller than AWG No. 12. Control conductors may be AWG No. 14.

2.2 CONNECTORS

- A. Ideal Industries "Wing Nut" or 3M Company "SCOTCHLOCK" pre-insulated connectors may be used for lighting and receptacle circuits for splices and taps in conductors AWG No. 10 and smaller. For AWG No. 8 and larger conductors, utilize Thomas & Betts compression connectors. Compress using recommended die and tools.
- B. For connections of wire to cord to removable equipment provided with integral cords (such as floats, transmitters, limit switches, aerators, submersible pump motors, etc.) provide junction box with terminals and spade/lug type terminations and coat with liquid insulation.
- C. For connections of wire to cord for submersible motors of all size wire use a water proof motor stub insulator: Thomas & Betts multi splice insulator MSLT112-4 or equal.

PART 3 EXECUTION

3.1 GENERAL

- A. Splicing of power and control wires or cables is not allowed. All wire transitions shall be done on terminals.
- B. Keep all conductors within the allowable tension limits during installation. Lubricants for wire pulling, if used, shall be approved for the insulation and raceway material. Observe cable manufacturer's and industry standard cable bending radius recommendations.
- C. Incoming cables in panels, AWG No. 6 and smaller, shall be bundled and laced at intervals not greater than 6 inches and neatly spread into trees and connected to their respective terminals.
- D. Sufficient slack shall be allowed in cables for alterations in terminal connections. Lacing shall be done with plastic cable ties using a tensioning tool designed for that purpose.
- E. Cables crossing hinges shall be made up into groups not exceeding 12 and shall be so arranged that they will be protected from chafing when the hinged member is moved.

3.2 WIRE AND CABLE TERMINATION

- A. Power conductors, AWG No. 8 and larger may be terminated directly in box-type lugs.
- B. For any power or control wire terminating on screw type terminals; provide spade tongue type terminations.
- C. Stranded control conductors may be directly terminated in box type terminals at control panels. Insulated terminals shall be used also on all stranded instrumentation wiring.
- D. No splices shall be used in power and/or control wiring. The wiring shall be continuous from point-to-point.
- E. Terminals and connectors shall be installed with the compression tool recommended by the terminal manufacturer. Solid wire shall not be lugged, but shall be terminated with a full ring eye of the wire under the binding-head screw or saddle of the terminal block.

3.3 COLOR CODING

- A. Wiring shall conform to the following color code.
- B. Insulation on phase conductor sizes AWG No. 10 and smaller shall be colored, No.8 AWG and larger may have black insulation with plastic tape of the appropriate color from the table below.

- C. Insulation on the grounded conductor (neutral) sizes AWG No. 8 and smaller shall be colored, AWG No. 6 and larger may have black insulation with plastic tape of white or gray in accordance with the table below.

Description	120/208/240V	277/480V	Control
Phase A (Left)	Black	Brown	--
Phase B (Center)	Red	Orange	--
Phase C (Right)	Blue	Yellow	--
Neutral	White	Gray	White
Ground	Green	Green	Green
120 VAC Control – Power	--	--	Red
120 VAC Control – Neutral	--	--	White
DC Control (+)	--	--	Blue
DC Control (-)	--	--	Gray
External Source	--	--	Yellow

- D. All control wiring in control panels or other enclosures that is powered from an external source and is not disconnected by the control panel disconnect shall be terminated at a disconnecting terminal block upon entering the enclosure. The color of the wire shall then be changed to yellow to identify it as being powered from an external source. Provide identification nameplate on exterior of enclosure to indicate sources of external power.
- E. All wiring in industrial machines and equipment shall be in accordance with NFPA 79. Notify Owner of any deficiencies noted during installation.

3.4 TERMINAL MARKING

- A. All terminals in instrument and relay compartments, motor control centers, control panels, instrument panels, field panels and control stations, as well as connections to mechanical equipment, shall have reference number and letter in accordance to the following:
1. h = Control power hot (usually 120V or 24V)
 2. n = neutral
 3. g = ground
 4. x = PLC input (number shall correspond to the program input number)
 5. y = PLC output (number shall correspond to the program output number)
 6. ax = PLC signal/analog input (number shall correspond to the program input number)
 7. ay = PLC signal/analog output (number shall correspond to the program output number)
 8. c = control (use if none of the above letters apply)
 9. p = power (usually 480V)
 10. s = signal (usually 4-20ma or 1-5V) (use if none of the above letters apply)
 11. B = DC + and -

3.5 CONDUCTOR SPACING

- A. Unless specifically shown otherwise on the drawings, in all areas maintain a minimum 2-inch separation between all conductors of different voltages. For parallel runs over 6 feet maintain the following minimum separation between conductors:
- | | |
|-------------------------------------|-----------|
| 1. Signal (12/24) VDC and 120 VAC | 6 inches |
| 2. Signal (12/24) VDC and 480 VAC | 12 inches |
| 3. 120 VAC control wire and 480 VAC | 2 inches |

3.6 WIRE BENDING RADIUS

- A. The radius of bends in all wire (conductors and cables) shall not be less than five (5) times the outside diameter of the wire. Any wire installed with bends less than five times the diameter which the Engineer deems has caused that insulation to be damaged shall be removed and new wire shall be installed.

3.7 VISUAL AND MECHANICAL INSPECTIONS

- A. Inspect exposed section for physical damage.
- B. Verify that cable is supplied and connected in accordance with specifications and one line diagram, and that phases are labeled correctly.

3.8 TESTING

- A. See Section 26 01 26 – Electrical Testing.

END OF SECTION

SECTION 26 05 26 GROUNDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Grounding and bonding
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installing all grounding and/or bonding conductors, connectors, ground rods and terminations as required to meet these specifications and to comply with Article 250 of the National Electric Code.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 05 19 – Wire and Cable
 - 2. Section 26 05 33 – Raceways
 - 3. Section 26 00 00 – Electrical General Provisions
 - 4. Section 26 00 02 – Basic Materials and Methods

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products shall be designed, manufactured, tested, and installed in compliance with the following standards:
- C. American National Standards Institute:
 - a) ANSI/IEEE Standard 142 Recommended Practice for Grounding of Industrial and Commercial Power Systems.
- 2. American Society for Testing and Materials (ASTM):
 - a) B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
- 3. National Fire Protection Association (NFPA):
 - a) 70, National Electrical Code (NEC).
- 4. Underwriters Laboratories, Inc. (UL):
 - a) 467, Electrical Grounding and Bonding Equipment.
- D. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
 - 2. See Section 26 01 26.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS**2.1 GENERAL**

- A. For each electrical grounding connection, provide a complete assembly of materials to construct a completely grounded electrical system.
- B. Raceways for grounding conductors shall be as specified in Section 26 05 19.
- C. Grounding cable, wire and connectors shall be as specified in Section 26 05 33.
- D. Grounding conductors and jumpers shall be connected to each other and to items to be grounded by means of approved type pressure connectors, clamps, and other suitable methods approved by the Engineer. No solder connections shall be made.

2.2 GROUNDING ELECTRODE CONDUCTORS

- A. All concrete encased or direct buried underground grounding electrode conductors shall be soft drawn stranded bare copper cable, conforming to ASTM B8.
 - 1. Sized as required by Table 250-66 of the NEC, except where a larger size conductor is shown on the Contract Drawings.
 - 2. Minimum conductor allowed: 2/0.

2.3 EQUIPMENT GROUNDING CONDUCTOR:

- A. Green copper conductor: Identical insulation to phase conductors.
- B. Sized as required by Table 250-122 of the NEC, except where a larger size conductor is shown on the Contract Drawings.

2.4 GROUND ROD BOXES

- A. Provide ground rod boxes for each ground rod. Ground rod boxes shall be concrete with traffic rate covers, Fogtite SP-1, or approved equal.

2.5 GROUNDING ELECTRODE RODS

- A. Grounding electrode rods used shall be a minimum of $\frac{3}{4}$ " diameter by 10' long, steel core and thick copper jacket (copperclad).
- B. Heavy uniform coating of electrolytic copper molecularly bonded to a rigid steel core. Corrosion resistant bond between the copper and steel. Hard drawn for a scar-resistant surface. UL listed.
 - 1. Blackburn
 - 2. Thomas & Betts

2.6 EXOTHERMIC WELD CONNECTIONS

- A. Use Cadweld or approved equal system of exothermic welding for welded grounding connections where shown on the Drawings or specified.
 - 1. Copper oxide reduction by aluminum process.
 - 2. Molds properly sized for each application.

2.7 GROUND CLAMPS

- A. Ground clamps for connecting grounding conductors to copper, brass, or lead pipes shall be made of copper. If pipes are of steel or iron, the ground clamps should be made of galvanized iron. These clamps shall be designed to provide permanent and positive pressure and to avoid mechanical injury to the pipe. Use exothermic welds for connecting ground wires to ground rods for all below grade counterpoise grounds, grids, and elsewhere where noted on the Drawings.
- B. High copper alloy content, compression type, noncorrosive.
- C. UL 467 listed.
 - 1. Burndy
 - 2. ILSCO
 - 3. Thomas & Betts

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Remove paint, rust, or other nonconducting material from contact surfaces before making ground connections.
- C. Where ground conductors pass through floor slabs or building walls, sleeves of intermediate metal conduit of the required size, shape, and length shall be provided, unless otherwise specified or shown on Drawings.

3.2 RACEWAY GROUNDING-CONDUIT

- A. All metallic conduit shall be electrically continuous.
- B. Provide grounding-type insulating bushings:
 - 1. For all equipment not supplied with a conduit hub.
 - 2. On ends of metallic conduit.
- C. Bond all conduit, at entrance and exit of equipment, to equipment ground bus or ground lug.
- D. Use manufactured conduit hubs at all panels.
- E. Provide bonding jumpers if conduit are installed in concentric knockouts.
- F. Make all metallic raceway fittings and grounding clamps tight to ensure equipment grounding system will operate continuously at ground potential to provide low impedance current path for proper operation of overcurrent devices during possible ground fault conditions.
- G. Provide bonding jumper from equipment ground lug to RGS conduit if flexible conduit is utilized for equipment connections.
- H. Provide bonding jumpers identical in conductor size to the largest ground conductor run within the conduit.

3.3 EQUIPMENT GROUNDING

- A. Ground all voltage levels at the supply transformer from the secondary neutral to the ground grid. Provide two separate grounding conductors.
- B. Consider control devices (switches, indicating lights, meters, starters, relays, etc.) mounted in control panels, or other metal enclosures to be adequately grounded, if the enclosure ground lug or ground bus is properly grounded.
- C. Do not splice grounding conductors.
- D. Run all equipment grounding conductors in conduit.
- E. Size all grounding conductors in accordance with Article 250 of the NEC unless larger size is shown on the Drawings.

3.4 STRUCTURAL GROUNDING

- A. Bond concrete foundation reinforcing steel to the ground at corners of the structure. Do not use exothermic welding if it will damage the structural integrity of the foundation.
- B. Make all reinforcing steel electrically continuous.

END OF SECTION

SECTION 26 05 33

RACEWAYS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Conduits
 - 2. Conduit fittings
 - 3. Conduit supports
 - 4. Wireways
 - 5. Outlet boxes
 - 6. Pull and junction boxes
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. Provide electrical raceway and fitting work as shown, scheduled, indicated, and specified.
- B. All electrical conductors shall be installed in conduit or surface metallic raceways. Conduit shall be as specified herein. In addition, empty conduit shall be installed for the voice/data system and for other systems as indicated on the Drawings and in the Specifications.
- C. The types of electrical raceways and fittings required for the project include, but are not limited to, the following.
 - 1. Rigid metallic conduit (RMC) and intermediate metal conduit (IMC),
 - 2. Flexible metal conduit,
 - 3. Liquidtight flexible metal conduit,
 - 4. Rigid nonmetallic conduit.

1.3 RELATED SECTIONS

- A. Section 26 05 26 – Grounding
- B. Section 26 00 00 – Electrical General Provisions
- C. Section 26 00 02 – Basic Materials and Methods

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products and installation shall comply with applicable sections of the following standards:
 - 1. American Iron and Steel Institute (AISI)

2. American National Standards Institute (ANSI):
 - a) C80.1, Rigid Steel Conduit - Zinc-Coated
 - b) C80.6, Intermediate Metal Conduit - Zinc-Coated
 3. ASTM International (ASTM):
 - a) A123, Standard Specification for Zinc Coating (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - b) A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - c) D1784, Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds
 - d) D2564, Solvent Cements for PVC Plastic Pipe, Tubing, and Fittings
 - e) E84, Standard Test Method for Surface Burning Characteristics of Building Materials
 - f) F512, Standard Specification for Smooth-Wall PVC Conduit and Fittings for Underground Installation
 4. National Electrical Manufacturers Association (NEMA):
 - a) FB 1, Fittings and Supports for Conduit and Cable Assemblies
 - b) OS 1, Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
 - c) RN 1, PVC Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
 - d) TC 3, PVC Fittings for Use with Rigid PVC Conduit and Tubing
 - e) TC 6, PVC Plastic Utilities Duct for Underground Installations
 - f) 250, Enclosures for Electrical Equipment (1000 Volts Maximum)
 5. Underwriters Laboratories, Inc. (UL):
 - a) 1, Flexible Metal Conduit
 - b) 6, Rigid Metal Conduit
 - c) 50, Standard for Safety Enclosures for Electrical Equipment
 - d) 360, Liquid-Tight Flexible Steel Conduit
 - e) 467, Grounding and Bonding Equipment
 - f) 514A, Standard for Safety Metallic Outlet Boxes
 - g) 514B, Fittings for Cable and Conduit
 - h) 651, Schedule 40 and 80 Rigid PVC Conduit
 - i) 870, Wireways, Auxiliary Gutters, and Associated Fittings
 - j) 1242, Intermediate Metal Conduit
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 1. See Section 26 00 00.
 2. Fabrication and/or layout drawings:
 - a) Proposed routing of raceways buried under concrete floors and embedded in concrete walls. Identify conduit by tag number of equipment served or by circuit schedule number.
 - b) Proposed routing and details of construction, including raceway and rebar, for raceways embedded in floor slabs, walls and columns. Identify conduit by tag number of equipment served or by circuit schedule number.
 - c) Proposed location and details of construction for openings in slabs and walls for raceway runs.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS**2.1 GENERAL**

- A. Provide metal conduit, tubing, and fittings of the type, grade, size, and weight (wall thickness) as shown and required for each service. Where type and grade are not indicated, provide proper selection determined by this Section to fulfill the wiring requirements and complying with the NEC for electrical raceways.
- B. For each electrical raceway system indicated, provide a complete assembly of conduit, tubing, or duct with fittings, including, but not necessarily limited to, connectors, nipples, couplings, expansion fittings, bushings, locknuts, other components and accessories as needed to form a complete system of the type indicated.
- C. Conduit fittings shall be designed and approved for the specific use intended. Conduit fittings, including flexible, shall have insulated throats or bushings. Rigid conduits shall have insulated bushings, except insulated throat grounding bushings shall be used on all conduits without ground conductors and where required by N.E.C. Article 250.

2.2 ACCEPTABLE MANUFACTURERS

- A. Provide products complying with these specifications and produced by one of the following:
 - 1. Rigid metallic conduits:
 - a) Allied Tube and Conduit Corporation
 - b) Triangle PWC Inc.
 - c) Western Tube and Conduit Corporation
 - d) Wheatland Tube Company
 - e) LTV Steel Company
 - 2. Flexible Metal and Liquidtight Flexible Metal:
 - a) AFC
 - b) Anaconda Metal Hose
 - c) Electri-Flex Company
 - d) Flexi-Guard, Inc.
 - e) Triangle PWC, Inc.
 - f) Wheatland
 - 3. Rigid Nonmetallic Conduit and Innerduct:
 - a) Carlon
 - b) Cantex
 - c) Triangle PWC, Inc.
 - 4. Raceway Fittings:
 - a) Appleton Electric Company
 - b) Cantex (PVC)
 - c) Carlon (PVC)
 - d) Crouse Hinds
 - e) Efcor Division
 - f) ETP-Uni-Couple
 - g) O.Z. Gedney Company
 - h) Racor, Inc.

- i) Republic Steel Corporation
- j) Steel City
- k) Thomas and Betts
- 5. Support systems:
 - a) Unistrut Building Systems
 - b) B-Line Systems Inc.
 - c) Kindorf
 - d) Minerallac Fastening Systems
 - e) Caddy
- 6. Outlet, pull and junction boxes:
 - a) Appleton Electric Co.
 - b) Crouse-Hinds
 - c) Killark
 - d) O-Z/Gedney
 - e) Steel City
 - f) Raco
 - g) Bell
 - h) Hoffman Engineering Co.
 - i) Wiegmann
 - j) B-Line Circle AW
 - k) Adalet

2.3 RIGID METALLIC CONDUITS

- A. Rigid Galvanized Steel Conduit (RGS):
 - 1. Mild steel with continuous welded seam,
 - 2. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing; threads galvanized after cutting,
 - 3. Internal Coating: Baked lacquer, varnish or enamel for a smooth surface.
 - 4. Standards: ANSI C80.1, UL 6.
- B. Intermediate Metal Conduit (IMC):
 - 1. Mild steel with continuous welded seam,
 - 2. Metallic Zinc Applied by Hot-Dip Galvanizing or Electro-Galvanizing; threads galvanized after cutting,
 - 3. Internal Coating: Baked lacquer, varnish or enamel for a smooth surface.
 - 4. Standards: ANSI C80.6, UL 1242.

2.4 RIGID NON-METALLIC CONDUIT

- A. Schedules 40 (PVC-40) and 80 (PVC-80):
 - 1. Polyvinyl-chloride (PVC) plastic compound which meets, as a minimum, ASTM D1784 cell classification PVC 12233-A, B, or C,
 - 2. Rated for direct sunlight exposure,
 - 3. Fire retardant and low smoke emission,
 - 4. Shall be suitable for use with 90 Deg C wire and shall be marked "maximum 90 Deg C".
 - 5. Standards: ASTM D1784, NEMA TC 2, UL 651.

2.5 FLEXIBLE CONDUIT

- A. Flexible Galvanized Steel Conduit (FLEX):
 - 1. Formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
 - 2. Standard: UL 1.
- B. PVC-Coated Flexible Galvanized Steel (liquid-tight) Conduit (FLEX-LT):
 - 1. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked,
 - 2. Extruded PVC outer jacket positively locked to the steel core,
 - 3. Liquid- and vapor-tight.
 - 4. Standard: UL 360.

2.6 WIREWAY

- A. General:
 - 1. Suitable for lay-in conductors,
 - 2. Designed for continuous grounding.
 - 3. Covers:
 - a) Hinged or removable in accessible areas,
 - b) Non-removable when passing through partitions.
 - 4. Finish: Rust inhibiting primer and manufacturers standard paint inside and out except for stainless steel type.
 - 5. Standards: UL 870, NEMA 250.
- B. Rain-tight (NEMA 3R) Wiring Trough:
 - 1. 14 or 16 GA galvanized steel without knockouts.
 - 2. Cover: Non-gasketed and held in place by captive screws.
- C. Water-tight (NEMA 4X rated) Wireway:
 - 1. 14 GA Type 304 or 316 stainless steel bodies and covers without knockouts and 10 GA stainless steel flanges.
 - 2. Cover: Fully gasketed and held in place with captive clamp type latches.
 - 3. Flanges: Fully gasketed and bolted.
- D. Dusttight (NEMA 12 rated) Wireway:
 - 1. 14 GA steel bodies and covers without knockouts and 10 GA steel flanges.
 - 2. Cover: Fully gasketed and held in place with captive clamp type latches.
 - 3. Flanges: Fully gasketed and bolted.

2.7 CONDUIT FITTINGS AND ACCESSORIES

- A. Fittings for Use with RGS:
 - 1. Locknuts:
 - a) Threaded steel or malleable iron,
 - b) Gasketed or non-gasketed,
 - c) Grounding or non-grounding type.
 - 2. Bushings:
 - a) Threaded, insulated metallic,
 - b) Grounding or non-grounding type.
 - 3. Hubs: Threaded, insulated and gasketed, metallic, for rain-tight connection.

4. Couplings:
 - a) Threaded, straight-type: Same material and finish as the conduit with which they are used on.
 - b) Threadless type: Gland compression or self-threading type, concrete tight.
5. Unions:
 - a) Threaded galvanized steel or zinc plated malleable iron.
6. Conduit bodies:
 - a) Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs,
 - b) Standard and mogul size.
 - c) Cover: Clip-on type with stainless steel screws. Gasketed or non-gasketed galvanized steel, zinc plated cast iron or cast copper free aluminum.
7. Service entrance head:
 - a) Malleable iron, galvanized steel or copper free aluminum,
 - b) Insulated knockout cover for use with a variety of sizes and number of conductors.
8. Expansion couplings:
 - a) 2 IN nominal straight-line conduit movement in either direction.
 - b) Galvanized steel with insulated bushing.
 - c) Gasketed for wet locations.
 - d) Internally or externally grounded.
- B. Fittings for Use with FLEX:
 1. Connector:
 - a) Zinc plated malleable iron,
 - b) Squeeze or clamp-type.
 2. Standard: UL 514B.
- C. Fittings for Use with FLEX-LT:
 1. Connector:
 - a) Straight or angle type
 - b) Metal construction, insulated and gasketed
 - c) Composed of locknut, grounding ferrule and gland compression nut
 - d) Liquid-tight.
 2. Standard: UL 467, 514B.
- D. Fittings for Use with Rigid Non-Metallic Conduit:
 1. Coupling and adapters shall be of the same material, thickness, and construction as the conduits with which they are used.
 2. Standards: UL 651, NEMA TC 3.
 3. Solvent cement for welding fittings shall be supplied by the same manufacturer as the conduit and fittings.
 - a) Standard: ASTM D2564.
- E. Weather and Corrosion Protection Tape:
 1. PVC based tape, 10 mils thick,
 2. Protection against moisture, acids, alkalis, salts and sewage and suitable for direct burial,
 3. Used with appropriate pipe primer.

2.8 OUTLET BOXES

- A. Metallic Outlet Boxes:
 1. Hot-dip galvanized steel,

2. Conduit knockouts and grounding pigtail,
 3. Accessories:
 - a) Flat blank cover plates,
 - b) Barriers,
 - c) Extension, plaster, or tile rings,
 - d) Box supporting brackets in stud walls,
 - e) Adjustable bar hangers.
 4. Standards: NEMA OS 1, UL 514A.
- B. Cast Outlet Boxes:
1. Zinc plated cast iron or die-cast copper free aluminum with manufacturer's standard finish,
 2. Threaded hubs and grounding screw.
 3. Styles:
 - a) "FS" or "FD",
 - b) "Bell",
 4. Accessories: 40 mil PVC exterior coating and 2 mil urethane interior coating.
 5. Standards: UL 514A and 886.

2.9 PULL AND JUNCTION BOXES

- A. NEMA 4 Rated:
1. Body and cover: 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out,
 2. Seams continuously welded and ground smooth,
 3. No knockouts,
 4. External mounting flanges,
 5. Hinged or non-hinged cover held closed with stainless steel screws and clamps,
 6. Cover with oil resistant gasket.
- B. NEMA 4X Rated (metallic):
1. Body and cover: 14 GA Type 304 or 316 stainless steel,
 2. Seams continuously welded and ground smooth,
 3. No knockouts,
 4. External mounting flanges,
 5. Hinged door and stainless steel screws and clamps,
 6. Door with oil-resistant gasket.
- C. NEMA 4X Rated (non-metallic):
1. Body and cover: Ultraviolet light protected fiberglass-reinforced polyester boxes,
 2. No knockouts,
 3. External mounting flanges,
 4. Hinged door with quick release latches and padlocking hasp,
 5. Door with oil resistant gasket.
- D. NEMA 12 Rated:
1. Body and cover: 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out,
 2. Seams continuously welded and ground smooth,
 3. No knockouts,

4. External mounting flanges,
5. Non-hinged cover held closed with captivated cover screws threaded into sealed wells or hinged cover held closed with stainless steel screws and clamps,
6. Flat door with oil resistant gasket.

2.10 SUPPORT SYSTEMS

- A. Multi-conduit surface or trapeze type support and pull or junction box supports:
 1. Material requirements.
 - a) Galvanized steel: ASTM A123 or ASTM A153.
 - b) Stainless steel: AISI Type 316.
 - c) PVC coat galvanized steel: ASTM A123 or ASTM A153 and 20 mil PVC coating.
- B. Single conduit and outlet box support fasteners:
 1. Material requirements:
 - a) Zinc plated steel
 - b) Stainless steel
 - c) Malleable iron
 - d) PVC coat malleable iron or steel: 20 mil PVC coating
 - e) Steel protected with zinc phosphate and oil finish.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General:
 1. Install electrical raceways and fittings as shown in accordance with the manufacturer's written instructions, the applicable requirements of the NEC, and in accordance with recognized industry practices to ensure that products serve the intended function. Complete electrical raceway installation before starting the installation of wire and cable.
- B. Conduit Size:
 1. Minimum conduit size for power wiring shall be $\frac{3}{4}$ ", except that 3/8" flexible metallic conduit may be used for fixture whips. Minimum conduit size for control wiring shall be $\frac{3}{4}$ ". Minimum conduit size for voice/data wiring shall be 1".
- C. Rigid Steel and Intermediate Metal Conduit:
 1. Use rigid steel or intermediate metal conduit to run all electrical raceway systems where exposed to weather; in damp or wet locations; where subject to physical damage; and where cast in concrete walls or floors slabs which have waterproof membranes and where cast in masonry walls. Use rigid steel or IMC conduit for all exposed feeders. IMC conduit shall not be used in sizes larger than 4". Use threaded type couplings and fittings. Split type couplings and fittings are not acceptable. The interior of all buildings shall be considered a damp or wet area.
- D. Liquidtight Flexible Metal:
 1. Use liquidtight flexible metal conduit and fittings for all motor connections, and for other electrical equipment connections where subject to movement and vibration and when subject to one or more of the following conditions: (1) exterior locations, moist or humid atmosphere where condensation can be expected to accumulate; (2) corrosive atmosphere, subject to water spray; subject to dripping oil, grease or water. Install internal ground wire in flexible conduit with grounding bushings. Maximum length shall be 6'0" and minimum length shall be 3'0".

E. Rigid Nonmetallic:

1. Use PVC conduit directly buried in earth, concrete encased, cast in concrete slabs, and where subject to corrosive environment. PVC may be used for all raceways on the interior of the building, which do not contain 480 volt conductors or motor feeders. Use Schedule 40 where direct buried and Schedule 80 where exposed, with size adjusted to have same fill area as if Schedule 40 were used.

3.2 INTERIOR CONDUIT SYSTEM:

- A. Ground all metallic conduit in accordance with the requirements of the latest edition of the NEC.
- B. Install all conduit as a complete system without conductors, continuous from outlet to outlet and from fitting to fitting. Make up threaded joints of conduit carefully in such a manner as to ensure a tight joint. Field-cut threads shall be cold-galvanized after cutting. The entire conduit system shall be secured at all joints and boxes in such a manner that each system shall be electrically continuous throughout. Fasten the entire conduit system securely into position. A run of conduit between outlet and outlet, between fitting and fitting, or between outlet and fitting shall not contain more than the equivalent of four quarter bends, including those bends located immediately at the outlet or fitting. Install approved expansion fittings in all conduit runs as specified in paragraph 3.2.P.
- C. Ream all ends of conduit properly to remove rough edges. Whenever a rigid steel or IMC conduit enters a switchboard, panelboard, enclosure, or box it shall be securely fastened by the use of a locknut inside and outside and an approved insulating bushing shall be installed. Insulated grounding bushings shall be installed on all conduits without ground conductors and where required by NEC Article 250. Lay out and install all conduit systems as to avoid all other services or systems, the proximity of which may prove injurious to the conduit or the wires or conductors which the conduit confines.
- D. Conceal conduit systems in finished areas. Concealed metallic conduits shall be run in a direct manner, basically parallel to, and at right angles with the lines of the building, and with as long a bend as possible. Conduit may be exposed in mechanical rooms and where otherwise shown or indicated. On exposed systems, run the conduit parallel or perpendicular to the structural features of the building and rigidly support with malleable iron conduit clamps at intervals as required by NEC, or on conduit racks, neatly racked and bent in a smooth radius at corners insofar as practicable. All bends shall be field-made using an approved bending machine designed for the purpose, or using standard ells having a radius not less than that required by the National Electrical Code, and with approved fittings or connectors. All bends shall be free from dents or flattening.
- E. All conduit shall be run without traps. Where traps are unavoidable, a junction or pull box shall be placed at the low point. Metallic conduit systems, which are exposed to the weather or water, shall be made watertight. As soon as conduit has been permanently installed in place, conduit shall be capped or plugged with standard accessories. All metallic conduit shall be swabbed after plaster and drywall is finished and dry.
- F. Support exposed raceway or grouped concealed raceways on galvanized channel using compatible galvanized fittings (bolt, beam clamps, and similar items) and galvanized threaded rod pendants to secure raceway to channel and channel to structure. Support single conduit runs using a properly sized galvanized conduit hanger with galvanized closure bolt/nut and threaded rod. Support-spacing shall not exceed 10' apart for all IMC conduit and rigid conduit 2" and smaller, and 15' apart for rigid conduit 2-1/2" and larger and within 3' from boxes and changes in direction. Support flexible conduit on maximum 4-1/2' centers and within one foot (1') of boxes. All raceway support system materials shall be galvanized and manufactured by Kindorf, Unistrut, Superstrut, Caddy, or Spring Steel Fasteners, Inc. Provide chrome or nickel-plated escutcheon plates on all conduit passing through walls and ceilings in finished areas.

- G. Make all joints and connections to ensure mechanical strength and electrical continuity. PVC conduit shall be joined, or have fittings attached, by using a fusing (solvent) compound recommended by and applied as instructed by, the conduit manufacturer.
- H. Run conduit to avoid proximity to heat producing equipment, piping and flues, keeping a minimum of 8" clear. Whenever possible, install horizontal raceway runs above water piping. Unless shown otherwise, do not install conduit horizontally in concrete slabs without written approval. All roof penetrations shall be made in adequate time to allow the roofer to make proper flashings.
- I. Carefully review electrical Drawings and place boxes and conduit to avoid conflicts with structural members or other general construction.
- J. Conduit larger than 3/4" shall not be embedded in structural slabs without prior written permission from the Engineer. Conduits embedded in structural slabs shall be installed in the middle of the slab below the top and above the bottom reinforcing steel. Maintain a minimum concrete coverage of one (1") except where penetration is made.
- K. Furnish sleeves for timely placing in construction for all conduit passing through concrete walls, partitions, beams, floors, and roofs while same are under construction.
- L. All conduit passing through the housing on connected equipment, shall pass through a cleanly cut hole protected with an approved grommet.
- M. Metallic conduit installed below grade shall have its entire length painted with two coats of protective finish unless encased in concrete. Each coat shall consist of 5mils of PPG "Coat Cat Epoxy Coating" applied in accordance with the manufacturer's recommendations. The entire length of metallic conduit, including fittings, shall be protected to a point 6" above finished grade (or concrete slab).
- N. Coordinate locations of raceways in fire rated partitions so as not to affect the fire rating of the partition. Notify the Engineer in writing where additional construction is required to maintain the partition fire rating.
- O. Install expansion fittings in all conduit as follows:
 - 1. All conduits crossing building expansion joints; unless some other form of thermal expansion compensation is approved in writing by the Engineer,
 - 2. All conduit straight runs in excess of 200', and 400' centers in all longer conduit runs.
 - 3. Conduit entering environmental rooms,
 - 4. Locations subject to thermal expansion and as required by NEC.
 - 5. Unless expansion fitting has an integral bonding braid, an external braid approved for the purpose shall be installed around the fitting.

3.3 EXTERIOR CONDUIT SYSTEMS

- A. Exterior conduit systems shall meet all of the general installation requirements for interior conduit systems.
- B. All exterior conduit systems shall be completely watertight. All hangers, fasteners, and supports used with exterior conduit systems shall be stainless steel.
- C. Install underground conduits with sealing glands equal to OZ Type "FSK" or approved equal exterior to entrance and OZ Type "CSB" or approved equal interior to entrance at points where conduits enter the building, to prevent water seepage.

- D. Install conduits outside the building lines a minimum of 30" below grade, unless noted otherwise on the Drawing. Maintain 12" of earth or 2" of concrete separation between electrical conduits and other services or utilities below grade. Maintain 10'0" separation between parallel underground power and voice/data conduits. Where power and voice/data conduits cross below grade, crossing shall be at right angles (90 degrees) with a minimum 2'0" vertical separation.

3.4 EMPTY CONDUIT RACEWAY SYSTEMS

- A. General: Empty conduit in which wire is to be installed by others shall have pull wires installed. The pull wire shall be No. 14 AWG zinc-coated steel, or plastic having not less than 200 pounds tensile strength. Not less than 12" of slack shall be left at each end of the pull wire.

3.5 IDENTIFICATION

- A. See Section 26 00 02 for applicable labeling requirements.
- B. Conduit Markers
 - 1. All conduits scheduled shall be identified at each end with a permanent metallic tag. Conduits shall be labeled as identified on the Conduit and Wire Schedule. Attach tags to cables or conduit by using a nylon cable tie. Identify concealed conduits entering equipment, panelboards, or enclosures by attaching marker tag to cables as they exit the conduit. Embedded conduits and conduits routed underground shall be labeled also at all points of entry and exit including handholes and buildings, by attaching a marker tag to the exterior of the conduit.

3.6 FIELD INSPECTION

- A. Prior to backfilling and encasing conduits installed underground or covering conduits concealed in walls and ceilings, all raceways shall be inspected by the Engineer. Engineer shall be contacted a minimum of one week in advance for field inspection of concealed raceway. No raceway shall be concealed or backfilled until inspected by the Engineer.

END OF SECTION

SECTION 26 22 00 LOW VOLTAGE TRANSFORMERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Step-down dry type transformers.
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installing dry type, step-down transformers for supplying 120VAC building power requirements from the 480VAC primary system.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical: General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods
 - 3. Section 26 24 16 – Panelboards

1.4 MEASUREMENT AND PAYMENT

- A. Step-down Transformers: Payment for the work associated with this section shall be paid by the lump sum. Payment shall include all labor, equipment, transformers, and other incidentals to necessary to complete the work for this item which is not specifically included in other pay items.
- B. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 EQUIPMENT SIZE

- A. Electrical equipment shall fit in the space provided on the plan drawings or as specified. Equipment heights shall not exceed those shown or specified. Larger equipment shall not be considered acceptable. Equipment that is larger than specified shall not be considered equivalent.

1.7 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
- B. Catalog data showing material information and conformance with specifications.
- C. Manufacturer name and address.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS

2.1 TYPE

- A. Dry type transformers shall be constructed of heavy gauge sheet steel. Coil and terminal chamber shall be constructed with guarded opening for ventilation and convection cooling. Primary coil shall be delta connected, secondary coil wye connected.

2.2 WINDINGS

- A. General purpose transformers
 - 1. Separate primary and secondary windings shall have Class H insulation and shall be rated for continuous operation at rated kVA with temperature rise of not over 150 degrees C above a 40 degree C ambient, with a maximum hot spot temperature of 220 degrees C. Windings, core and coil assembly shall be treated and built to resist the effects of dirt and moisture.

2.3 PRIMARY TAPS

- A. General purpose transformers
 - 1. Unless otherwise noted or shown, transformers shall be provided with a minimum of four full capacity taps, minimum of two 2-1/2 percent above and two 2-1/2 percent below normal (rated) primary voltage.

2.4 CAPACITY

- A. Transformers furnished shall have a continuous rating of not less than the size noted on the drawings.
- B. The secondary neutral terminal on three-phase K-rated transformers shall be sized for 200% of secondary phase current.

2.5 CONNECTIONS

- A. Provisions for external connections shall be made by means of a terminal board employing lugs compatible for the external conductors to be installed.

2.6 GROUNDING

- A. The core of the transformer shall be grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable NEMA, IEEE ANSI standards.

2.7 NOISE LEVEL

- A. ASA rated quiet type.

2.8 EQUIPMENT

- A. Acceptable manufacturers for dry type transformers shall be:
 - 1. General Electric,
 - 2. Eaton
 - 3. Square D,
 - 4. Heavy Duty
 - 5. and approved equals.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Transformers shall include internal "rubber-in-shear" isolation mounts selected per manufacturer's recommendations or shall be installed with "KORFUND" or equal external vibration isolators. Wall mounting shall be allowed on masonry. Mounting hardware shall be per manufacturer's instructions. Transformers with enclosures designed for floor mounting where suspended from above shall be suspended on a trapeze constructed of a minimum of two horizontal structural channels hung from threaded rod attached to structural slab with inserts. Channel rod and inserts shall be sized for not less than 400% load safety factor. Transformer raceway connections shall be flexible metal conduit as specified herein-before for equipment subject to vibration.

3.2 CONNECTION

- A. Transformers shall be considered "grounded neutral separately derived systems" and neutral shall be grounded accordingly to the building ground grid utilizing a direct connection.

3.3 IDENTIFICATION

- A. The transformer shall be identified with phenolic nameplates. Nameplates shall be white background with 1/4" black letters, secured in place with screws.
- B. The nameplate shall state the following:

EXAMPLE

Rating: 480V-120/208, 3Ø

Primary Source: Primary Breaker at Panel P1

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Power distribution panelboards
 - 2. Surge protection components
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installing all panelboards and enclosure work, including cabinets, as shown, scheduled, indicated, and specified.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical: General Provisions
 - 2. Section 26 01 26 – Electrical Testing
 - 3. Section 26 00 02 – Basic Materials and Methods
 - 4. Section 26 05 19 – Wire and Cable
 - 5. Section 26 05 33 – Raceways

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products shall be designed, manufactured, tested, and installed in compliance with the following standards:
 - 1. National Electrical Manufacturers Association (NEMA):
 - a) AB 1, Molded Case Circuit Breakers.
 - b) PB 1, Panelboards.
 - c) PB 1.1, Instruction for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
 - 2. Underwriters Laboratories, Inc. (UL):
 - a) UL 1449, Standard for Safety, Transient Voltage Surge Suppressors.
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.
- B. Deliver panelboards in factory-fabricated, water-resistant wrapping.
- C. Handle panelboards carefully to avoid damage to material component enclosure, and finish.
- D. Store panelboards in a clean, dry space and protect from the weather.

PART 2 PRODUCTS

2.1 GENERAL

- A. Panelboards shall be dead front safety type equipped with molded case circuit breakers as shown and scheduled.

2.2 ACCEPTABLE MANUFACTURERS

- A. Provide products complying with these specifications and produced by one of the following:
 - 1. General Electric Company
 - 2. Square D Company
 - 3. Siemens

2.3 MATERIALS AND COMPONENTS

- A. Busing Assembly
 - 1. Panelboard busing shall be tin-plated 55% conductivity aluminum, plated by the latest Alstan process. Bus structure and mains shall have ratings as shown and scheduled and shall be phase sequence construction. Such ratings shall be established by heat rise tests with maximum hot spot temperature on any connector or busbar not to exceed 65 degree Celsius rise above 40 degrees Celsius ambient. Heat rise test shall be conducted in accordance with UL 67. The use of conductor dimensions will not be accepted instead of actual heat tests. All bus joints shall be bolted with medium carbon steel, zinc, or cadmium plated hardware equipped with lock washers and torqued to the manufacturer's recommended settings (usually ASTM standards). All bolted connections shall have Belleville washers. Furnish a bare un-insulated, or an isolated, where noted, ground bus inside each panelboard enclosure and elsewhere where noted on the Drawings. Furnish an isolated full size neutral bus, insulated where noted, in all panels where the neutral is present.
- B. Molded Case Circuit Breakers
 - 1. Circuit breakers shall be of the molded case; thermal magnetic type equipped with individually insulated, braced and protected connectors. The front faces of all circuit breakers shall be flush with each other. Tripped indication shall be clearly shown by the breaker handle taking a position between "ON" and "OFF". Provisions for additional breakers shall be such that no additional connectors will be required to add breakers. Circuit breakers shall be such that no additional connectors will be required to add breakers. Circuit breakers shall bolt on the main bus. All 2 and 3-pole breakers shall have common trips.

2. All single-pole circuit breakers shall be either ambient or case-compensated (calibrated 40 degrees Celsius) thermal-magnetic type breakers, with inverse time delay on overloads and instantaneous magnetic trip on short circuits. (Twin, tandem, and half-size single-pole breakers. Breaker tie handles are not acceptable). All multiple breakers shall be common trip, thermal-magnetic type and calibrated 40 degrees Celsius.
3. The breakers shall employ quick-make, toggle mechanism for manual operation, as well as automatic operation. The breakers shall have provisions for manually testing the tripping mechanism with the breaker removed from the panel. Automatic tripping shall be indicated by the breaker handle assuming a clearly distinctive position from the manual "on" and "off" positions.
4. Circuit breakers used as switches in fluorescent lighting circuits shall be approved for such switching duty and shall be marked "SWD".
5. Provide panelboard circuit breakers with interrupting capacity as shown, but in no case less than the following symmetrical amperes RMS:

Voltage (volts)

120/240

Interrupting Capacity

10,000 AIC

6. Current limiting thermal-magnetic circuit breakers suitable for interrupting currents up to 200,000 amperes shall be provided where scheduled or specified. Current limiting breakers shall have a non-fusible type, independently operating limiter section in series with each pole, which shall automatically reset after circuit interruption. Current limiting circuit breakers shall be equal to Square D Company "I-LIMITER". Standard thermal-magnetic circuit breakers capable of operation and interrupting currents up to 200,000 amperes may be acceptable with the Engineer's written approval.
7. Ground fault interrupter (GFI) circuit breakers, where shown, shall be 5 ma ground fault trip and shall include a TEST button.

C. Lugs

1. Panelboards and distribution panels shall be provided with main lugs, main over-current devices, and feed-thru lugs as noted on the Drawings. Lugs shall be suitable for use with the cable size and material installed. Panel wire-ways shall provide adequate space for wiring to all lugs.

D. Spaces

1. Where space for future breakers is shown, panelboards enclosure shall include removable blank panels or knockouts to allow installation of future breakers and panelboard busing shall be complete, including all required connectors.

E. Integrated Equipment Rating

1. Each panelboard, as a complete unit, shall have a short-circuit rating equal to the interrupting rating of the weakest over-current devices, and feed-thru lugs as noted on the Drawings, where applicable. Such ratings shall have been established by tests on similar panelboards with the circuit breakers installed.

F. Panelboard Enclosures

1. Provide galvanized steel enclosures, NEMA Type 12 for indoor locations, NEMA 3R for outdoor locations, minimum 16 gauge thickness, minimum 20" width, with multiple knockouts, unless shown otherwise. Provide doors with concealed hinges, spring-loaded doors pulls, flush lock and key, all panelboard enclosures keyed alike, equipped with interior circuit directory frame, card and clear plastic covering for all lighting and appliance panelboards. Door and trim shall be painted with manufacturers standard gray enamel finish over a rust inhibitor. Trim on flush mounted panels shall have concealed fasteners. Enclosure shall be for recessed or surface mounting as shown. Enclosures

shall be fabricated by the same manufacturer as panelboards to be enclosed. Multi-section panelboards shall have separate covers and trims. Multi-section panelboards shall be installed side by side with covers butted together.

2.4 TRANSIENT VOLTAGE SURGE SUPPRESSION (OR SPDS)

- A. Panelboards shall be provided with a transient voltage surge suppression (or surge protective device) system for the protection of all AC electrical circuits from the effects of lightning-induced currents, substation switching transients, and internally generated transients resulting from inductive and/or capacitive load switching.
- B. Suppressors shall be listed in accordance with UL 1449, Standard for Safety, Transient Voltage Surge Suppressors.
- C. Suppressors shall be mounted internal to and integral with the panelboard.
- D. Suppressors shall be provided with dry contacts output to monitor alarm status.
- E. Suppressor shall be provided with surge counter which displays the combined total number of transient voltage surges detected.
- F. Visible indication of proper suppressor connection and operation shall be provided and shall be visible without removal of the panel deadfront.
- G. The mounting position of the suppressor shall permit a straight and short lead length connection between the suppressor and the point of connection to the main bus.
- H. Suppressors shall meet or exceed the following criteria:
 - 1. Peak Surge Current Rating Per Phase (based on 8/20us Waveform): 120,000 Amps.
 - 2. Maximum Clamping Voltage Rating (Tested to ANSI/IEEE C62.41-1980 Cat. B, 6000V, 1.2/50us, 3000A 8/20 us Waveforms): 600 Volt
 - 3. Transient Joule Rating/Phase (Based on 10/1000 μ s Waveforms): 920 Joules
- I. Units may be manufactured using Metal Oxide Varistors (MOV's) as primary suppression component, or as a "hybrid" system using MOVs, Gas Tubes, Inductors, capacitors, and/or diodes. However, units relying solely on gas tubes or diodes are not acceptable.
- J. Suppressors shall be of solid-state componentry and shall operate bidirectionally.
- K. Suppressors shall be of Square D IMA series, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION OF PANELBOARDS AND ENCLOSURES

- A. Install panelboards and enclosures as shown; including electrical connections, in accordance with the manufacturer's written instructions, the applicable requirements of NEC, the NECAs "Standard of Installation", and recognized industry practices to ensure that products serve the intended function.
- B. Coordinate installation of panelboards and enclosures with cable and raceways installation work. Verify that wall thickness is adequate where recessed panels are shown.
- C. Anchor enclosures firmly to walls and structural surfaces ensuring that they are permanently and mechanically secured.

3.2 TESTING

- A. Prior to energization, check for continuity of circuits and for short circuits.

3.3 IDENTIFICATION

- A. Refer to Section 26 00 02 for applicable labeling requirements and nameplates.
- B. Circuit Index Card
 - 1. Type the enclosure's circuit directory card upon completion of work.
 - 2. Refer to Section 26 00 02 for additional requirements.

END OF SECTION

SECTION 26 27 13

SERVICE AND METERING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Service and metering
- B. Temporary construction power

1.2 DESCRIPTION OF WORK

- A. Work consists of upgrading and existing 480V delta service to a new 480/277 VAC, 600 Amp, grounded wye service and service entrance equipment as indicated on the drawings.

1.3 RELATED SECTIONS

- A. Section 26 00 00 – Electrical General Provisions
- B. Section 26 01 26 – Electrical Testing
- C. Section 26 00 02 – Basic Materials and Methods

1.4 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Service equipment shall be listed and labeled by UL as "suitable for use as service equipment".
- C. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- D. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.5 QUALITY ASSURANCE

- A. Comply with all serving utility company standards and requirements.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

1.7 SCHEDULING WORK WITH THE UTILITY COMPANY AND OWNER

- A. The Contractor shall be fully and completely responsible for all scheduling and coordination with the utility company and Owner. The Contractor shall coordinate and schedule power outages, power outage duration and power service for operation and construction, and power service as may be required by the facility prior to final acceptance of the project.
- B. The Contractor shall make all necessary applications for service with the Utility and shall notify the Owner in writing of any obligations that the Owner must fulfill for service to be started, installed, or modified.

1.8 CONTRACTOR/UTILITY INTERFACE RESPONSIBILITIES

- A. The electrical utility providing service to this facility is Avista Utilities.
- B. During design, contact was made with Randy Widman of the serving utility. The division of responsibilities stated below has been determined by coordination with the utility. The Contractor shall comply with all utility company standards and requirements.
 - 1. Contact Information: randy.widman@avistacorp.com , 509-867-8790
- C. The Contractor shall notify the Owner (in writing) of any obligations or forms that the Owner is responsible to provide for service.
- D. All utility company charges for and related to the final permanent service to the facility will be paid by the Owner, directly to the utility company and shall not be included in the Contractors bid price.

1.8.2 THE UTILITY COMPANY WILL

- A. Provide and install new utility transformer(s) at the identified location.
- B. Provide primary service to the new transformer.
- C. Provide secondary service conductor from the transformer(s) to the CT cabinet.
- D. Terminate primary and secondary conductors.
- E. Provide and install meter in Contractor supplied enclosure and make connections for metering.

1.8.3 THE CONTRACTOR SHALL

- A. Provide primary service trenching and backfill from the pole or tap box to the transformer.
- B. Provide CT enclosure and meter base.
- C. Provide an equipment rack for the CT enclosure and meter base.
- D. Provide secondary service, including underground secondary conduit and conductors from the CT cabinet to the service entrance rated main disconnect.
- E. Furnish and install concrete bollards per Avista utility standards in front of the new pad mount utility transformer and new utility equipment rack to protect utility equipment from vehicle damage. Coordinate location and quantity with Avista Utilities.

PART 2 PRODUCTS**2.1 METER ENCLOSURE**

- A. Meter enclosure shall be Circle AW and as required to meet the requirements of the serving utility. Installation shall be in vandal proof NEMA 3R enclosure with a lockable hinged door.
- B. Contractor shall coordinate with the serving Utility regarding the type of metering required. The Contractor shall provide all labor and material necessary to meet the requirements of the serving Utility.

2.2 SERVICE ENTRANCE

- A. Service entrance equipment shall be one (1) service entrance rated main disconnect.
- B. Utility metering CT enclosures shall meet all requirements of the serving utility and shall be located as shown on the drawings.

PART 3 EXECUTION

3.1 GROUND ELECTRODE SYSTEM

- A. The grounded conductor and ground bus shall be connected to the grounding electrode system, via the grounding electrode conductor as indicated on system one-line diagram.
- B. The system shall be as indicated in Article 250 of the National Electrical Code.

3.2 UNDERGROUND SECONDARY SERVICE

- A. Install in accordance with Section 16110.

3.3 UTILITY REQUIREMENT VERIFICATION

- A. The Contractor shall coordinate and submit all equipment, materials, etc. related to the utility work to the serving utility to verify conformance to the Utility's requirements for service. The Contractor shall also submit any plans for the installation of the primary and secondary service for approval by the Utility prior to excavation. Any discrepancy between the Utility requirements and the Contract documents shall be brought to the immediate attention of the Engineer.

END OF SECTION

SECTION 26 28 00 OVERCURRENT PROTECTIVE DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Service Entrance Rated Main Disconnect (Circuit Breaker)
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installing the furnishing and installation of all circuit breakers used in this project.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS

2.1 MOLDED CASE CIRCUIT BREAKERS

- A. Molded case circuit breakers shall be quick-make and quick-break type. They shall have wiping type contacts. Each shall be provided with arc chutes and individual trip mechanisms on each pole consisting of both thermal and magnetic trip elements. Two and three pole

OVERCURRENT PROTECTIVE DEVICES

breakers shall be common trip. Circuit breakers utilizing handle ties shall not be allowed. All breakers shall be calibrated for operation in an ambient temperature of 40°C. Molded case circuit breakers shall be trip-free. Each breaker shall have trip indication independent of the ON or OFF positions.

- B. Breakers shall have lugs UL listed for both copper and aluminum.
- C. Circuit breakers shall be capable of accepting the cable shown on the drawings. Circuit breakers not capable of accepting the cable shown shall not be acceptable.
- D. Breakers shall have the interrupting rating and trip rating indicated on the drawings.
- E. Circuit breakers 400-ampere through 1200-ampere frame shall be Cutler-Hammer type Westinghouse Series C with microprocessor based RMS sensing trip units. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.

2.2 USES

- A. Breakers covered under this specification may be installed in switchboards, panelboards, motor control centers, combination motor starters, and individual enclosures.

2.3 ENCLOSURES

- A. Unless otherwise shown on the drawings, enclosures for protective devices shall be NEMA rated for the environment in which they are installed. In general, devices installed indoors shall be in NEMA 12 enclosures, devices installed outdoors shall be in NEMA 4X enclosures.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Fuses and circuit breakers shall be installed in their respective enclosures and locations in such a manner as to insure tight connections so as to preclude arcing and overheating.
- B. Install fuses in fuse holders immediately prior to energization of the circuit in which the fuses are installed. Fuses shall not be installed and shipped with equipment.
- C. Labels
 - 1. Place fuse identification labels, showing fuse size and type installed, inside the cover of each switch or other location where fuses are installed.

END OF SECTION

SECTION 26 28 16

SAFETY AND DISCONNECT SWITCHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Fused and unfused safety and disconnect switches.
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. Provide safety and disconnect switch work as shown, scheduled, indicated, and as specified. The types of safety and disconnect switches required for the project include, but are not limited to, equipment disconnects and motor-circuit disconnects.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods
 - 3. Section 26 05 19 – Wire and Cable
 - 4. Section 26 05 33 – Raceways

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products shall be designed, manufactured, tested, and installed in compliance with the following standards:
 - 1. National Electrical Manufacturers Association (NEMA):
 - a) NEMA KS 1 Enclosed Switches.
 - 2. Federal Spec. W-S-865 Switch, Box (Enclosed), Surface-Mounted.
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
 - 2. Cut sheets of the safety and disconnect switches with ratings, voltage, poles, capacity, horsepower, short circuit rating, and all associated accessories clearly indicated.

3. Include dimensioned drawings of electrical safety and disconnect switches which have a rating of 100 amperes or larger, showing the accurately scaled switches, their layout, and relation to associated equipment.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS

2.1 DISCONNECTS

- A. Provide products complying with these specifications and produced by one of the following:
 1. Square D
 2. Siemens
 3. Eaton
- B. Safety and disconnect switches must have Underwriters' Laboratories, Inc., approval and bear the UL label.

2.2 MATERIAL

- A. Provide heavy-duty type, dead front, sheet steel-enclosed, surface-mounted safety switches of the type and size indicated. Safety switches shall be rated for the voltage of the circuit in which they are installed. Safety switches used as motor disconnects shall be horsepower rated for the motor served.
- B. Safety switches shall be quick-make break type with permanently attached arc suppressors and constructed such that switchblades are visible in the "OFF" position with the door open. The operating handle shall be an integral part of the box, not of the cover. Switch shall have provision to padlock in the "OFF" position. Safety switches shall have a cover interlock to prevent unauthorized opening of the switch door when the switch mechanism is in the "ON" position or closing of the switch mechanism when the switch door is open.
- C. Cover interlock shall have an override mechanism to permit switch inspection by authorized personnel. Lugs shall be copper-plated or aluminum, suitable for copper or aluminum cable and front removable.

2.3 FUSING

- A. Provide fusible safety switches where indicated. Fuse clips shall be positive pressure rejection type fuse clips suitable for use with UL Class R fuses. Bussman LPN, RK, LPS.

2.4 NEUTRAL

- A. Provide safety switches with number of switched poles as indicated. Where a neutral is present in the circuit, provide a solid neutral with the safety switch.

2.5 ENCLOSURES

- A. Safety switches installed in exterior locations or where exposed to outdoor conditions shall be NEMA 3R (water resistant) unless otherwise shown or specified.

PART 3 EXECUTION**3.1 INSPECTION**

- A. Installer shall examine the areas and conditions under which safety and disconnect switches are to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF SAFETY AND DISCONNECT SWITCHES

- A. Install safety and disconnect switches where shown, in accordance with the manufacturer's written instruction, the applicable requirements of the NEC, the NECAs "Standard of Installation", and recognized industry practices to ensure that products serve the intended function.
- B. Provide safety switches where shown and at each motor which is out-of-sight-of or greater than 50' from the switch or panel from which the motor circuit is fed, unless another NEC complying disconnecting method is utilized.
- C. Provide all safety and disconnect switches with galvanized angle or other suitable supports where mounting on wall or other rigid surface is impractical. Switches shall not be supported by conduit alone. Where safety and disconnect switches are mounted on equipment served, the switch shall not inhibit removal of any service panels or interfere with any required access areas.
- D. Fasten securely to supporting structure at walls and stands:
 - 1. Wood screws or lag screws to wood boards or timbers,
 - 2. Machine bolt to metal framing or plates,
 - 3. Expansion anchors to concrete walls,
 - 4. Expansion toggle wing bolts or sleeve anchors to hollow block,
 - 5. Provide 1 inch spacers to set panel out from concrete or block wall.
- E. Stands and supports:
 - 1. Corrosion-resistant materials and finishes,
 - 2. Unistrut-type materials for fabrication,
 - 3. Expansion anchors for bolts in concrete floor,
 - 4. Machine bolt to metal framing or plates,
 - 5. Wood screws or lag screws to wood boards or timber,
 - 6. Backing plate for mounting units,
 - 7. Fasten stand securely to floor,
 - 8. Dimensions as required by equipment to be mounted.
- F. Arrange for driven equipment use or function:
 - 1. Similar units adjacent.
 - 2. Adequate space for operation and servicing.
- G. Mounting height:
 - 1. Single unit, 4 feet 6 inch center line above floor
- H. Install disconnect switches used with motor-driven appliances, motors, and controllers within sight of the controller position unless otherwise indicated.
- I. Coordinate safety and disconnect switch installation work with electrical raceway and cable work as necessary for proper interface.

3.3 TESTING

- A. Prior to energization, check for continuity of circuits and for short circuits.

3.4 IDENTIFICATION

- A. Refer to Section 26 00 02, "Basic Materials and Methods", for applicable painting, nameplates, and labeling requirements.

END OF SECTION

SECTION 26 32 13 POWER GENERATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Standby power generator
 - 2. Automatic transfer switches
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers furnishing and installing a standby power generator set including diesel engine-driven generator with controls, output circuit breaker, automatic transfer switches and all required auxiliary systems.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods
 - 3. Section 26 05 19 – Wire and Cable
 - 4. Section 26 05 33 – Raceways

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
Bid Additive Alternate #1	Standby Power System	LS

- B. This pay item shall also include the generator concrete pad, all electrical equipment and wiring in the Existing Shop and all conductors and surface raceways associated with the standby power system. Refer to the drawings for additional information.

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. Products and installation shall comply with applicable sections of the following standards:
 - 1. American National Standards Institute (ANSI):
 - a) C37.13, Low Voltage AC Power Circuit Breakers Used In Enclosures
 - b) C37.50, Test Procedures For Low Voltage AC Power Circuit Breakers Used in Enclosures
 - c) C37.90a, IEEE Guide for Surge Withstand Capability (SWC) Test
 - 2. National Electrical Manufacturers Association (NEMA):

- a) AB 1, Molded Case Circuit Breakers
 - b) ICS 2, Standards for Industrial Control Devices, Controllers and Assemblies
 - c) ICS 4, Terminal Blocks for Industrial Use
 - d) ICS 6, Enclosures for Industrial Controls and Systems
 - e) MG 1, Motor and Generators
 - f) MG 2, Safety Standard for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators
- 3. National Fire Protection Association (NFPA):
 - a) 70, National Electric Code (NEC)
 - b) 37, Installation and Use of Stationary Combustion Engines and Gas Turbines
 - c) 110, Emergency and Standby Power Systems
 - 4. Underwriters Laboratories, Inc. (UL):
 - a) 489, Molded Case Circuit Breakers and Circuit Breakers Enclosures
 - b) 1004B, Standard for Electric Motors (and Generators)
 - c) 1008, Standard for Transfer Switch Equipment
 - d) 2200, Standard for Stationary Engine Generator Assemblies
 - 5. Idaho Administrative Code (IDAPA) 58.01.08, Idaho Rules for Public Drinking Water Systems
 - a) 512, Facility and Design Standards: Well Lot, Part 02., a. – f.”
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.
 - D. All electrical equipment and materials, and the design, construction, installation, and application thereof, shall comply with all applicable provisions of the National Electrical Code (NEC), the Occupational Safety and Health Act (OSHA), and any applicable Federal, State, and local ordinances, rules, and regulations.
 - E. All materials and equipment specified herein shall, within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which that are used and shall bear their label.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
- B. In accordance with the “submittals” requirements in Section 26 00 00, the following project data shall be submitted by the Contractor prior to placement of a purchase order for the equipment:
 - 1. Submitted materials shall be bound in a 3 hole binder with section tabs and an index.
 - 2. Wiring diagrams with details specific to this project showing all interface points and terminal numbers clearly identified.
 - 3. Specific information on the components provided for this project and all optional equipment provided.
 - 4. Provide specific and detailed wiring and connection diagram showing all details of field wiring connections and component connections for transfer switch, fuel monitor, louver controls, battery charger alarm contacts and customer contacts as specified in control panel, etc. Drawings shall show all terminal numbering and physical locations of terminals.
 - 5. Operations and programming/adjustments manual.
 - 6. Provide specific detailed information on the control features, their ranges, recommended set points etc.

7. Detailed plan and elevation drawings of the generator set indicating overall dimensions and the specific location of all components, including the engine exhaust system, fuel tank, and enclosure.
 8. Detailed drawings indicating installation requirements and the specific location of vibration isolators and seismic snubbers.
 9. Detailed plan of the face of the control panel indicating overall dimensions and the specific location of all components.
 10. Detailed specifications and standard operating characteristics of the engine, the generator, and all components.
 11. Certification by the manufacturer and documentation that appropriate linear and torsional vibration analyses have been performed and that engine and generator are compatible units.
 12. Certification by the manufacturer and documentation that the generator set will meet or exceed the general requirements as specified in Paragraph 2.4 of this section and the required performance as specified in Paragraph 2.2 of this section.
 13. Generator control schematic.
 14. Engine control schematic.
 15. Certification by the engine manufacturer of review and approval of the proposed engine application.
 16. Certification by the generator manufacturer of review and approval of the proposed generator application.
 17. Detailed specifications and drawing of the diesel fuel tank.
 18. Detailed specifications and drawings of the engine exhaust system.
 19. Detailed specifications and drawings of the enclosure.
- C. After break-in and testing of the generator set, the following project data shall be submitted by the Contractor:
1. Certified results of testing of the engine by the engine manufacturer.
 2. Certified results of testing of the generator by the generator manufacturer.
 3. Certified results of break-in and testing of the generator set by the manufacturer of the assembly.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.
- B. The standby generator set(s) shall be stored at the factory until they must be shipped to the job site to prevent building construction delay.
- C. The standby generator set(s) shall be crated and covered to protect it from damage during shipment and subsequent storage at the job site.

1.8 WARRANTY

- A. The Contractor shall guarantee the generator set to be free of defects in design, materials, and workmanship for a period of two (2) years following the date of acceptance, by formal action of the Owner, of all work under the contract. The guarantee shall include all parts and labor and shall be secured by a written guarantee from the manufacturer to the Owner. The written guarantee shall be delivered to the Owner prior to date of acceptance of all work under the Contract.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. The generator set shall be manufactured by one of the following acceptable manufacturers:
 - 1. Caterpillar Tractor Company
 - 2. Cummins Diesel Engine Company / ONAN Corporation
 - 3. Detroit Diesel Allison Division
 - 4. Kohler Company
 - 5. Generac Power Systems, Inc.
- B. The dimensional data for the sizing of the generator is from ONAN Corporation. The equipment of the manufacturer selected must fit within the space restrictions as shown on the plans.
- C. Other alternate equipment manufacturers not listed shall be considered by the Contractor only when specifically identified by Addendum to the plans and specifications. Other manufacturers which desire to be designated as acceptable shall deliver a detailed statement of qualifications to the Engineer at least seven (7) calendar days prior to the scheduled bid opening. The statement of qualifications shall be in accordance with and shall also include pertinent items listed in the "Submittals" paragraph above and the following:
 - 1. Description of company,
 - 2. Resumes of principals and/or key employees,
 - 3. Description of expertise in design, assembly, and installation of diesel engine-driven generator sets,
 - 4. Description of generator sets designed, assembled and installed in the last ten (10) years. Description shall include:
 - a) Names of employees involved in each system,
 - b) Detailed description and drawings of each system,
 - c) Cost of each system,
 - d) Names and telephone numbers of persons involved in operation and maintenance of each system.
- D. Description of the service capabilities normally provided by the company, including resumes of employees assigned to field service and listing of service equipment.
- E. Detailed plan and elevation drawings of the proposed generator set indicating overall dimensions and the specific location of all components, including the engine exhaust system.
- F. Detailed specifications and standard operating characteristics of the engine, the generator and all components.
- G. Additional information that may assist the Engineer in evaluation of the manufacturer and/or proposed generator set.
- H. Acceptability of the manufacturers will be determined by the Owner and the acceptable manufacturers will be designated by Addendum mailed to holders of plans and specifications at least ten (10) working days prior to the date of opening of bids.

2.2 REQUIRED PERFORMANCE

- A. Performance of the generator set shall be based on operation of the assembly with fan, battery charging alternator and all specified and required appurtenances.
- B. The generator set shall be rated for continuous standby service, however the temperature rise of the generator shall not exceed 105 degrees C above a 40 degree C ambient, when producing full rated load for a continuous period of time.

- C. Voltage Drop: The engine generator unit supplied must start the indicated load with a sustained RMS voltage drop no greater than 15% of rated phase to phase voltage during the starting period. The starting period shall be from zero up to 3 seconds. The instantaneous voltage dip may be greater than 15% but shall not cause motor starter chatter or relay drop out or exceed a level which causes undesirable motor starting. If motor starting problems are encountered the size of the generator set shall be increased as required to reduce voltage dip until the motors can be started without problems. No additional cost shall be incurred by the Owner for the increased size of the generator set. The method of measurement shall be by light beam oscilloscope.
- D. Frequency Regulation: Plus or minus 3 hertz maximum, no load to rated load.
- E. Voltage Regulation: Plus or minus 2% maximum.
- F. The generator set shall be capable of starting and operating the following load without exceeding the temperature ratings of the engine or the generator:
 - 1. Connected base load consisting of one 250 Hp motor operating on a VFD and miscellaneous 120/240/480V loads totaling 60KVA. It is expected that the overall power factor will be .80. The minimum generator size shall be 450kW.

2.3 ENGINE

- A. The engine shall be a water-cooled, in-line or V-type, two or four-stroke cycle, compression ignition, diesel-fueled unit. The engine shall be fully and completely capable of and equipped for driving electrical generators. The specific model of engine selected by the manufacturer of the generator set shall have an acceptable history of successful similar applications.
- B. The engine shall be equipped with an electronic governor which shall control the speed of the engine and generator. The speed shall be controlled to maintain the generator output frequency within 0.25 percent of rated frequency from no load to full load.
- C. The engine shall be equipped for operation with ASTM D975, No. 2-D diesel fuel. The fuel system shall include a fuel pump and replaceable element fuel filter.
- D. The engine shall be equipped with a pressurized oil lubricating system which shall include threaded, spin-on type, full flow lubricating oil filters which are located for easy removal. The lubricating system shall be equipped with spring-loaded bypass valves which will allow oil circulation if the filters are plugged.
- E. The engine shall be equipped with an electric starting system which includes a lead acid battery set, an engine-driven battery charging alternator and appropriate electrical controls. The system shall be minimum 12 V. The batteries shall be mounted adjacent to the generator set on a fabricated steel housing. Batteries shall be rated minimum 225 ampere-hours.
- F. The engine shall be equipped with a unit-mounted, radiator type cooling system which shall maintain the jacket water temperature at the level required for proper operation of the engine from no load to full load. The engine shall be equipped with one or two, as required, water jacket heater(s), which shall be thermostatically controlled to maintain the coolant temperature at 120 degrees F. Operation of the heater(s) shall be stopped while the engine is turning.

2.4 GENERATOR

- A. The generator shall be brushless, revolving field-type, and shall be fully and completely capable of and equipped to be driven by a diesel engine, and able to produce the starting and running kVA demanded by the connected load. The specific model of generator, selected by the manufacturer of the generator set, shall have an acceptable history of successful similar applications.
- B. The generator shall comply with NEMA standard MG1 Parts 16 and 22. The generator shall be insulated to Class F requirements, however, the unit shall be sized and rated so that the temperature rise of the unit will not exceed 105 degrees C over ambient temperature of 40 degrees C under continuous, full load conditions in accordance with NEMA MG1-22.40. The generator shall be fully guarded in accordance with NEMA MC1-1.25.
- C. The rotating brushless exciter shall incorporate a full wave, three phase rotating rectifier with hermetically sealed, metallic type, silicon diodes to supply main field excitation. A multiplate selenium surge protector shall be connected across the diode network to protect it against transient conditions.
- D. The generator shall be coupled directly to the engine flywheel through a flexible driving disc for positive alignment. The generator housing shall bolt directly to the engine flywheel housing and shall have a single ball bearing support for the rotor. The rotor shall be dynamically balanced up to 25 percent overspeed. The rotor shaft bearing shall be shielded type with provisions for easy servicing through grease pipes which extend to the exterior of the generator frame. The bearing shall be designed for a minimum B-10 bearing life of 40,000 hours.
- E. The generator shall be designed and manufactured to be capable of sustaining at least 300 percent of rated current for at least 10 seconds under three-phase symmetrical short circuit conditions by inherent design of the unit or by a current boost system. The generator shall be designed and manufactured to be capable of sustaining at least 50 percent increase in rated speed for an unlimited time without mechanical damage.
- F. The generator shall be equipped with a solid-state, volts-per-hertz type regulator which is compatible with both the engine and the generator. The regulator shall be capable of regulating the generator under sudden zero to full load changes.
- G. The regulator shall be housed and mounted for protection of all components against moisture and vibration. The regulator assembly shall be mounted on the generator.

2.5 CONTROL PANEL

- A. The generator shall be equipped with a control panel. The control panel shall be readily accessible, visible and shall be mounted such that the top of the control panel is no higher than 6'-0" above the finished floor when installed.
- B. The generator control panel shall include the following:
 - 1. Engine coolant temperature gauge,
 - 2. Engine lubricating oil temperature gauge,
 - 3. Engine lubricating oil pressure gauge,
 - 4. Engine running time meter,
 - 5. Battery charge ammeter,
 - 6. Engine/generator tachometer,
 - 7. Voltmeter,
 - 8. Ammeter,
 - 9. Ammeter-voltmeter phase selector switch,
 - 10. Frequency meter (45 to 65 hertz),

11. Voltage adjustment rheostat (minimum plus/minus 5%),
 12. Emergency stop push button,
 13. Individual indicating lights for:
 - a) Selector switch in OFF position,
 - b) Selector switch in AUTOMATIC position,
 - c) High water temperature,
 - d) Low water temperature,
 - e) Low water level,
 - f) Low lubricating oil pressure,
 - g) Engine starting prohibited after three (3) cranking cycles,
 - h) High engine/generator speed,
 - i) Generator run failure,
 - j) High battery voltage,
 - k) Low battery voltage,
 - l) Battery charger failure,
 - m) Low fuel alarm,
 - n) Low fuel shutdown.
- C. Lamp test push-button for all indication lights listed above.
- D. Dry contacts wired to a terminal strip for:
1. Each alarm light as listed above,
 2. Common remote "trouble" alarm,
 3. Common remote "fail" alarm,
 4. Low fuel alarm,
 5. Low battery voltage.
- E. Three position (automatic/off/test) selector switch which shall:
1. In the automatic position - allow the engine to automatically start when contacts in the transfer switch control circuit close and stop after the control circuit contacts open.
 2. In the off position - prohibit starting of the engine
 3. In the test position - cause the engine to start and remain in operation until the selector switch is moved to either of the other positions.
 4. Provide separate dry contact for each switch position.
- F. An automatic starting system that shall cause and control operation of the engine starter motor until the engine has started. The starting system shall include manually adjustable timing circuits for control of the time of operation of the engine starter motor and the time from stopping of operation of the starter motor (after the engine has failed to start) to re-initiation of operation of the starter motor. The starting system shall enable the number of starting cycles to be manually selected and shall prohibit operation of the starter motor if the engine fails to start after three (3) starting cycles. The starting system circuitry shall include dry contacts for remote indication of generator set running and not running conditions.
- G. Engine emergency shutdown controls that shall include sensors and control circuits which shall stop operation of the engine when the engine coolant temperature rises to a preselected value, when the engine coolant drops below a preselected level, the engine lubricating oil pressure drops to a preselected value, when the fuel level reaches the critical low level, and the engine speed rises to a preselected value. The controls shall prohibit subsequent restarting of the engine until a reset switch is manually engaged.

- H. Ethernet/IP communication module. Module shall be capable of communicating all generator status and alarm parameters with an Allen-Bradley CompactLogix (1769-I30ER) PLC processor via an unmanaged N-Tron/Red Lion 105TX Ethernet Switch.

2.6 MAIN CIRCUIT BREAKER

- A. A main line, molded case, 3-pole circuit breaker shall be installed as a load circuit interrupting and protection device. It shall operate both manually as an isolation switch and automatically during overload and short circuit conditions.
- B. The trip unit for each pole shall have elements providing inverse time delay during overload and instantaneous magnetic tripping for short circuit protection. The circuit breaker shall meet standards established by Underwriters' Laboratories, National Electric Manufacturer's Association, and National Electric Code.
- C. The circuit breaker shall be mounted in NEMA 1 enclosure adjacent to the generator control panel.

2.7 SUPPORT FRAME

- A. The engine and generator shall be mounted on and supported by a welded support frame fabricated of structural steel members. The support frame shall specifically be designed by the manufacturer of the generator set to:
 - 1. Resist bending forces and loads imposed by the engine and generator during transportation and during operation.
 - 2. Limit torsional and bending movement caused by torque reactions
 - 3. Prevent resonant vibration
 - 4. Resist the bending and seismic loads per the UBC 2336 C.
- B. The support frame shall be mounted on and supported by spring-type vibration isolators and shall be restrained by all-directional seismic snubbers as required by earthquake zone 3 conditions. The isolators and snubbers shall be selected by the manufacturer of the generator set. The manufacturer shall design the support frame for incorporation of and attachment to the isolators and snubbers and shall define all requirements for mounting of the isolators and snubbers on to the supporting surface.

2.8 FUEL TANK SYSTEM

- A. The Contractor shall be responsible to coordinate the fuel system requirements with the local building and fire codes for installation. The Contractor shall verify all necessary space, containment, alarming and monitoring requirements are met. The Contractor shall provide all necessary equipment, raceway, wiring etc. to meet the requirements of the local codes, Fire Marshall, NEC, and as recommended by the generator manufacture. Specific requirements are as follows:
- B. The fuel tank system shall be double walled. The system shall include the following:
 - 1. Dry contacts wired to terminals in the control panel for a low level fuel alarm,
 - 2. Critical low fuel alarm which shall also cause the generator engine to shutdown,
 - 3. Manual fuel fill cap,
 - 4. Level gage mounted in generator room,
 - 5. Fuel strainer,
 - 6. Plastic sight glass,
 - 7. Interstitial monitoring, leak detection, and alarming per local requirements.
- C. The low level fuel alarm shall be set to trip when the fuel tank quantity reaches 25% of capacity.

- D. The integral generator fuel tank shall be sized by the generator manufacturer to provide 24 hours of runtime with the generator fully loaded.

2.9 AUTOMATIC TRANSFER SWITCHES

- A. One (1) automatic system load transfer switch shall be supplied as an integral component of the generator set. The transfer switch for this project was designed around the features and space requirements of Cutler Hammer. The transfer switch shall be manufactured by one of the following acceptable manufacturers:
 - 1. ONAN Corporation
 - 2. CUTLER HAMMER
 - 3. RUSSELL
 - 4. ASCO
- B. The Well House automatic transfer switch shall be installed indoors, in a factory NEMA 12 rated enclosure. The City Shop automatic transfer switch shall be installed indoors, in a factory NEMA 1 rated enclosure.
- C. Transfer switch shall be well documented with clear wiring diagrams, and submittals shall include wiring diagram showing clearly all connections for field wiring with terminal numbering.
- D. The transfer switches shall be equipped with three poles for normal and emergency service of 480 volts, 60 hertz, 3 phase.
- E. The transfer switch shall be mechanically and electrically held and rated to 600 volts for all classes of load and continuous inductive duty.
- F. The transfer switch shall conform to UL 1008 Revision 4 provisions for Withstand Current Ratings and Closing Ratings.
- G. The switch shall be capable of enduring 6000 cycles of complete opening and closing at rated current and voltage at a rate of 6 cycles per minute without failure.
- H. The switch shall be double throw, inherently interlocked mechanically and electrically to prevent supplying the load from both sources simultaneously. The operating current shall be obtained from the source to which the load is to be transferred. The transfer mechanism shall be of the double break design with solid silver cadmium surface contacts and individual heat resistant arc chambers.
- I. Single break contacts will also be acceptable if arc barriers and magnetic blow out coils are used. The contacts shall be capable of carrying 20 times the continuous rating for interrupting current.
- J. All contacts, coils, etc. shall be readily accessible for replacement from front of panel without major disassembly of associated parts.
- K. The transfer switch shall have UL 1008 label and listing.

2.9.2 CONTROLS HARDWARE

- A. All relays shall be provided with indicating LED lights for energized position indication.
- B. Time delay relays shall be provided with timing and timed out LED indicators.
- C. Panel front Indication lights shall be push-to-test or the switch shall have a push to test feature for indication lights, unless lights are LED.
- D. All fuses shall be provided with "blown fuse" indicators.
- E. All wiring shall be numbered at each end with basic wiring numbering scheme.
- F. All terminals shall be clearly labeled.

- G. All internal equipment shall be labeled.
- H. All external devices shall be clearly labeled.
- I. Provide nameplate on transfer switch as shown on the drawings.
- J. If available as an option, provide a transfer switch with solid state logic CONTROL CUTLER HAMMER IQ TRANSFER, ONAN -POWER SENTRY CONTROL, or approved equal.

2.9.3 CONTROLS FEATURES

- A. The transfer switch shall include the following accessories:
 - 1. Undervoltage Sensor: Adjustable solid state low voltage sensing relays (pick up at 85 to 98 percent of normal voltage - set at 98%; drop out at 75 to 100 percent - set at 90% of pickup setting). Provide for each phase.
 - 2. Time Delay Start and Stop on Drop Out: Solid state adjustable time delay on start (0 to 15 seconds). Set start delay for 15 seconds. Timer will send start signal to generator set CP (genset), where louver timer will allow 15 second delay for louvers to open prior to starting genset.
 - 3. Time Delay Stop: Solid state adjustable time delay (0 to 10 minutes) to allow generator to cool down after normal power is restored and retransfer occurs. Set at 5 minutes.
 - 4. Time Delay Transfer & Retransfer: Solid state, time delay, relay adjustable; 2 to 120 seconds for transfer to emergency and 0 to 30 minutes for retransfer to normal. Set at 5 minutes for retransfer to normal. Set at 3 seconds for transfer to emergency.
 - 5. With or Without Load Selector Switch: Switch to select exercise with or without load.
 - 6. Normal-Test Switch: Switch such that in the "Normal" mode the transfer switch will operate automatically and in the "Test" mode the generator will start for test purposes. This switch shall work in conjunction with the "With" or "Without" load switch. An extra contact block shall be provided on the normal-test switch for wiring to the Programmable Controller, if one is required.
 - 7. Exercise Clock: An exerciser clock shall be provided which shall be programmable to exercise the generator set. The exerciser shall be adjustable from 15 to 60 minutes once each week. The exercise shall be either with or without load. If power fails during the exercise cycle, the load shall automatically pick up.
 - 8. Programmed Transition: The load transfer control shall be capable of remaining in the neutral position for an adjustable time of .5 to 60 seconds, when transferring from one line power source to the other, to allow residual voltages to decay before application of the source. Set to 3 seconds for less than 50 hp loads.
- B. Provide the following dry contacts each with terminals for field connection, 2Amp rated at 120VAC.
 - 1. Two, separate, normally open dry auxiliary contacts; one indicating transfer switch is in NORMAL position and one indicating switch is in EMERGENCY position,
 - 2. Four, separate, normally open, dry contacts; two indicating "commercial power / normal power" available, and two indicating generator / emergency power available.
 - 3. Normally open, dry contact indicating generator called to run.
- C. Position lights for normal and emergency position indication.
- D. Two indication lights, one for emergency power available and one for normal power available.
- E. Note: provide push to test type lights or push to test feature for all indication lights.

2.10 GENERATOR BATTERY CHARGER

- A. Provide fully automatic constant voltage, current limiting battery charger sized for the generator starting batteries.
- B. Charger shall have the following features: Protection fuses, DC ammeter, Temperature compensating voltage regulator, and LED alarm lamps indicating AC power fail, Low battery voltage, High battery voltage. Form C contacts for alarm indication, high and low battery alarm adjust pots, float voltage adjustment pot.
- C. Charger shall monitor the battery voltage and control the SCR to deliver the optimum current level to the battery. The battery shall be permanently connected and when the battery approaches full charge preset voltage, the charging current shall automatically taper to zero amperes or to the steady state load on the battery. Use ONAN, OTIII and BT series or equal.

2.11 QUIET TYPE GENERATOR ENCLOSURE

- A. A factory standard Level II sound attenuated enclosure shall be provided with the generator. The enclosure shall limit noise levels to 73dBA or less, at distance of 7 meters, with the generator fully loaded.
- B. Generator shall be enclosed in a sound attenuating housing which shall be totally weatherproof. The unit shall be skid mounted and the walls and roof shall be adequately reinforced to carry all dead and live loads. The enclosure shall be sized to contain the generator set, fuel tank, and batteries, and to allow adequate room to service the entire unit.
- C. The enclosure shall be a standard sound attenuating protective housing as manufactured by the generator manufacturer.
- D. Doors shall be provided on each side of the enclosure and a control panel access door shall be provided on the end. All doors shall be equipped with handles and latches which are keyed. Each door or opening shall have prewired magnetic type intrusion switch for alarming unauthorized entry. All magnetic switches shall be wired to a common terminal at the main control panel.
- E. The unit shall be primed and finished in accordance with manufacturer's standards. Color shall be approved by Owner.
- F. The operating louver assembly, including the louver, motor, and guard shall be completely factory assembled. Size per generator manufacturer's recommendations. The louver shall be equipped with a motor which shall be spring loaded to open the louver when the generator is called to start, and electrically operated to close the louver when the generator is called to stop.
- G. The generator set shall be mounted in the enclosure using spring type vibration isolators between the generator set mounting skids and the enclosure.

2.12 EMERGENCY STOP PUSHBUTTONS

- A. Furnish and install emergency stop pushbuttons at all automatic transformer switch locations for emergency shutdown of the generator. Furnish and install all boxes, wiring, raceways and appurtenances as required for operation.

PART 3 EXECUTION

3.1 INSTALLATION

- A. The generator set shall be installed by the Contractor or, at the option of the Contractor, by the manufacturer of the generator set in accordance with the installation drawings and instructions prepared by the manufacturer. Installation shall be performed by workers who are skilled and experienced in the installation of generator sets and electrical systems.
- B. It is the Contractor's responsibility to provide louver or door openings which are large enough for the genset to fit into the building or enclosure. It is also the Contractor's responsibility to provide necessary optional equipment to provide clearance requirements for the entire genset installation and to verify all mechanical and electrical clearance requirements are met.
- C. Install fuel system, ventilation system, and exhaust system in accordance to the requirements of the drawings, specifications, manufacturer, local codes, and the NEC. Any additional requirements or equipment necessary for a complete installation shall be provided by the Contractor at no additional expense to the Owner.

3.1.1 CONTROL PANEL & CIRCUIT BREAKER MOUNTING

- A. The control panel shall be installed so that there is a minimum of 3 feet clear space in front of the panel, and the top of the panel is no more than 6 feet above the finished floor.
- B. Install the control panel for the generator on the generator at a height no more than 6 feet above the finished floor to the top of the control panel. If the control panel mounted on the generator is higher than 6 feet, then the Contractor shall mount the control panel on a separate stand or on the wall. The Contractor shall provide all necessary raceway, wiring, and mounting equipment at no additional cost to the Owner.
- C. The main circuit breaker shall be installed so that there is a minimum of 3½ feet clear space in front of the breaker. The Contractor shall coordinate the breaker installation with the generator manufacturer to meet this requirement.
- D. The installation and space requirements stated above shall be verified prior to construction. Any discrepancies shall be stated in the submittals.
- E. If the physical size of the structure in which the generator is being installed will not allow for these space requirements; The Contractor shall bring this to the immediate attention of the Engineer.

3.2 IDENTIFICATION

- A. Refer to Section 26 00 02 for applicable painting, nameplates, and labeling requirements.

3.3 INSPECTION AND VERIFICATION OF INSTALLATION

- A. After completion of the installation of the generator set, the manufacturer shall inspect the installation and verify that all components and wiring are correctly installed. The manufacturer shall determine the exact scope and nature of work required to correct any deficiencies and errors in the work and shall supervise the performance of such work.
 - 1. All components of the generator set shall be calibrated by the manufacturer after completion of installation. Each component shall be adjusted to be within the manufacturer's required range and for the specific application. Components that cannot be properly calibrated or that are found to exceed the manufacturer's specified range or accuracy shall be removed and replaced.
 - 2. After installation of the generator set is completed, the generator set shall be placed into operation by the manufacturer. The manufacturer shall revise, modify, adjust and reprogram the various components as required during and following start-up to provide proper operation.

3.4 ON-SITE OPERATION AND LOAD TEST

- A. After the Manufacturer has inspected and verified the generator installation, the generator set shall be tested by the manufacturer. All components of the generator set shall be fully and completely operated and tested under simulated power failure conditions and under a full load for a period of at least two continuous hours. Load banks shall be provided by the manufacturer of the generator set as required to supplement the connected facility load and to provide full load conditions. Operating temperature, load amperes and voltage shall be recorded every 1/2 hour.
- B. The on-site operation testing shall take place in the presence of the Engineer. The Contractor shall inform the Engineer a minimum of 3 days prior to the testing taking place. All controls and functions of the generator shall be operable and all auxiliary equipment shall be connected and all field wiring complete before the testing is to take place.
- C. Test Load: Testing shall be performed at 0.8 PF with loads as specified below. Where the specific set has been tested at 0.8 PF as specified herein below, field-testing can be performed at 1.0 PF. The supplier of the engine-generator set shall provide a load bank of sufficient capacity to complement the available building load for testing. The field test shall include running the emergency power system under loads as specified below:
 - 1. 30 minutes at 25% of rated load (field load bank),
 - 2. 15 minutes at 50% of rated load (field load bank),
 - 3. 15 minutes at 75% of rated load (field load bank),
 - 4. 30 minutes at 100% of rated load (field load bank).
 - 5. Miscellaneous building loads may be used to supplement load bank.
- D. Test Readings: The voltage current and frequency readings shall be recorded at 15-minute intervals throughout the test. Each automatic transfer switch shall automatically operate a minimum of four times during the test. There shall be a 15 minute unloaded run at the conclusion of the test to allow engine to cool before shutdown. The Contractor shall make all necessary hook-ups to facilitate field-test and shall furnish all fuel necessary for field-testing. Refer to Section 26 01 26, "Electrical Testing", for additional testing requirements.
- E. At the conclusion of the load testing, the generator fuel tank shall be filled.

3.5 OPERATION AND MAINTENANCE TRAINING

- A. The manufacturer of the generator set shall conduct specifically organized training sessions covering operation and maintenance of the unit for personnel employed by the Owner. The training sessions shall be conducted to educate and train the personnel in maintenance and operation of all components of the unit. Training shall include, but not be limited to, the following:
 - 1. Preventative maintenance procedures,
 - 2. Trouble-shooting,
 - 3. Calibration,
 - 4. Testing,
 - 5. Replacement of components,
 - 6. Automatic mode operation,
 - 7. Manual mode operation,
 - 8. Fuel and monitoring system.
- B. At least one (1) training session, at least two (2) hours in duration, shall be conducted at the site after start-up of the system. The manufacturer shall prepare and assemble specific

instruction materials for each training session and shall supply such materials to the Owner at least two (2) weeks prior to the time of the training.

3.6 OPERATION AND MAINTENANCE DATA

- A. See Section 26 60 00.
- B. The supplier of the engine-generator set shall provide Operation and Maintenance Manuals which shall include, but not be limited to, the following:
 - 1. Preventive maintenance procedures,
 - 2. Trouble-shooting Calibration Testing,
 - 3. Replacement of components,
 - 4. Automatic mode operation,
 - 5. Programming,
 - 6. Manual mode operation,
 - 7. System schematics,
 - 8. As-built wiring diagrams of overall system,
 - 9. Catalog data and complete parts list for all equipment and control devices,
 - 10. Listing of recommended spare parts,
 - 11. Listing of recommended maintenance tools and equipment.
- C. The supplier of the engine-generator set shall review and revise the generic O&M manual provided by the manufacturer so that only pertinent information relevant to this particular project is included. Non-relevant information, such as part lists, option lists, wiring diagrams, etc., should be crossed out if it can not be removed from the manuals.

3.7 MAINTENANCE SUPPORT PROGRAM

- A. The manufacturer of the generator set shall provide a maintenance support program covering all routine service maintenance and repair of the engine generator set for a period of one year from the date of acceptance. The cost of the maintenance support program shall be shown individually, but must be included in the engine generator total bid price.
- B. Under the maintenance support program contract, the generator set manufacturer shall be solely and completely responsible for correction of all deficiencies and defects and shall make any and all repairs, replacements, modifications and adjustments as malfunctions or failure occur.
- C. The contract will cover the furnishing of all material, labor, testing equipment, load banks, tools, and transportation necessary to perform the preventative maintenance work herein described.
- D. The vendor shall stock common replacement parts (i.e. filter, etc.) for service or repair work for engines, generators, control panels, switchgear, and automatic transfer switches.
- E. The vendor shall be equipped with service technicians, tools, and transportation "on-call"; 24 hours a day, 365 days a year, to provide emergency service.
- F. It is the responsibility of the vendor to notify the Owner of the scheduled maintenance interval at least two (2) weeks prior to the actual performance of their contractual obligations. The Owner reserves the right to witness the evaluation, testing, and maintenance of the equipment at its discretion. It is the responsibility of the vendor to coordinate testing and preventative maintenance on the existing operational system.

- G. Three (3) copies of the evaluation, testing, and preventative maintenance work shall be submitted no later than (14) days following the completion of the service interval. All site documentation shall be typed.
- H. The reports shall contain but shall not be limited to:
 - 1. Summary of findings and corrective work.
 - 2. Recommendations of repairs, overhauls, and other maintenance work that should be scheduled prior to the next scheduled service interval.
 - 3. Complete documentation of all test and inspection results on each significant item (i.e. engine, generator, transfer switch, and alarm functions).
- I. As a minimum, the maintenance program shall include work as shown on the attached maintenance schedule. Any deletions from the schedule must be noted in writing as a part of the bid package.

END OF SECTION

ATTACHMENT: ENGINE-GENERATOR SET MAINTENANCE SCHEDULE.

ENGINE-GENERATOR SET MAINTENANCE SCHEDULE

			<u>6 mos.</u>	<u>1 yr.</u>
Air Intake	Check	- for leaks	x	x
		- air cleaner restriction	x	x
		- piping and connections	x	x
	Clean or change	- crankcase breather	x	x
		- air cleaner element	x	x
Fuel	Check	- for leaks	x	x
		- fuel level/take sample	x	x
		- governor linkage	x	x
		- fuel lines and connections	x	x
	Drain	- sediment from tanks & filter	x	x
	Change	- float tank breather		x
	Clean	- float tank breather		x
Exhaust	Check	- for leaks	x	x
		- for exhaust restriction	x	x
		- turbocharger bearing clearances		x
	Drain	- condensate trap	x	x
	Torque	- exhaust manifold & turbocharger cap-screws		x
	Clean	- turbocharger comp. wheel and diffuser		x
Electrical	Check	- battery charging system	x	x
		- battery electrolyte level and specific gravity/check battery voltage	x	x
		- safety controls and alarms	x	x
Engine Related	Check	- for unusual vibration	x	x
		- tighten mounting hardware		x
		- fan belt wear/cracking		
	Clean	- engine		x
	Grease	- fan pillow block bearings		x
	Test	- oil analysis or metals and cool- coolant for DCA/pH		x
	Change	- oil and filter and fuel filter		x
Main Generator	Check	- air inlet and outlet for		
		- restriction	x	x
		- windings & elect. connections		x
		- operation of generator heater strips		x
	Grease	- bearing		x
		- measure and record generator winding resistance		x
	Check/Clean	- generator	x	x

SECTION 26 70 00 MOTORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Motors
 - 2. Submittal requirements
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. This section covers motors which are supplied with and as part of connected equipment specified in other sections of this specification.
- B. Special provisions, requirements and/or revisions to this Specification and/or Bid Item(s) may be included on the Drawings or Details.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 00 00 – Electrical General Provisions
 - 2. Section 26 00 02 – Basic Materials and Methods
 - 3. Section 26 05 19 – Wire and Cable
 - 4. Section 26 05 33 – Raceways

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.
 - 2. Drawings and Data: Catalog information and complete name-plate and efficiency information.
 - 3. Motor wiring and connection diagrams for all provided external connections including power, overtemp contacts, space heaters, moisture sensors, etc.

4. Physical drawing showing electrical connection.
5. Motor terminal connection box size.
6. Refer to individual equipment specification requirements.
7. Submit the motor manufacturer's certification of conformance to the specified bearing life on all motors 20 horsepower and larger. Also submit, upon the Engineer's request, certification of bearing life on smaller motors.
8. For motors provided with cords, provide complete information on the cord including:
 - a) Length, number and size of conductors, overall diameter, materials, ratings, etc.
9. For motors with special requirements for protection such as overtemp, moisture, overtorque, etc. from electrical controls or components, submit detailed information on equipment, installation, and control wiring requirements.
10. For motors on VFD's,
 - a) Provide data on expected speed range of load being served.
 - b) Provide proof of inverter duty rating and insulation rating as specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

PART 2 PRODUCTS

2.1 GENERAL

- A. Unless specifically excepted, all motors shall be of the "energy efficient" or "energy saver" type which meet the minimum efficiencies required by the Energy Policy Act of 1992. Normal efficiency motors shall not be supplied. In addition, all motors shall have a minimum power factor rating of .85 at full load, motors rated at a lower power factor shall not be supplied.
- B. Provide motors in accordance with standard NEMA type classifications as specified. The use of industry standard sub classifications such as "Mill and Chemical" motors and similar "standard" heavy-duty designs are encouraged where they meet or exceed the specified minimum requirements.
- C. All Motors shall be suitable both electrically and mechanically to drive the connected equipment under any and all modes of operation. The speed, horsepower, torque, base, bearing, shaft, insulation, and enclosure shall be closely coordinated with equipment requirements specified herein and in other portions of this specification so as to provide a satisfactory, efficient drive without overloading, overheating, abnormal noise or vibration.
- D. All Motors shall be designed and built for long, trouble-free life in industrial service and shall be capable of operating successfully under the following application conditions:
 1. 40° C maximum ambient temperature to -20° C minimum ambient temperature,
 2. 3,300 ft. maximum altitude,
 3. Voltage variations to plus or minus 10% of nameplate rating,
 4. Frequency variations to plus or minus 5% of nameplate rating,
 5. Variable speed motors shall be suitable for use with variable speed controller,
 6. .85 minimum full load power factor.
- E. All motors shall be rated for full voltage starting, NEMA Design B, normal torque, normal starting current, unless otherwise required by the driven equipment or specified.
- F. All motors shall be suitable for the environment in which they are to be installed.

2.2 ENCLOSURES

- A. Totally enclosed fan cooled (TEFC) unless otherwise specified.
- B. Cast iron stator frames and end shields, rigid construction.
- C. Heavy fabricated steel, or cast iron for single phase motors.

2.3 MOTOR ACCESSORIES

- A. Motor Leads: Provide motor leads compatible with motor insulation system, permanently identified.
- B. Eyebolts: Provide drilling and tapping for eyebolts on all motors weighing more than 83 pounds.
- C. Nameplates: Provide two engraved stainless steel stamped metal nameplates (one for the motor and one for mounting in the motor control center), with the information required by NEMA-MG1-10.39 and the following additional information:
 - 1. Maximum ambient temperature for which motor is rated,
 - 2. Class of insulation,
 - 3. Service factor,
 - 4. Bearing part number,
 - 5. Motor connection diagram if more than three leads,
 - 6. Power rating in kW if driven equipment ratings are given in metric units,
 - 7. Voltage and wattage of internal space heaters.
- D. All single-phase motors shall be self-protected unless specified "for separate protection", and the self-protection characteristic shall be indicated on the motor nameplate. Protection shall be manual or automatic-reset type as specified or required by safety considerations of the equipment served.
- E. Single phase motors shall be provided with start capacitors if necessary for proper operation of the motor. The start capacitors shall be located within the motor housing.
- F. Enclosed Motors: Provide drain plugs for non-explosion proof motors and drain and breather for explosion proof motors.
- G. Finish: Provide a prime and final finish of the manufacturer's standard colors.
- H. Provide embedded thermostats for thermal alarm or motor cut out for all motors 40 Hp and above unless otherwise shown.

2.4 MOTOR TERMINAL CONNECTION BOX

- A. Provide a terminal connection box two sizes larger than normal to allow extra room for motor feeder splices.
 - 1. Refer to Section 26 05 19 – Wire and Cable.
 - a) Motor Terminal Splice Insulation
- B. Conduit Entrance: Provide conduit entrance box on the right-hand side of all horizontal motors, when facing motor end opposite shaft extension unless otherwise detailed on the drawings or required by the unique characteristics of the equipment served. Provide conduit entrance box size and drilling to conform to the conduit or wiring requirements indicated on the electrical drawings. Include motor leads and all accessory leads in a common conduit entrance box.

2.5 INSULATION CLASS

- A. Provide NEMA Class B insulation with additional nonhygroscopic moisture protection which will maintain a minimum resistance of 1.0 megohms after 168 hours of exposure at 100% humidity.
- B. Class F insulation with additional nonhygroscopic moisture protection as specified above may be utilized at the Contractor's option, however, the temperature rise as measured by resistance when operating at rated service factor and load shall conform to the limiting observable temperatures in NEMA-MGI, for class B insulation.
- C. Class A insulating materials shall not be utilized.

2.6 MOTORS ON VARIABLE FREQUENCY DRIVES (VFD'S)

- A. Motors for use with VFD's shall be inverter duty rated. Inverter duty rated motors shall meet the requirements of NEMA MG1, Part 31. Insulation rating shall be 2100V minimum. The Contractor shall coordinate between the VFD and motor manufacturers to provide a motor/VFD combination suitable for the application.
- B. Provide motors with adequate cooling for the lowest expected speed for load served.
- C. Any line terminators, filtering devices, harmonic filters, line reactors, or other devices required for proper operation of the motor/VFD combination shall be provided and installed by the Contractor at no additional cost to the Owner.

2.7 SERVICE FACTOR

- A. The rated nameplate horsepower of the motor, when operating at a service factor of 1.0, shall be equal to or greater than the horsepower required to drive the connected equipment under any and all modes of operation.
- B. Provide motors with a 1.15 service factor.

2.8 POWER RATINGS

- A. Motor horsepower, if indicated in the detailed equipment specifications, are minimum size acceptable.
- B. Ratings indicated on the electrical drawings are for guidance only and do not limit the equipment size.
- C. Frame/hp relationships shall conform to the latest NEMA standards for "T" or "U" frames, and all dimensions shall meet NEMA standards.

2.9 SYNCHRONOUS SPEED

- A. In general, the motor speed indicated is the rated synchronous speed. Provide motor rated full-load speeds which are compatible with the specified performance of the driven equipment.

2.10 STANDARD RATED VOLTAGE PHASE AND FREQUENCY

- A. Provide motors nameplate-rated for 60 hertz power supply as follows unless otherwise specified or shown on the drawings:
 - 1. Motors 1/2 hp through 200 hp, three-phase 230/460V.
- B. Conform to the specified service conditions and the equipment specifications without reduction in the service factor.

2.11 BEARINGS & SHAFTS

- A. All bearings shall be anti-friction-type AFBMA standard sizes. All motors shall provide a minimum bearing life of 20,000 hours. All motors shall have thrust ratings not less than the combined static and dynamic loads to be imposed.
- B. Shafts shall be in accordance with NEMA "T" or "TS" dimensions. Long shafts shall be suitable for belt, chain or gear drive within limits established by good industrial practice and documented by NEMA. Short shafts shall be used for direct connection. Vertical motors shall be the solid-shaft type except where application requires a hollow-shaft design.
- C. Balance and Vibration: Conform to NEMA standard, MG1, latest revision.

2.12 DUTY CYCLE

- A. Provide motors rated for continuous duty unless otherwise specified.

2.13 LUBRICATION

- A. Horizontal polyphase motors shall be grease lubricated. The bearing housing shall be large enough to hold sufficient lubricant to minimize the need for frequent re lubrication but facilities shall be provided for adding new grease and draining out old grease without major motor disassembly. Motors 180T frame and smaller may utilize grease release fitting in lieu of grease drain plug. The bearing housing shall have long, tight, running fits or rotating seals to protect against the entrance of foreign matter into the bearings or leakage of grease out of the bearing cavity.
- B. Vertical polyphase motor lubrication shall conform to the motor manufacturer's recommendations. Except as otherwise recommended, guide bearings shall be ball bearings, grease lubricated; thrust bearings shall be grease lubricated through frame 280T, oil lubricated in larger frame sizes.

2.14 EFFICIENCY

- A. Efficiency shall be determined by testing production motors with a dynamometer at rated output, voltage and frequency in accordance with IEEE Specification 112A, Paragraph B.

2.15 SHOP TESTS

- A. Each polyphase motor shall be given a routine test to determine that it is free from electrical or mechanical defects and provide assurance that it meets the specifications. The routine test shall conform to applicable NEMA and IEEE Standards latest revision.
- B. Copies of the test report will not be required unless actual operation and installation suggest the motors' performance should be verified, in which case certified copies of the test report shall be submitted upon the Engineer's request.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Motors shall be factory installed on common bases, stands, etc., with the driven equipment. Provide suitable couplings and guards between motor and driven equipment.
- B. Align and connect to driven equipment.
- C. Provide suitable personnel guards over all shafts, couplings, or other exposed moving parts.
- D. Connect motors to power supply and controllers.
- E. Verify correct rotation of equipment.

- F. Connect motor leads with a splice kit specifically designed for motor lead connection.
 - 1. Refer to Section 26 05 19 – Wire and Cable.

3.2 INSTALLATION CHECK

- A. Provide services of an experienced, competent, and authorized representative of manufacturer to visit site of work to inspect, check, adjust if necessary, and approve equipment installation for motors.
- B. Assure that equipment manufacturer's representative is present when equipment is placed in operation.
- C. Verify that equipment representative revisits job site as often as necessary until all trouble is corrected and equipment installation and operation are satisfactory, at discretion of Engineer.
- D. Verify that motor overcurrent protection is in accordance with the NEC.
- E. Verify the motor protection and control is in accordance with the equipment manufacturer's requirements.
- F. The Contractor shall open each motor terminal box for inspection by the Engineer.

3.3 TESTS

- A. The Contractor shall simulate all motor alarm and shutdown conditions to test that the motor control is operating correctly. These tests shall be witnessed and verified by the Engineer.
- B. The Contractor shall perform voltage, current and resistance tests as required to complete the Motor Test Report.
 - 1. Refer to Section 26 01 26 – Testing.
 - 2. The Contractor shall inform the Engineer a minimum of 3 days in advance of testing and shall only perform tests with the Engineer or Owner's representative present.
- C. If the test results indicate corrective measures are required, the Contractor shall undertake all such corrective measures until the electrical system is accepted by the Engineer. No additional compensation will be paid for corrective measures.

END OF SECTION

SECTION 26 90 25 CONTROL COMPONENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Material and installation requirements for:
 - 1. Instrumentation
- B. Measurement and Payment

1.2 DESCRIPTION OF WORK

- A. The work and materials specified in this section include the system for control and monitoring of motor driven pumps and all components, instruments and sensing devices.
- B. The control system shall include the control devices, sensors, interfacing devices, enclosures and other components indicated and implied by the Plans and these Specifications, and to provide trouble-free operation with minimum maintenance.
- C. The control system shall be designed and assembled by the Contractor to be an integrated system composed completely of components which are specifically designed and used for and in conjunction with control and operation of motor-driven pumps and equipment. All components shall be standard, catalog-listed products, new and free of defects. The system shall readily enable manual operation of any and all functions in the event of failure of any one component. The system shall be designed for future expandability, including additional level control probes and level control relays.
- D. The Contractor shall supply all interfacing equipment, appurtenances and accessories and all such devices that may be required for proper interfacing as part of the control system.

1.3 RELATED SECTIONS

- A. Related Sections include but are not necessarily limited to:
 - 1. Section 26 60 00 – Electrical: General Provisions.
 - 2. Section 26 60 02 – Basic Materials and Methods.

1.4 MEASUREMENT AND PAYMENT

- A. This section shall be paid under the following Pay Items:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
26 00 01.01	Electrical (General)	LS

1.5 STANDARDS AND REFERENCES

- A. All materials and equipment specified herein shall within the scope of UL Examination Services, be approved by the Underwriter's Laboratories for the purpose for which they are used and shall bear the UL label.
- B. All materials and equipment specified herein shall conform with all applicable NEMA, ANSI and IEEE Standards
- C. All materials and equipment specified herein and their installation methods shall conform to the latest published version of the National Electrical Code, NEC.

1.6 SUBMITTALS

- A. Shop Drawings
 - 1. See Section 26 00 00.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 26 00 00.

1.8 COORDINATION WITH MOTOR CONTROLS AND OTHER EQUIPMENT

- A. The Contractor shall be solely and completely responsible for coordination and integration of control system with the motor control and other related equipment. The Contractor shall communicate directly with the Manufacturer(s) and supplier(s) of all related control equipment to determine all intended details of the equipment, which may influence or affect the control system. The Contractor shall determine all requirements for and shall cause integration of the control system and all other control equipment into a unified operating system. The Contractor shall define all requirements for all interfacing equipment and shall supply all appurtenances, accessories and all such devices, which may be required for proper interfacing as part of the control system.

PART 2 PRODUCTS**2.1 TEMPERATURE TRANSMITTER**

- A. 2-wire device transmitting a 4-20mA output signal proportional to temperature, integral probe, temperature range -40 to 212 degrees F. Turck TT series or approved equal.

PART 3 EXECUTION**3.1 OPERATING DEVICE LOCATION**

- A. Operating devices shall be mounted no higher than 6'-6" and no lower than 4'-0" above finished floor when panel is installed unless otherwise approved by the Engineer. Operating devices with displays shall be mounted so that the display is between 5'-3" and 6'-0" above finished floor unless otherwise approved by the Engineer.

3.2 INSTALLATION

- A. The control system shall be installed in accordance with the installation drawings and instructions prepared by the Contractor. Installation shall be performed by workers who are skilled and experienced in the installation of electrical instrumentation and control systems.
- B. Installation shall include all elements and components of control system and all conduit and interconnecting wiring between all elements, components, sensors and valve operators. All wiring between cabinets, sensors, pumps and equipment shall be multiple color coded for ease of servicing. All terminations shall be made with solderless pressure connectors.

3.3 CALIBRATION AND START-UP

- A. All components of the control system shall be calibrated by the Contractor after completion of installation. Each component shall be adjusted to be within the Manufacturer's required range and for the specific application.
- B. Components that cannot be properly calibrated or that are found to exceed the Manufacturer's specified range or accuracy shall be removed and replaced at no additional cost to the Owner.

3.4 SYSTEM MAINTENANCE

- A. The Contractor shall be solely and completely responsible for all maintenance of the system from time of start-up to the date of acceptance, by formal action of the Owner, of all work under the contract. The Contractor shall correct all deficiencies and defects and make any and all repairs, replacements, modifications, and adjustments as malfunctions or failures occur. The Contractor shall perform all such work required or considered to be required by the Owner to cause and maintain proper operation of the system and to properly maintain the system.
- B. The Contractor shall anticipate that the Owner may delay acceptance of all work under the contract if, in the judgment of the Owner, malfunctions or failures in operation of the control system repeatedly occur after start-up. The Contractor shall not be entitled to an extension of time or to any claim for damages because of hindrances, delays or complications caused by or resulting from delay by the Owner in accepting the work because of malfunctions or failures in operation of the control system.

3.5 OPERATION AND MAINTENANCE TRAINING

- A. See Section 26 00 00.

END OF SECTION

STRUCTURAL TECHNICAL SPECIFICATIONS INDEX AND STAMP PAGE

Division 03 – Concrete

Section 03 1000 – Concrete Forming and Accessories

Section 03 2000 – Concrete Reinforcing

Section 03 3000 – Cast-in-Place Concrete

Division 04 - Masonry

Section 04 2000 – Unit Masonry

Division 06 – Building

Section 06 1010 – Building

Section 06 1120 – Framing and Sheathing

Division 07 - Roofing

Section 07 6100 – Sheet Metal Roofing



3/29/2022



**SECTION 03 1000
CONCRETE FORMING AND ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing, anchorage and falsework.
- B. Openings for other work.
- C. Form accessories.
- D. Water Stops
- E. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.
- D. Section 31 2316 - Excavation: Shoring and underpinning for excavation.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Measurement and payment of forming work will be incidental to other items of work.
- C. Formwork (Vertical Structures): Includes form materials, placement, placing accessories, stripping.

1.04 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010 (Errata 2012).
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute; 2011.
- D. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute; 2004.
- E. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures & Commentary; American Concrete Institute International; Current Edition
- F. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers; 2013.
- G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- H. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.
- I. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2014.
- J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.

- K. Idaho Standards for Public Works Construction, Current Edition.
- L. AASHTO - Standard Specifications for Transportation, Materials & Methods of Sampling and Testing; Part I & II.
- M. Idaho Transportation Department Standard Specifications for Highway Construction, Current Edition.
- N. PS 1 - Structural Plywood; 2009.

1.05 SUBMITTALS REQUIRED

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Product Data: Provide data on materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints, ties, tie hole patterns, and form lines.
- D. Delegated Design Data: As required by authorities having jurisdiction.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with Public Works standards of the State of Idaho.
- B. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in the State in which the Project is located.
- C. Maintain one copy of each installation standard on site throughout the duration of concrete work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
- B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.
- C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design, engineer and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Chamfer outside corners of beams, joists, columns, and walls.
- D. Comply with applicable State and local codes with respect to design, fabrication, erection, and removal of formwork.
- E. Comply with relevant portions of ACI 350, ACI 347, ACI 301, and ACI 318.
- F. Comply with Public Works standards of the State of Idaho.
- G. Use the following form types:
 - 1. Walls Not Exposed To View: Shall be 3/4" minimum thickness plywood in good condition and free from all surface imperfections.

2. Walls Exposed To View: Shall be 3/4" minimum thickness water proof synthetic resin bonded plywood specifically made for concrete work. Forms shall be free of all surface imperfections.

2.02 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.
- B. Softwood Plywood: PS 1, C Grade, Group 2.
- C. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.
- D. Plywood: Douglas Fir species; solid one side grade; sound undamaged sheets with clean, true edges.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
 1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
 2. Do not use materials containing diesel oil or petroleum-based compounds.
 3. VOC Content: None; water-based.
 4. Products:
 - a. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com.
 - b. W.R. Meadows, Inc; Duogard: www.wrmeadows.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- C. Form Release Agent: All form release agents shall be NSF approved for drinking water. Colorless mineral oil that will not stain concrete, absorb moisture, impair natural bonding of concrete finish coatings, or affect color characteristics of concrete finish coatings.
- D. Corners: Filleted, wood strip type; 3/4 x 3/4-inch size; maximum possible lengths. Not required for footings and stem walls in building structure.
- E. Dovetail Anchor Slot: Galvanized steel, at least 22 gage, 0.0299 inch thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork. Provide _____ manufactured by _____.
- F. Flashing Reglets: Galvanized steel, at least 22 gage, 0.0299 inch thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork. Provide _____ manufactured by _____.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Earth forms are not permitted unless otherwise specified on the plans.
- B. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Install permanent insulated foam panel formwork per manufacturer's recommendations.
- D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- E. Align joints and make watertight. Keep form joints to a minimum.
- F. Obtain approval before framing openings in structural members that are not indicated on drawings.
- G. Provide fillet and chamfer strips on external corners including but not limited to beams, joists, columns, and walls.
- H. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- I. Coordinate this section with other sections of work that require attachment of components to formwork.
- J. Erect formwork in order to provide required concrete cover over reinforcing steel. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Engineer before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals specified in Section 04 2001.
- E. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean and protect permanent insulated concrete foam panel formwork per manufacturer's recommendations.
- C. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- C. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.09 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

**SECTION 03 2000
CONCRETE REINFORCING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Concrete Reinforcing: Shall be considered incidental to other items of work.
 - 1. Includes: Reinforcement, placement and accessories.

1.04 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements For Structural Concrete and Commentary; American Concrete Institute International; 2011.
- C. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures & Commentary; American Concrete Institute International; Current Edition.
- D. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International; 2004.
- E. AASHTO - Standard Specifications for Transportation, Materials & Methods of Sampling and Testing, Part I & Part II.
- F. AASHTO M 284/M 284M - Epoxy-Coated Reinforcing Steel Bars
- G. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- H. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2014.
- I. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement; 2014.
- J. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- K. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute; 2009.
- L. CRSI (P1) - Placing Reinforcing Bars; Concrete Reinforcing Steel Institute; 2011.
- M. Idaho Standards for Public Works Construction; current edition.

1.05 SUBMITTALS REQUIRED

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.

- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.
- E. See General Structural Notes for additional requirements.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with CRSI (DA4), CRSI (P1), ACI 301, ACI SP-66, ACI 318, and ACI 350.
 - 1. Maintain one copy of each document on project site.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 - 60,000 psi.
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- B. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice, ACI SP-66 - ACI Detailing Manual, ACI 318, and ACI 350.
- B. Welding of reinforcement is not permitted.
- C. Locate reinforcing splices not indicated on drawings at point of minimum stress.
 - 1. Review locations of splices with Engineer.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcing as follows: See General Structural Notes.
- E. Conform to applicable code for concrete cover over reinforcement.
- F. Bond and ground all reinforcement to requirements of Section 26 0526.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4000, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

**SECTION 03 3000
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Floors and slabs on grade.
- C. Concrete walls.
- D. Concrete reinforcement.
- E. Joint devices associated with concrete work.
- F. Miscellaneous concrete elements, including but not limited to equipment pads, thrust blocks, and pole bases.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.
- D. Section _____ - _____: Mechanical items for casting into concrete.
- E. Section _____ - _____: Electrical items for casting into concrete.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for additional unit price requirements.
- B. Cast-in-place Concrete: Shall be considered incidental to other items of work.
 - 1. Includes: Reinforcement, formwork, placement and accessories.

1.04 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International; 1998 (Reapproved 2004).
- D. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010 (Errata 2012).
- E. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (errata 2007).
- F. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- G. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
- H. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.

- I. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- J. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- K. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- L. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Billet-Steel Bars for Concrete Reinforcement; 2014.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2014.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2014.
- P. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2013.
- Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- R. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- T. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2014.
- U. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- V. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
- W. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
- X. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes; 2001 (Reapproved 2012).
- Y. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2012.
- Z. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2011.
- AA. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2010.
- BB. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- CC. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014.
- DD. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2012.
- EE. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2011.

- FF. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 2011.
- GG. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
- HH. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).
- II. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2010.
- JJ. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy Coated Reinforcing Steel Bars; 2001 (Reapproved 2007).
- KK. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- LL. Idaho Standards for Public Works Construction; Current Edition.
- MM. NSF 61 - Drinking Water System Components - Health Effects; 2014.
- NN. NSF 372 - Drinking Water System Components - Lead Content; 2011.

1.05 SUBMITTALS REQUIRED

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

G. See General Structural Notes for additional requirements.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301, ACI 318 and ACI 350.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.
- B. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- C. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Form Facing for Exposed Finish Concrete: Steel.
 - 3. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
 - 4. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 5. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT

- A. Comply with requirements of Section 03 2000.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 - 60,000 psi.
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel, galvanized, plastic, or plastic-coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
 - 2. Only one type and brand of cement is permitted in any one structure.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class F.
- D. Calcined Pozzolan: ASTM C618, Class N.
- E. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- F. Water: Clean, fresh and not detrimental to concrete.

2.04 ADMIXTURES

- A. Chemical Admixture Manufacturers:

- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Air Entrainment Admixture: ASTM C260/C260M.
 - 1. Products:
 - a. MB - AE10 manufactured by Master Builders.
 - b. Daravair® 1000 manufactured by Grace.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- E. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- F. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- G. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
 - 1. Provide pigmented type, with ASTM C979/C979M inorganic pigments.
 - 2. Products:
 - a. Pozzolith 300R manufactured by Master Builders.
 - b. ADVA® 195 manufactured by Grace.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- H. Accelerating Admixture: ASTM C494/C494M Type C.
 - 1. Products:
 - a. W.R. Meadows, Inc; Hydraset: www.wrmeadows.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- I. Retarding Admixture: ASTM C494/C494M Type B.
- J. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 PATCHING AND GROUTING COMPOUND

- A. Fast-setting, non-shrink, high bond strength, hydraulic cement compound.
- B. Manufacturers:
 - 1. XYPEX, PATCH n' PLUG
 - 2. Substitutions: See Section 01 6000 - Product Requirements

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
 - 1. Products:
 - a. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com.
 - b. W.R. Meadows, Inc.; ACRY-LOK-: www.wrmeadows.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
 - 2. Products:
 - a. Adhesives Technology Corporation; Crackbond SLV302, Crackbond LR321, Crackbond LR321 LPL, Ultrabond 2100 LPL, Ultrabond 2100, Ultrabond 1, Ultrabond 2, Ultrabond 4CC, or Ultrabond HS200: www.atcepoxy.com.

- b. Adhesives Technology Corporation; Crackbond LR321 G, Miracle Bond 1350 or Miracle Bond 1450: www.atcepoxy.com.
 - c. Dayton Superior Corporation; Slow Set Bonding Agent: www.daytonsuperior.com.
 - d. Dayton Superior Corporation; Perma Prime 3C: www.daytonsuperior.com.
 - e. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000, or SpecPoxy 3000FS: www.specchemllc.com.
 - f. W.R. Meadows, Inc.; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000: www.wrmeadows.com.
 - g. Substitutions: See Section 01 6000 - Product Requirements.
- C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, cellulose fiber.
 - 2. Material: ASTM D1752 sponge rubber (Type I).
 - 3. Material: Closed-cell, non-absorbent, compressible polyethylene or polymer foam in sheet form.
 - 4. Products:
 - a. W.R. Meadows, Inc; Fiber Expansion Joint Filler with Snap-Cap: www.wrmeadows.com.
 - b. W.R. Meadows, Inc; Deck-O-Foam Joint Filler with pre-scored top strip: www.wrmeadows.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.
 - 1. Products:
 - a. W.R. Meadows, Inc; Speed-E-Joint: www.wrmeadows.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- E. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/2 inch thick and 4 inches deep; tongue and groove profile.
- F. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center, spacing to be indicated on drawings, ribbed steel stakes for setting.
 - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 - 2. Height: To suit slab thickness.
 - 3. Manufacturers:
 - a. Substitutions: See Section 01 6000 - Product Requirements.
- G. Sealant and Primer: As specified in Section 07 9005.

2.07 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
 - 1. Products:
 - a. Dayton Superior Corporation; AquaFilm Concentrate J74: www.daytonsuperior.com.

- b. SpecChem, LLC; SpecFilm Concentrate or SpecFilm RTU: www.specchemllc.com.
 - c. W.R. Meadows, Inc; Evapre or Evapre-RTU: www.wrmeadows.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
 - 1. Application: Use at slabs and walls if formwork is removed prior to full concrete cure.
 - 2. Product dissipates within 4 to 6 weeks.
 - 3. Provide product containing fugitive red dye.
 - 4. Products:
 - a. Dayton Superior Corporation; Resin Cure with Dye J11WD: www.daytonsuperior.com.
 - b. Dayton Superior Corporation; Clear Resin Cure J11W: www.daytonsuperior.com.
 - c. Dayton Superior Corporation; Clear Cure VOC J7WB: www.daytonsuperior.com.
 - d. SpecChem, LLC; SpecRez: www.specchemllc.com.
 - e. W.R. Meadows, Inc.; 1100-Clear: www.wrmeadows.com.
 - f. Substitutions: See Section 01 6000 - Product Requirements.
- C. Wax Curing Compound: Water-based liquid, white pigmented, membrane-forming.
 - 1. Products:
 - a. Dayton Superior Corporation; White Wax Cure J9A: www.daytonsuperior.com.
 - b. Dayton Superior Corporation; White Wax Cure CRD300: www.daytonsuperior.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. Resin Curing Compound: Solvent-based liquid, white pigmented, membrane-forming.
 - 1. For use on exterior slabs. When slab will be painted, sealed, topped, or receive other applied finish, completely remove curing compound after curing is complete and before finish coatings are applied.
 - 2. Comply with ASTM C309, Type 2, Classes A and B.
 - 3. VOC Content: Less than 350 g/L.
 - 4. Solids Content: 20 percent, minimum.
 - 5. Products:
 - a. Dayton Superior Corporation; White Resin Cure J10W: www.daytonsuperior.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- E. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
 - 1. Application: Use at Use at slabs and walls if formwork is removed prior to full concrete cure.
 - 2. Vehicle: Solvent-based.
 - 3. Solids by Mass: 25 percent, minimum.
 - 4. VOC Content: OTC compliant.
 - 5. Products:

- a. Dayton Superior Corporation; Cure & Seal 1315 J22WB: www.daytonsuperior.com.
 - b. Dayton Superior Corporation; Cure & Seal 1315 EF: www.daytonsuperior.com.
 - c. W.R. Meadows, Inc.; VOCOMP-20: www.wrmeadows.com.
 - d. W.R. Meadows, Inc.; VOCOMP-25: www.wrmeadows.com.
 - e. W.R. Meadows, Inc.; CS-309 OTC: www.wrmeadows.com.
 - f. W.R. Meadows, Inc.; CS-309-25: www.wrmeadows.com.
 - g. W.R. Meadows, Inc.; CS-309-25 OTC: www.wrmeadows.com.
 - h. W.R. Meadows, Inc.; CS-309-30: www.wrmeadows.com.
 - i. W.R. Meadows, Inc.; CS-309-30 OTC: www.wrmeadows.com.
 - j. W.R. Meadows, Inc.; TIAH: www.wrmeadows.com.
 - k. W.R. Meadows, Inc.; TIAH OTC: www.wrmeadows.com.
 - l. Substitutions: See Section 01 6000 - Product Requirements.
- F. Moisture-Retaining Sheet: ASTM C171.
- 1. Curing paper, regular.
 - 2. Polyethylene film, clear, minimum nominal thickness of 0.0040 in..
 - 3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide.
- G. Polyethylene Film: ASTM D2103, 4 mil thick, clear.
- H. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- 1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
- B. Concrete Strength: Establish required average strength for concrete on the basis of trial mixtures, as specified in ACI 301.
- 1. For trial mixtures method, employ independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- D. Normal Weight Concrete: See General Structural Notes.
- E. Chlorides are not permitted in any form.

2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2. Use latex bonding agent only for non-load-bearing applications.
- E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Engineer not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 - 1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

- D. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.
- E. Saw Cut Contraction Joints: See Structural Plans.
- F. Contraction Joint Devices: Use preformed joint device, with top set flush with top of slab.
- G. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.
- H. Separate slabs on grade from vertical surfaces with joint filler.
- I. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- J. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07 9005 for finish joint sealer requirements.
- K. Install joint devices in accordance with manufacturer's instructions.
- L. Install construction joint devices in coordination with joint pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- M. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt successive placement; do not permit cold joints to occur.
- P. Saw cut joints within 24 hours after placing.
- Q. Screed slabs on grade level, maintaining surface flatness of maximum 1/4 inch in 10 ft.
- R. Concrete for thrust blocks shall be confined to the fitting that is being thrust-blocked and shall not be allowed to come in contact with the pipe(s) the fitting is attached to. Place concrete to permit full access to pipe and pipe accessories.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for conformance to specified tolerances.
- B. Maximum Variation of Surface Flatness:
 - 1. Exposed Concrete Floors: 1/4 inch in 10 ft.
- C. Correct the slab surface if tolerances are less than specified.
- D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
 3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
- D. Concrete Slabs: Finish in accordance with ACI 301:
1. Interior: Float finish exposed surfaces.
 2. Exterior: Broom finish exposed surfaces.
- E. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
1. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
 - a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.
- F. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.08 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
1. Normal concrete: Not less than 7 days.
 2. High early strength concrete: Not less than 4 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding or saturated burlap.
 - a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
 - b. Spraying: Spray water over floor slab areas and maintain wet.
 - c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
 2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 PATCHING AND GROUTING

- A. Prepare concrete surfaces to receive grout. Flush away all loose materials and dirt with water and stiff brush.
- B. Apply patching and grouting compound per manufacturer's recommendations.

3.10 FIELD QUALITY CONTROL

- A. Contractor shall employ an independent testing agency to perform field quality control tests, as specified in Section 01 4000.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design to Engineer and inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure four concrete test cylinders. Obtain test samples for every 50 cu yd or less of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.11 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Engineer and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Engineer. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

3.12 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

**SECTION 04 2000
UNIT MASONRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete Block.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Flashings.
- E. Lintels.
- F. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing: Reinforcing steel for grouted masonry.
- B. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.
- C. Section 07 2100 - Thermal Insulation: Insulation for cavity spaces.
- D. Section 07 6200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
- E. Section 07 9005 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2100 - Allowances, for cash allowances affecting this section.
- B. This allowance includes purchase, delivery, and installation of Masonry.
- C. Masonry:
 - 1. Shall be considered incidental to other work.

1.04 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2011.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2012.
- C. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2014.
- E. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2014.
- F. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- G. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2014.
- H. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.

- J. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2012.
- L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- M. ASTM C476 - Standard Specification for Grout for Masonry; 2010.
- N. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2012.
- O. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2008).
- P. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2012.
- Q. ASTM C1357 - Standard Test Methods for Evaluating Masonry Bond Strength; 2009.
- R. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2013.
- S. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014.
- T. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.06 SUBMITTALS REQUIRED

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. See Section 01 3100 - Submittal Procedures.
- C. Product Data: Provide data for masonry units, mortar, and masonry accessories.
- D. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.
- E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- F. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.
- G. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.07 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
 - 1. Maintain one copy of each document on project site.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depth of 8 inches.
 - 2. Special Shapes: Provide non-standard blocks configured for corners, jambs, lintels, and sills.
 - 3. Load-Bearing Units: ASTM C90, normal weight.
 - a. Hollow block, as indicated.
 - b. Exposed Faces: Manufacturer's standard color and texture where indicated.

2.02 MORTAR AND GROUT MATERIALS

- A. Mortar and Grout: As specified in General Structural Notes.
- B. Masonry Cement: ASTM C91/C91M, Type S.
 - 1. Colored Mortar: Premixed cement as required to match Engineer's color sample.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- C. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
 - 1. Not more than 0.10 percent alkali.
 - 2. Hydrated Lime: ASTM C207, Type S.
 - 3. Mortar Aggregate: ASTM C144.
 - 4. Grout Aggregate: ASTM C404.
- D. Water: Clean and potable.
- E. Accelerating Admixture: Nonchloride type for use in cold weather.
- F. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.
- G. Integral Water Repellent Admixture for Mortar and Grout: Polymeric liquid admixture added to mortar and grout at the time of manufacture.
 - 1. Use only in combination with masonry units manufactured with integral water repellent admixture.
 - 2. Use only water repellent admixture for mortar and grout from the same manufacturer as water repellent admixture in masonry units.
 - 3. Meet or exceed performance specified for water repellent admixture used in masonry units.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: Type specified in Section 03 2000; size as indicated on drawings; uncoated finish.

2.04 FLASHINGS

- A. Metal Flashing Materials: Copper, as specified in Section 07 6200.
- B. Plastic Flashings: Sheet polyvinyl chloride; 40 mil thick.

1. Manufacturers:
 - a. Hohmann & Barnard, Inc; X-Seal Transition Membrane: www.h-b.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Copper/Kraft Paper Flashings: 3 oz/sq ft sheet copper bonded to fiber reinforced asphalt treated Kraft paper.
 1. Manufacturers:
 - a. Hohmann & Barnard, Inc; C-Kraft Duplex: www.h-b.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Copper/Polyethylene Flashing: Polyethylene film laminated to a 2 oz/sq ft copper sheet through a fiberglass scrim.
 1. Manufacturers:
 - a. Hohmann & Barnard, Inc; Copper-Flex: www.h-b.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- E. Copper/Polymer Fabric Flashing: 3 oz/sq ft copper sheet laminated between two sheets of polymer or fiberglass fabric.
 1. Manufacturers:
 - a. Advanced Building Products, Inc.; Copper Sealtite 2000: www.advancedbuildingproducts.com.
 - b. York Manufacturing, Inc; Multi-Flash 500 Series: www.yorkmfg.com.
 - c. _____.
 - d. _____.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- F. Copper/Polymer Fabric Drainage Plane Flashing System: 3 oz/sq ft copper sheet bonded with rubber-based adhesive between one sheet of polymer fabric and one sheet of non-woven drainage material, and manufacturer's standard butt joint tape sealant.
 1. Manufacturers:
 - a. York Manufacturing, Inc; Flash-Vent: www.yorkmfg.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- G. Polymer Coated Copper Flashing: Polymer coating bonded to a 2 oz/sq ft copper sheet through a fiberglass scrim.
 1. Manufacturers:
 - a. Hohmann & Barnard, Inc; Copper-Tuff: www.h-b.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

H. Copper/Rubberized Asphalt Flashing: 3 oz/sq ft copper sheet coated with elastic asphalt compound.

1. Manufacturers:

- a. Advanced Building Products, Inc.; Copper Fabric Flashing: www.advancedbuildingproducts.com.
- b. Hohmann & Barnard, Inc; H & B C-Coat Flashing: www.h-b.com.
- c. _____.
- d. _____.
- e. Substitutions: See Section 01 6000 - Product Requirements.

I. Stainless Steel/Polymer Fabric Flashing: Manufacturer's standard stainless steel sheet bonded with rubber-based adhesive to one sheet of polymer fabric, and manufacturer's standard stainless steel lap tape.

1. Manufacturers:

- a. York Manufacturing, Inc; Multi-Flash SS: www.yorkmfg.com.
- b. _____.
- c. _____.
- d. Substitutions: See Section 01 6000 - Product Requirements.

J. Stainless Steel/Polymer Fabric Flashing and Drainage System: Manufacturer's standard stainless steel sheet bonded with rubber-based adhesive between one sheet of polymer fabric and one sheet of non-woven drainage material, with manufacturer's standard stainless steel lap tape.

1. Manufacturers:

- a. York Manufacturing, Inc; Flash-Vent SS: www.yorkmfg.com.
- b. _____.
- c. _____.
- d. Substitutions: See Section 01 6000 - Product Requirements.

K. Flexible Flashing with Elvaloy KEE: Solid-phase plasticizer and flexibilizer added to membrane flashing.

1. Manufacturers:

- a. Hohmann & Barnard, Inc; Flex-Flash Flashing: www.h-b.com.
- b. _____.
- c. _____.
- d. Substitutions: See Section 01 6000 - Product Requirements.

L. EPDM Flashing: ASTM D4637, Type I, 0.040 inch thick.

1. Manufacturers:

- a. Hohmann & Barnard, Inc; Epra-Max: www.h-b.com.
- b. _____.
- c. _____.
- d. Substitutions: See Section 01 6000 - Product Requirements.

M. Rubberized Asphalt Flashing: Self-adhering polymer modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; with cross laminated polyethylene top and bottom surfaces.

1. Manufacturers:

- a. Advanced Building Products, Inc.; Strip-N-Flash: www.advancedbuildingproducts.com.
 - b. York Manufacturing, Inc; York Seal: www.yorkmfg.com.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- N. Plastic Flashings: Sheet polyvinyl chloride; 20 mil thick.
- O. Copper Flashing: ASTM B370, 060 soft annealed; 20 oz/sq ft thick; natural finish.
- P. Prefabricated Metal Flashing: Smooth fabricated 12 oz/sq ft copper flashing for surface mounted conditions.
 - 1. Manufacturers:
 - a. Hohmann & Barnard, Inc; MFL Metal Flashing: www.h-b.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- Q. Factory-Fabricated Flashing Corners and Ends: PVC with Elvaloy KEE.
 - 1. Manufacturers:
 - a. Mortar Net Solutions; Mortar Net TotalFlash High Corner Boots & End Dams: www.mortarnet.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- R. Pre-Coated Galvanized Steel Flashing: ASTM A653/A653M, with G90/Z275 coating, 24 gage, 0.0239 inch base metal thickness, shop precoated with fluoropolymer coating in color matching masonry.
- S. Galvanized Steel Flashing: ASTM A653/A653M, with G90/Z275 coating, 26 gage, 0.0179 inch base metal thickness.
- T. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gage, 0.0187 inch thick; finish 2B to 2D.
- U. Flashing Sealant/Adhesive: Butyl type as specified in Section 07 9005.
- V. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
 - 1. Synthetic Rubber Products:
 - a. Mortar Net Solutions; BTL-1: www.mortarnet.com.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. Modified Polyether Products:
 - a. Mortar Net Solutions; MPE-1: www.mortarnet.com.
 - b. York Manufacturing, Inc; UniverSeal US-100 Liquid Tape: www.yorkmfg.com.
 - c. _____.
 - d. _____.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORIES

- A. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.
- B. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 1000.
- C. Nailing Strips: Softwood lumber, preservative treated for moisture resistance, dovetail shape, sized to masonry joints.
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
 - 1. Masonry below grade and in contact with earth: Type S.
 - 2. Exterior, loadbearing masonry: Type S.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match Engineer's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- E. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.
- B. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- C. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.

2. Coursing: One unit and one mortar joint to equal 8 inches.
3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- F. Interlock intersections and external corners.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
- J. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 8 inches to form watertight pan at non-masonry construction.
 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
- C. Extend metal flashings to within 1/4 inch of exterior face of masonry.
- D. Extend plastic, EPDM, and _____ flashings to within 1/4 inch of exterior face of masonry.
- E. Lap end joints of flashings at least 6 inches and seal watertight with flashing sealant/adhesive.

3.07 LINTELS

- A. As indicated on Structural Drawings.

3.08 GROUTED COMPONENTS

- A. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- B. Place and consolidate grout fill without displacing reinforcing.

3.09 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames, glazed frames, and window frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.10 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.11 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.12 PARGING

- A. Dampen masonry walls prior to parging.
- B. Scarify each parging coat to ensure full bond to subsequent coat.
- C. Parge masonry walls in two uniform coats of mortar to a total thickness of 3/4 inch.
- D. Steel trowel surface smooth and flat with a maximum surface variation of 1/8 inch per foot.
- E. Strike top edge of parging at 45 degrees.

3.13 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for conformance to requirements of this specification.
- C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.14 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.

- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.15 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

**SECTION 06 1010
BUILDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Price and Payment Procedures
- B. Related Sections
- C. Products
- D. Execution

1.02 RELATED SECTIONS

- A. Section 03 1000 – Concrete Forming and Accessories
- B. Section 03 2000 – Concrete Reinforcing
- C. Section 03 3000 - Cast-In-Place Concrete
- D. Section 04 2000 - Unit Masonry
- E. Section 06 1120 - Wood Framing and Sheathing
- F. Section 07 6100 - Sheet Metal Roofing

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2000 - Price and Payment Procedures for additional requirements.
- B. Concrete Masonry Unit Building
 - 1. Measurement Method: Shall be paid per Lump Sum
 - 2. Includes: labor, materials, and equipment necessary to construct Concrete Masonry Unit Building as detailed in the Contract Documents. Incidental items include but are not limited to the following: sub-grade preparation, structural fill, concrete slab-on-grade, reinforcement, floor drains, wall construction, trusses, sheathing, roofing, insulation, painting, man door, accessories, and exterior concrete apron slab as well as all other items necessary to complete the building as shown on the plans.

1.04 REFERENCES

- A. International Building Code, latest edition.

1.05 SUBMITTALS FOR CLOSEOUT

- A. Section 01 7800 - Closeout Submittals,
- B. Section 01 6000 - Product Requirements.
- C. Project Record Documents: Record actual locations of concealed components and utilities.
- D. Provide one pint of each type of paint used on the inside and outside of the building.

1.06 REGULATORY REQUIREMENTS

- A. Cooperate with regulatory agency or authority and provide data as requested.

1.07 WARRANTY

- A. Provide a 25-year warranty to include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling,

chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 PRODUCTS

2.01 DESIGN REQUIREMENTS

- A. Size and Dimensions of Concrete Masonry Unit Building: Dimensions are shown on the drawings.
- B. Construction Loads: Consider loading for initial handling and erection, equipment loading, and materials storage.
 - 1. Dead, Snow, and Live Loads as indicated in the Structural Drawings.

2.02 GARAGE DOORS

- A. Manufacturers:
 - 1. Wayne Dalton DS200, or approved equal.
- B. Color: Submit color chart for Owner's selection.
- C. Size: To fit 6'-0" wide by 8'-0" tall rough opening.
- D. Insulated.
- E. Wayne Dalton electric operator kit to be provided with door. Provide power supply as required to electric operator.
- F. Substitutions: Substitutions permitted. Substitution approval must be complete prior to bid opening. Refer to Section 01600.

2.03 MAN DOORS

- A. Galvanized hollow metal double leaf door and frame.
- B. Thickness: 18 GA door and 16 GA frame. Frame to have fully welded corners.
- C. Color: Paint door and frame to match roll-up door.
- D. Door Size: Each door to be 3'-0" wide by 7'-0" tall. 4" wide frame to fit 6'-8" wide by 7'-4" tall rough opening.
- E. Insulated.
- F. Provide handles (exterior lockset and interior with panic hardware), threshold, sweeps, closers, weatherstripping, and door stops. Coordinate lockset with owner.
- G. Substitutions: Substitutions permitted. Substitution approval must be complete prior to bid opening. Refer to Section 01600.

2.04 GLASS BLOCK WINDOWS

- A. Manufacturers:
 - 1. Nubio Glass Block by Seves, or approved equal.
- B. Finish/Style: Wave
- C. Size: 8x8x4 nominal.
- D. Mortar: Provide mortar intended for glass block installation, color white.
- E. See Structural Drawings for installation requirements.
- F. Substitutions: Substitutions permitted. Substitution approval must be complete prior to bid opening. Refer to Section 01600.

2.05 EXTERIOR CONCRETE APRON SLAB ON GRADE

- A. See General Structural Notes for minimum strength requirements.
- B. See Geotechnical Report for subgrade preparation requirements.
- C. Provide $\frac{3}{4}$ " diameter by 8" long smooth stainless steel dowels at 24 inches on center tying exterior slab to building stemwall and slab on grade. Provide equal concrete embedment each end of dowel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

END OF SECTION

**SECTION 06 1120
FRAMING AND SHEATHING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural framing
- B. Wall sheathing
- C. Joint treatment

1.02 RELATED SECTIONS

- A. Section 03 3000 - Cast-in-Place Concrete
- B. Section 06 1010 - Building

1.03 PRICE AND PAYMENT PROCEDURES

- A. Framing and sheathing: shall be considered incidental to the Building.

1.04 REFERENCES

- A. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.
- B. ANSI A208.1 - Mat-Formed Wood Particleboard.
- C. APA (American Plywood Association).
- D. AWWA (American Wood Preservers Association) C1 - All Timber Products - Preservative Treatment by Pressure Process.
- E. AWWA (American Wood Preservers Association) C20 - Structural Lumber Fire Retardant Treatment by Pressure Process.
- F. NFPA (National Forest Products Association).

1.05 SUBMITTALS FOR REVIEW

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- C. Shop Drawings For Engineered Wood Trusses: Indicate dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, erection details and sequence. See Structural Drawings for additional requirements.

1.06 SUBMITTALS FOR INFORMATION

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Manufacturer's Certificate: Certify that Products conform to specified requirements.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with the following agencies:
 - 1. Lumber Grading Agency: Certified by ALSC.

2. Plywood Grading Agency: Certified by APA.

- B. Each piece or each bundle of lumber millwork, and trim shall be identified by the grade mark of a recognized association or independent inspection agency that is certified by the Board of Review, American Lumber Standards Committee, to grade the species. In lieu of grade stamping exposed to view lumber and plywood, submit manufacturer's certificate certifying that products meet or exceed specified requirements.
- C. Pressure Treated Wood: Each treated piece shall be permanently marked or branded by the producer in accordance with APWA M6 except that lumber which is smaller than 2 by 4 inches or shorter than 36 inches and bundled may be marked on outer faces only.
- D. Moisture Content: Lumber shall be air-dried or kiln-dried. Treated lumber shall be kiln-dried after treatment. The maximum moisture content of wood products shall be as follows:
 - 1. Interior paneling: 12 percent
 - 2. Interior finish lumber, trim and millwork 1-1/4 inch or less in nominal thickness: 12 percent
 - 3. Exterior treated or untreated finish lumber and trim 4 inch and less in nominal thickness: 15 percent
 - 4. Other materials: 19 percent

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01 6000 - Product Requirements: Transport, handle, store, and protect products.
- B. Protect trusses from warping or other distortion by stacking in vertical position, braced to resist movement.
- C. Materials shall be stacked to ensure ventilation and drainage and protected against dampness before and after delivery.
- D. Materials shall be stored under cover in a well-ventilated enclosure and protected against extreme changes in temperature and humidity.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Lumber: except where specified grade is indicated or specified, lumber shall be any of the species and grades listed in NFP NDS that have allowable unit stresses not less than 625 psi unit stress in bending (Fb) with 1,600,000 psi modulus of elasticity.

2.02 SHEATHING MATERIALS

- A. APA Rated Sheathing -See General Structural Notes.

2.03 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Fasteners: Hot dipped or Electro galvanized steel.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length to achieve full penetration of sheathing substrate.
 - 3. Anchors: See Structural Drawings.
- B. Sill Anchors: anchor bolts cast into concrete or masonry grout

2.04 FACTORY WOOD TREATMENT

- A. Wood Preservative, Pressure Treatment: Lumber treated in accordance with AWPB Treatment C1 and APWA C2 and plywood treated in accordance with APWA C1 and APWA C9. Treatment shall be verified by an approved inspection agency report or the AWPB LP-22 mark on each piece.

PART 3 EXECUTION

3.01 FRAMING

- A. Set structural members level and plumb, in correct position.
- B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Place horizontal members, crown side up.
- D. Construct load bearing framing and curb members full length without splices.
- E. Proper size fasteners shall be used so as not to split members.

3.02 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.

END OF SECTION

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**SECTION 07 6100
SHEET METAL ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheet metal roofing, associated flashings, and underlayment.
- B. Counterflashings, snow guards, integral fascias, gutters and downspouts, and soffits.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.

1.04 ADMINISTRATIVE REQUIREMENTS

- A.

1.05 SUBMITTALS

- A. See Section 01 3100 - Submittal Procedures, for specific instructions.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Product Data: Provide data on metal types, finishes, and characteristics.
- D. Submit two samples 6 inches by 6 inches in size illustrating metal finish color.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Manufacturers:
 - 1. Rolled Steel Products or Engineer-approved equal
 - 2. Substitutions: Under provisions of Section 01 6000, substitutions permitted.
- B. Materials:
 - 1. Rolled rib profile with nominal panel width of 36 inches.
 - 2. ASTM A792, 1.9 mils minimum thickness.
 - 3. Color: submit color chart for Owner selection.
- C. Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 zinc coating; 26 gage core steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect roof deck to verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.
- B. Verify deck is dry and free of snow or ice. Verify joints in wood deck are solidly supported and fastened.
- C. Verify correct placement of wood nailers and insulation positioning between nailers.

- D. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets are in place, and nailing strips located.
- E. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil.
- C. Place eave edge metal flashings tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure flange with nails spaced 8 inches OC.

3.03 INSTALLATION - EAVE (ICE DAM) PROTECTION

- A. Extend eave protection sheet minimum 4 feet upslope beyond interior face of exterior wall.

3.04 INSTALLATION - ROOFING

- A. Apply underlayment over entire roof area.
 - 1. Apply in single layer laid perpendicular to slope; weather lap edges 2 inches and nail in place.
- B. Apply slip sheet in one layer, laid loose.
- C. Cleat and seam all joints.
- D. Use plastic cement for joints between metal and bitumen and for joints between metal and felts.

3.05 INSTALLATION - FLAT SEAM ROOFING

- A. Notch corners and turn up edges 3/4 inch.
- B. Lay sheets with long dimension parallel to eaves. Apply pans beginning at eaves.
- C. Lock cleats into seams and flatten in direction of drainage.
- D. Stagger transverse joints of roofing sheets.
- E. At eaves and gable ends, terminate roofing by hooking over edge strip.
- F. Fold lower ends of seams at eaves over at 45 degree angle.
- G. Extend valley sheet minimum 6 inches under roofing sheets.

3.06 INSTALLATION - STANDING SEAM ROOFING

- A. Lay sheets with long dimension perpendicular to eaves. Apply pans beginning at eaves.
- B. Lock cleats into seams and flatten.
- C. Stagger transverse joints of roofing sheets.
- D. At eaves and gable ends, terminate roofing by hooking over edge strip.
- E. Bend up one side edge 1-1/2 inches and other edge 1-3/4 inches.
- F. Make first fold 1/4 inch wide single fold and second fold 1/2 inch wide, providing locked portion of standing seam, 5 plies in thickness.
- G. Fold lower ends of seams at eaves over at 45 degree angle.

3.07 INSTALLATION - BUILT-IN GUTTERS AND DOWNSPOUTS

- A. Secure gutter lining to substrate with cleats and straps spaced maximum 24 inches on center along edges of gutters.
- B. Longitudinal joints not acceptable.
- C. At roof edges, extend gutter lining under metal roofing 6 inches minimum and terminate in 3/4 inch folded edge secured by cleats. Hook lower end of roofing into lock strip to form 3/4 inch wide loose-lock seam.

- D. Seal gutters watertight. Seal joint of gutter to drain.

3.08 INSTALLATION -- FLASHINGS, TRIM AND SOFFITS

- A. Secure in place using concealed fasteners. Use exposed fasteners only where permitted.
- B. Cleat and seam all joints.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.09 PROTECTION

- A. Do not permit traffic over unprotected roof surface.
- B. Touch-up repair, or replace damaged roof panels, components, or accessories before date of Substantial Completion.

END OF SECTION

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PART 4

ATTACHMENTS

Geotechnical Report



May 28, 2021
File: MO21034A

Mr. Nathan Wright, P.E.
Welch Comer & Associates, Inc.
330 E. Lakeside Ave, Ste 101
Coeur d'Alene, ID 83814

RE: **Geotechnical Engineering Evaluation**
Proposed Well House #6
Public Works Maintenance Shop
650 N. Van Buren Street
Moscow, Idaho

Greetings, Nathan.

GeoProfessional Innovation Corporation (GPI) performed the authorized geotechnical engineering evaluation for the proposed Well House #6 project located at the City of Moscow (City) Public Works Maintenance Shop at 650 N. Van Buren Street in Moscow, Idaho. Our geotechnical engineering evaluation's purpose was to explore the subsurface conditions within the anticipated improvement area and provide geotechnical recommendations to assist Welch Comer & Associates, Inc. (Welch Comer) in project planning, design, and construction.

The following text provides specific recommendations for preparing subgrades, performing earthwork activities, foundation design and construction, as well as other geotechnical-related project aspects. Read this report and implement it in its entirety. Portions of the report cannot be relied upon individually without the supporting text of remaining sections, appendices, and plates. Our opinion is the success of the proposed improvements will depend on following report recommendations, good construction practices, and providing the necessary construction testing and consultation to verify that work has been constructed as recommended. GPI stands ready to assist Welch Comer and the City of Moscow (City) in confirming the subsurface conditions exposed during excavation and documenting our recommendations are incorporated into construction.

We appreciate the opportunity to continue our professional relationship with Welch Comer and the potential to assist the design and construction team. We look forward to our continued involvement on this project as design advances and stand ready to assist as necessary. Please contact us if you have any questions or comments.

Sincerely,
GPI

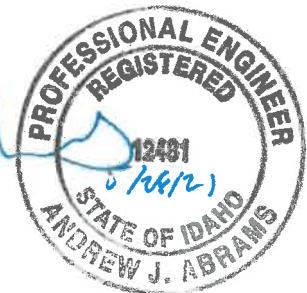
A handwritten signature in blue ink, appearing to read 'A. Carlson'.

Amanda Carlson, E.I.
Staff Engineer

AJA/mg

A handwritten signature in blue ink, appearing to read 'Andrew J. Abrams'.

Andrew J. Abrams, P.E.
Senior Engineer



Geotechnical Engineering Evaluation

Proposed Well House
Public Works Maintenance Shop
650 N. Van Buren Street
Moscow, Idaho

PREPARED FOR:

Mr. Nathan Wright, P.E.
Welch Comer & Associates, Inc.
330 E. Lakeside Ave, Ste 101
Coeur d'Alene, ID 83814



PREPARED BY:

GeoProfessional Innovation Corporation
6 O'Donnell Road
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May 28, 2021

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Appendix A:	Unified Soil Classification System (USCS) and Exploration Logs
Appendix B:	Laboratory Test Results

Geotechnical Engineering Evaluation

Proposed Well House #6
Public Works Maintenance Shop
650 N. Van Buren Street
Moscow, Idaho

INTRODUCTION

GeoProfessional Innovation Corporation (GPI) accomplished the authorized geotechnical engineering evaluation for the Well House project located at the City of Moscow (City) Public Work Maintenance Shop at 650 N. Van Buren Street in Moscow, Idaho. GPI explored subsurface conditions in the anticipated improvement area and prepared these geotechnical recommendations to assist Welch Comer & Associates, Inc. (Welch Comer) and the City in project planning, design, and construction. We performed our services referencing the *Task 1: Geotechnical Engineering Evaluation* portion of the authorized geotechnical scope dated February 12, 2021. The following were advanced to fulfill the geotechnical scope:

1. Coordinated exploration with the Idaho Dig Line, Welch Comer, and the City prior to initiating our exploration.
2. Observed subsurface conditions at the site via 3 test pits excavated by City staff and equipment. GPI's staff visually classified and described the soil encountered in explorations in reference to the *Unified Soil Classification System* (USCS), and collected soil samples for subsequent laboratory testing.
3. Performed laboratory testing on select soil samples obtained during exploration referencing *ASTM International* (ASTM) test standards.
4. Discussed project design and construction concepts with Welch Comer, reviewed subsurface conditions, laboratory test results and proposed construction, conducted geotechnical analyses, and prepared geotechnical recommendations to assist project design and construction.
5. Provided this deliverable for Welch Comer's use throughout design and construction.

GPI engineers will remain available to consult with the design team as necessary while project documents are developed and design is finalized.

PROJECT UNDERSTANDING

The project will demolish the existing well house #6 structure and replace it with a new one, constructed directly atop the previous structure's footprint. Welch Comer reports the building will have a footprint less than 1,000 square feet, and will apply loads less than 1,500 pounds per linear foot to continuous perimeter footings. The new well house will be a single story, concrete masonry unit (CMU) structure, supported on typical shallow spread footings and slab-on-grade floors. Pumps and other equipment will be placed atop the finished slab, and will not be embedded in shaft excavations extending substantially below grade. However, new foundations will bear between 5 and 6 feet below the existing ground surface to accommodate new water transmission lines and other features of the well apparatus. No below-grade space or retaining walls are anticipated. No significant site grading or excavation outside of foundation and utility alignments is expected. Existing stormwater drainage patterns will be maintained to direct surface water to existing City disposal facilities. The existing gravel-surfaced access roads and parking areas will be maintained or reconstructed to match existing sections around the new building.

FIELD EXPLORATION

GPI observed 3 exploratory test pits advanced by City staff with a City-owned Bobcat mini-excavator extending to depths ranging from 3.0 to 7.5 feet below the existing ground surface. In explorations, we obtained soil samples at select depths and locations. Test pits were loosely backfilled by City staff at the conclusion of exploration. Plate 1 illustrates approximate exploration locations. Our geotechnical engineer visually described, classified, and logged the subsurface conditions encountered during exploration referencing the USCS. Appendix A, *USCS & Exploration Logs*, presents exploration logs and a USCS explanation, which should be used to help interpret soil terms used throughout this report and on the exploration logs.

SUBSURFACE CONDITIONS

Crushed gravel surfacing that was gray, dense, and moist was encountered at the ground surface in each test pit location and varied from 1.0 to 1.5 feet thick in the locations explored. Beneath gravel surfacing, we encountered the following subsurface units:

Uncontrolled Fill

- ✘ Mixed Clay, Silt, and Gravel: Gray to dark brown, loose to medium dense, and moist to wet. Mixed clay, silt, and gravel fill was encountered in each test pit location beneath surfacing to depths up to 4.0 feet below the ground surface. Fill contained various debris including wood, plastic, and brick fragments. Test pit TP-21034A-2 was terminated in the uncontrolled fill due to a utility conflict. Test pit TP-21034A-3 was terminated at 3 feet below the ground surface due to groundwater entering the excavation rapidly, causing caving sidewall conditions.

Loess

- ✘ Clay (CL): Reddish brown, firm to very stiff, moist. Clay loess was encountered beneath fill test pit TP-21034A-1 extending to test pit termination depth.

We encountered groundwater in test pit TP-21034A-3 at 3 feet below the ground surface. Based on our observations, our opinion is this groundwater was associated with an existing utility alignment traversing the area. Groundwater levels and soil moisture conditions at the site will fluctuate with seasonal variations in precipitation, infiltration, and irrigation. We did not encounter bedrock with the depths or locations explored.

LABORATORY TESTING

We tested select soil samples retained from each site during exploration to assess:

- ✘ Natural moisture content
- ✘ Grain size distributions (No. 200 wash)
- ✘ In-situ density
- ✘ Modified Proctor

We performed laboratory testing referencing applicable *ASTM* procedures. Index test results are summarized on the exploration logs. We used the laboratory test results to correlate to soil engineering design parameters relied on for analysis of various site components. Laboratory test results are provided in Appendix B, *Laboratory Test Results*.

GEOTECHNICAL OPINIONS AND RECOMMENDATIONS

The following geotechnical recommendations are presented to assist planning, design, and construction for the proposed Well House #6 project located at the City Public Works Maintenance Shop at 650 N. Van Buren Street in Moscow, Idaho. Our recommendations are based on our exploratory findings, laboratory testing, our experience with similar soil conditions, and our understanding of the planned improvements. If design plans change or if the subsurface conditions encountered during construction vary from those observed during our exploration, notify us to review our recommendations, make revisions if necessary, and to assist with earthwork construction.

Earthwork

Demolition

Demolition activities shall remove existing utilities, foundations, slabs, and any existing building features to the planned subgrade elevations and expose native soil to be verified by GPI during construction. Demolishing existing structures may require equipment with “breakers”, “rippers”, or pneumatic hammers. Remediate depressions caused by removing demolished site features by placing *General Structural Fill*. Place suitable structural fill products over native soil subgrade prepared per the *Establishing Subgrades* report section requirements.

Test Pit Remediation

We recommend all test pits located beneath the planned improvements be remediated during earthwork construction. Test pit remediation shall remove loose, disturbed soil and replace it with *General Structural Fill* meeting the requirements outlined herein.

Uncontrolled Fill

Uncontrolled fill was encountered in each exploration location extending to depths up to 4.0 feet below the existing ground surface. Two of our explorations were terminated in uncontrolled fill at 2 feet below the ground surface due to utility conflicts or caving conditions. Fill contained various debris including wood, plastic, and brick fragments. Fill exhibited variable consistency throughout the locations explored, ranging from loose to medium dense. Consistent with geotechnical practice standards, we recommend removing uncontrolled fill to expose undisturbed native soil beneath the planned structure and associated improvements.

Establishing Subgrades

Following demolition, test pit remediation, uncontrolled fill removal, and prior to placing structural fill, foundations, or slabs, prepare subgrades to receive site improvements by exposing undisturbed native loess, displaying a pocket penetrometer (PP) value of 2.0 tons per square foot (tsf) or greater.

After preparing subgrades, it is the contractor's sole responsibility to protect subgrades from degradation, freezing, saturation, or other disturbance. Seasonal wet and freezing weather conditions saturate and soften the finished subgrades, requiring additional earthwork to recompact loosened surface soil to structural fill conditions. This re-work should be specified as incidental to the contractor's means and methods. Also note, reworking prepared subgrades that become disturbed can be very difficult. There are numerous approaches that can be implemented to help protect prepared subgrades. GPI can assist with these at which time contractor staging becomes evident.

Our opinion is careful construction and earthwork procedures are critical to achieving adequate subgrade preparation and reducing over-excavation. Specifically, these procedures could include, but are not limited to, carefully staging equipment and/or stockpiles, routing construction equipment away from subgrades, and implementing aggressive site drainage procedures to help reduce saturating subgrades during wet weather conditions. GPI will remain available to consult with Welch Comer, the City, and your contractors as the project moves forward regarding subgrade preparation procedures.

Excavation Characteristics

We anticipate site soil may be excavated using conventional excavation techniques. Excavators with mechanical thumbs may be required to manipulate demolition debris or large particles within uncontrolled fill deposits. Based on our exploration results, we do not anticipate bedrock excavation will be required for this project.

Plan excavations carefully to be sloped, shored, or braced in accordance with the *Occupational Safety and Health Administration* (OSHA) regulations and local codes. Our exploration suggests the fine-grained native soil at each site is considered "Type C" soil when it remains dry and must be temporarily sloped back no steeper than 1.5H:1V (horizontal:vertical). Debris, saturation or other variations in uncontrolled fill can require flatter slopes. Also, construction vibrations can cause excavations to slough or cave. We do not recommend materials be stockpiled adjacent excavations, which may cause a surcharge and contribute to excavation instability. Ultimately, the contractor is solely responsible for site safety and excavation configurations factoring in water infiltration, construction access, adjacent loading, and other factors that contribute to excavation stability.

Significant groundwater seeps causing caving sidewall conditions were observed at approximately 3.0 feet below the ground surface in test pit TP-21034A-3 associated with an adjacent existing utility line. We anticipate similar perched water tables will be encountered during demolition, excavation and construction for the new well house. Therefore, contractors must plan excavations with water collection points and anticipate utilizing conventional sumps and pumps to remove nuisance water from runoff, seeps, springs, or precipitation. If site soil excavations are not immediately backfilled, they may degrade when exposed to runoff and require over-excavation and replacement with granular fill. We recommend construction activities and excavation backfilling be performed as rapidly as possible following excavation to reduce the potential for subgrades to degrade under inclement weather or construction traffic.

Wet Weather/Soil Construction

Once the subgrade elevation is achieved, it is the contractor's responsibility to protect the soil from degrading under construction traffic, freezing and/or wet weather. Initial footing excavations should not be completed within 24 hours of expected precipitation. Footing or slab concrete placement should never be attempted following a significant precipitation event and the subgrade should never be allowed to freeze prior to concrete or fill placement. The condition of the subgrade and careful construction procedures are critical to foundation and slab stability and the long-term performance of the planned improvements.

Initiating earthwork in the winter or spring (November through April) can negatively impact the project and require substantial weather delays, over-excavations, and/or rework. However, earthwork can typically be extended into late fall (October through November) with reduced risk of these moisture-related earthwork challenges.

Structural Fill

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 Transportation Department (ITD) Standard Specifications for Highway Construction* (Standards). Project structural fill products are described in Table 1: *Structural Fill Specifications and Allowable Use*.

Table 1. Structural Fill Specifications and Allowable Use

Soil Fill Product	Allowable Use	Material Specifications
General Structural Fill	• Site grading, general backfilling & stem wall backfill • Non-structural fill applications	• Soil classified as GM, GW, SM, SP, SW, SC, CL, or ML according to the USCS. • Site soil free of vegetation, organics, and debris meets these requirements. • Soil must contain less than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances. • Maximum mean particle size must be less than 0.5-feet in diameter.
Granular Structural Fill	• Backfilling over-excavations • General structural fill applications	• Soil meeting requirements stated in Section 703.11 Aggregate for Granular Subbase in the ITD Standards. • Soil may not contain particles larger than 0.3-feet in diameter. • Soil must contain less than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances.
Crushed Aggregate	• Granular structural fill applications • Foundation, slab, & pavement support aggregate	• Soil meeting requirements stated in Section 703.04 – Aggregate for Untreated Base, Treated Base and Road Mix, in the ITD Standards.
Unsatisfactory Soil	NONE	• Soil classified as MH, OH, CH, OL, or PT shall 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.

Site Soil Re-Use

We expect soil excavated from the site will be over optimum moisture content and will contain deleterious debris. Our opinion is, this soil will require significant processing to render it suitable for reuse as *Structural Fill*, and therefore may not be viable for a project of this size.

Compaction

Place structural fill only over approved subgrades. Never place structural fill over frozen, saturated, or soft subgrades. Subgrades must be approved by GPI prior to fill or concrete placement. Structural fill products must be moisture conditioned to near optimum moisture content and placed in maximum 1-foot-thick, loose lifts. This lift thickness requires compaction equipment with static weight of at least 5 tons. If smaller or

lighter compaction equipment is used, reduce the lift thickness to meet the compaction requirements presented in Table 2.

Table 2. Required Compaction for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement ¹
Foundation and concrete bearing surfaces	Native soil ² or General Structural Fill	95%
General site grading, utility trench backfilling, stemwall backfill	General Structural Fill	95%
Slab support aggregate	Crushed Aggregate	95%

1. Relative compaction requirement compared to the maximum dry density of the soil as determined by ASTM D1557 (Modified Proctor).
2. Stiff native soil exhibiting PP readings greater than 2.0 tsf.

Earthwork Observation and Testing

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 in reference to this report's requirements. Providing the necessary testing and engineering verification of earthwork activities is the second step. GPI is retained to document design-specified subgrade conditions, unsuitable soil removal, soil bearing units, and compaction by Welch Comer throughout construction. The minimum testing and observation frequencies to implement during earthwork and foundation construction are outlined below.

1. Subgrades exposed prior to fill placement. Reviewed by GPI for conformance with this report's design criteria. PP readings greater than 2.0 tsf or 1 compaction test every 500 square feet (sf) or 3 tests per slab/pavement area, whichever results in the greater number of tests.
2. Site Grading/Structural Fill Placement. One compaction test every 500 sf, per fill lift, minimum 3 tests per testing event.
3. Slab and Foundation Bearing Surfaces. Bearing surface conditions verified by an experienced engineer to confirm conditions as required by design. Additionally, and as applicable pending materials encountered, 1 compaction test every 50 linear feet (lf) of continuous foundations and 500 sf for slab areas, or a minimum of 3 tests per alignment/area.
4. Foundation Wall Backfill. One compaction test every 50 lf of wall or minimum 3 tests per wall line (interior and exterior), whichever results in the greater number of tests, per fill lift.
5. Utility Trench Backfill. One compaction test every 100 lf of trench and minimum 3 tests per utility alignment, whichever results in the greater number of tests, per each fill lift.

Utility Trench Construction Considerations

Pipe bedding for utility construction should conform to ITD Standards *Section 703.04 - Aggregate for Untreated Base, Treated Base, and Road Mix* and Table 1 of this report. Loose soil must be removed from the base of utility trenches prior to placing pipe bedding. In addition, if water is encountered, it must be removed

from the base of the utility trench before placing pipe bedding. We recommend utility pipes be placed on at least 0.5 feet of bedding placed over undisturbed native soil supported according to the pipe manufacturer's specifications and City requirements.

Thoroughly place and compact bedding below pipe haunches or the zone between the pipe invert and the spring line. Then place pipe bedding and compact it from the pipe invert to 1 foot above the top of the pipe with tamping bars and/or plate compactors to render the backfill to a firm and unyielding condition. To accomplish bedding compaction, the distance between the side of the pipe at the spring line and the trench wall should be at least 0.5 feet. Pipes shall always be placed at least 1 foot below any pavement or slab and according to local plumbing codes. The remainder of the utility trench should be backfilled in accordance with this report's *Compaction* section.

Geotextiles

Geotextile separation fabrics are required around drainage aggregate or foundation drain piping as outlined in the *Shallow Foundation Design* section. Also, depending on the time of year construction is initiated and the weather conditions at that time, fabric and geogrid may aid in constructability aspects of the project. The below specifications are provided simply to help guide material selection if deemed appropriate for construction. Where required, geotextiles shall meet the minimum requirements in ITD Standards Section 718.07, and the minimum properties shown in Table 3 below:

Table 3. Geotextile Specifications

Geotextile Type	Use	Minimum Material Specifications
Non-Woven Geotextile	Foundation drains (required)	- Reference ITD Standards Section 718.07 Table 718.07-1 – Subgrade Separation Geotextile Criteria – Type III - Grab tensile strength: 270 pounds (ASTM D4632) - Puncture strength: 600 pounds (ASTM D6241) - Apparent opening size: US Sieve #70 or finer (ASTM D4751) - Permittivity: 0.7 seconds⁻¹ (ASTM D4491)
Triaxial or Biaxial Geogrid	Persistent 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) - Minimum Radial Stiffness of 15,400 lb/ft at 0.5% Strain (ASTM D6637)

Apply geotextiles directly on approved subgrades, taut, free of wrinkles, and overlapped at least 1 foot. Consult GPI to review geotextile applications or other subgrade improvement alternatives.

Shallow Foundation Design

Welch Comer reports structural loads for the planned well house will be less than 1.5 kips per linear foot along continuous walls. No interior columns or isolated spread footings are expected. In our opinion, the anticipated structural loads may be supported on typical shallow foundations that bear directly on stiff undisturbed native soil or compacted *Structural Fill* placed above native soil. The following criteria are provided to aid foundation structural design.

Design Criteria

Shallow foundation design shall incorporate the following criteria and the current International Building Code (IBC) edition adopted by local agencies:

1. Allowable bearing pressure: 2,000 pounds per square foot (psf). This requires:
 - a. Stiff, undisturbed native soil exhibiting PP > 2.0 tsf at the bearing elevation or;
 - b. Structural fill compacted to 95% per ASTM D 1557 and referencing the *Establishing Subgrades*, *Structural Fill*, and *Compaction* report sections.
 - c. Frost protection embedment depth: Minimum 2.5 feet below finished exterior surface.
 - d. Drained subgrade conditions via perimeter foundation drains. See *Site Drainage* report section.
 - e. Bearing pressure may be increased 30 percent under live loading conditions such as wind or seismic conditions.
2. Estimated vertical settlement due to new footing loads:
 - a. Total settlement: 1.0 inch
 - b. Differential settlement: 0.5 inches in 30-foot, horizontal span
3. Lateral load resistance:
 - a. Foundation base friction coefficient:
 - i. 0.35 for foundations cast on fine-grained soils
 - ii. Reduce friction by $\frac{2}{3}$ for precast elements
 - b. Lateral passive resistance is available on foundation sides equal to 300 pounds per cubic foot (pcf) equivalent fluid weight (EFW) where *General Structural Fill* is used as stem wall backfill.
 - i. $\frac{3}{4}$ inches of lateral movement is required to mobilize passive pressure.
4. IBC Site Class (IBC Section 1613)
 - a. Based on field exploration, Site Class D be used as a basis for structural frame seismic design.
 - b. A site-specific seismic response study was not performed.

Concrete Slab-On-Grade Floors

We recommend new concrete slab-on-grade floors be supported by a minimum of 0.7 feet of *Crushed Surfacing Aggregate* meeting the requirements shown in Table 1. This assumes compacted *General Structural Fill* and native soil subgrades will be prepared beneath slabs per the *Earthwork* report section. Slabs must be structurally designed for the anticipated use and equipment or storage loading conditions. Based on correlations to our field and laboratory test results, if our recommendations are followed, we recommend concrete slab design utilize an allowable modulus of subgrade reaction (k) of 150 pounds per cubic inch (pci). To realize the estimated subgrade modulus, drained conditions, and a minimum of 0.7 feet of *Crushed Surfacing Aggregate* must be provided over the compacted subgrade soil.

We do not anticipate sub-slab moisture vapor barriers will be incorporated into well house construction. Therefore, moisture vapor transmission through floor slabs is likely throughout the life of the structure. If floor coverings, moisture sensitive equipment or other items that may be damaged by slab moisture vapor transmission are present in the structure, please contact GPI for additional consultation regarding moisture vapor barrier installation.

Site Drainage Considerations

The native site soil comprises silt and clay that are not conducive to stormwater disposal via infiltration. Runoff from precipitation or snowmelt must be routed away from structures to the maximum extent

practical and must not be allowed to infiltrate beneath or be diverted towards foundations, exterior flatwork, or slab subgrades. Runoff or water migrating along the ground surface must be conveyed away from planned improvements by an appropriately designed series of catch basins, ditches, swales, or other surface water management procedures.

We recommend the ground surface outside all structures be sloped at least 5 percent away for a minimum of 10 feet to rapidly convey surface water or roof runoff away from foundations. Site grades beyond 10 feet from structures should slope at least 2 percent away and toward acceptable areas. *Americans with Disabilities Act* (ADA) hardscapes may not meet the above site grading recommendations adjacent to structures. We recommend ADA-pertinent hardscapes be sloped away from structures to the maximum extent practical. We recommend elastomeric sealant be considered between exterior hardscapes and foundation stemwalls to reduce moisture infiltration at joints at the building. Well-designed site drainage and careful final grading will help limit moisture infiltration beneath the structures, which will help reduce impacts from frost heave, vapor intrusion to interior spaces, and help improve long-term performance of structures. Provide roof gutters and downspouts, however never connect them to the foundation drains.

Perimeter Foundation Drainage

Install subsurface drains in perimeter foundation alignments as shown on Plate 2, *Foundation Drain Schematic*. Maintaining uniformly drained conditions at the foundation subgrade is critical to long-term building performance and to help route water away from footings to reduce settlement risk. We recommend installing foundation drains at the lowest bearing elevation around each structure's perimeter. We anticipate geotextile fabric-wrapped foundation drains will be placed atop the prepared subgrade surface before foundation backfilling. Foundation drains should never connect to roof drains and should daylight to a disposal area at least 50 horizontal feet away, and down-gradient of the planned foundation bearing elevation.

ADDITIONAL RECOMMENDED SERVICES

Geotechnical Design Continuity

The information contained in this report is based on structural loads and site configurations reported by Welch Comer. The final floor elevation, building configuration, loading conditions, drainage provisions and site geometry can significantly alter our opinions and design recommendations. Changes in structural design loads site grading and drainage design may require additional analyses specific to the actual anticipated construction conditions. Therefore, it is critical GPI provide geotechnical continuity through final planning and design for the planned construction as individual aspects become available during design development phases of the project.

Our experience is that having consultants from the design team review the construction documents prior to bidding helps reduce the potential for errors and also reduces costly changes to the contract during construction. If we are not provided such opportunities, we cannot be responsible for soil-related design or construction-related errors, omissions, delays, or increased costs that are identified during construction.

Geotechnical Observation During Construction

GPI is retained by Welch Comer to provide construction monitoring to confirm the soil conditions and document 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. For this project, it is especially important to maintain this geotechnical continuity during the subgrading and uncontrolled fill removal process. If for some reason we

are not allowed to provide the recommended construction monitoring services, we cannot be responsible for soil engineering related construction errors or omissions.

EVALUATION LIMITATIONS

This report is prepared to assist project planning design and construction of the proposed Well House #6 project to be located at the City of Moscow Public Work Maintenance Shop at 650 N. Van Buren Street in Moscow, Idaho. Our geotechnical findings and opinions are developed based on the authorized subsurface exploration and laboratory testing, as well as our understanding of the project at this time. Our geotechnical design recommendations are specific to the planned construction outlined herein and should not be extrapolated to other future site developments without allowing adequate geotechnical consultation by GPI. Our services on this project do not include civil or structural design, deep or intermediate foundations, pavements, dewatering, shoring or earth retention system design or designing erosion control measures. Neither does our evaluation constitute an environmental site assessment or hazardous substance evaluation.

Our services consist of professional opinions and findings made in accordance with generally accepted geotechnical engineering principles and practices in northern Idaho at the time of this report. The geotechnical recommendations provided herein are based on the premise that appropriate geotechnical consultation during subsequent design phases is implemented and an adequate program of tests and observations will be conducted by GPI or another experienced geotechnical engineer during construction to verify compliance with our recommendations and to confirm conditions between exploration locations.

Subsurface variations may exist between exploration locations described herein. Test pit exploration allows observation of only a small portion of the site's subsurface conditions. Such variations may not be apparent until construction. Notify GPI immediately if subsurface conditions vary from those described herein. Once notified we will make necessary revisions to our recommendations and assist with evaluating necessary construction or design changes. This acknowledgment is in lieu of all warranties either express or implied.

The following plates accompany this report.

- Plate 1: Exploration Maps
- Plate 2: Foundation Drain Schematic
- Appendix A: Unified Soil Classification System (USCS) and Exploration Logs
- Appendix B: Laboratory Test Results

LEGEND

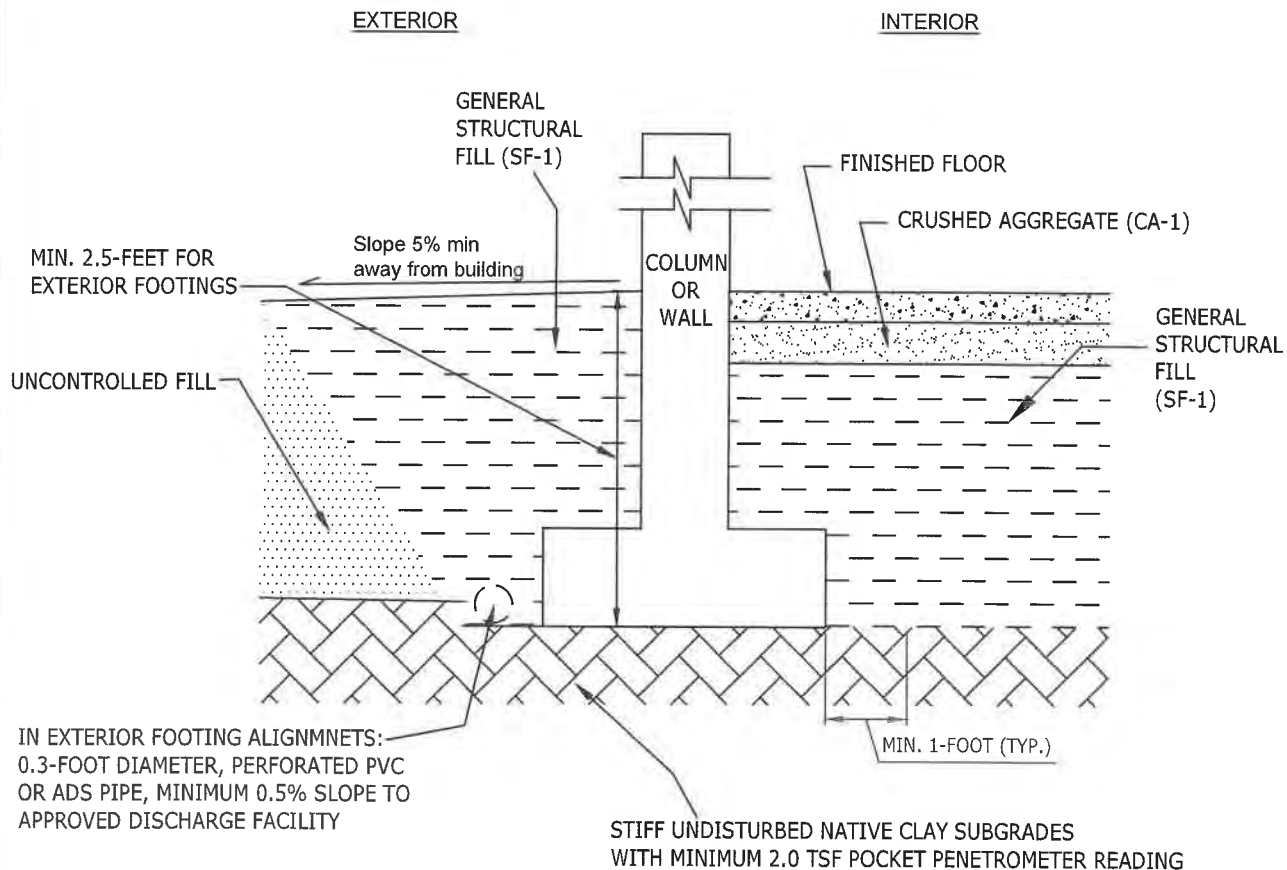
- Exploration location as observed by GPI on April 19, 2021
- (4.5) Depth of uncontrolled fill encountered (feet)
- <5.2> Depth to groundwater encountered (feet)
- N.E. Not Encountered



Foundation Drain Construction

- Excavate the subgrade to the planned foundation bearing elevation to expose stiff, undisturbed native clay loess
- Prepare the exposed subgrade referencing the *Earthwork* report requirements. Geotechnical engineer retained for construction to verify subgrades and compaction.
- In exterior (perimeter) foundation alignments, place 0.3-foot diameter, fabric wrapped, perforated PVC or ADS pipe at lowest possible elevation to maintain gravity drainage, with positive slope towards daylight or approved discharge facility.
- Backfill stemwalls and slab subgrades with *General Structural Fill* (SF-1), placed and compacted referencing the *Structural Fill* report section.

This drawing is intended for shallow foundations supporting perimeter walls. Foundation stemwall height will vary. This is not a structural detail.



FOUNDATION DRAIN SCHEMATIC
Well House #6
650 N. Van Buren Street
Moscow, Idaho



NOT TO SCALE

MO21034A
 DRAWN BY: AMC

PLATE: 2
 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, ELASTIC 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



BULK SAMPLE



RING SAMPLE



GROUNDWATER SYMBOLS

GROUNDWATER AFTER 24
HOURS



GROUNDWATER AT TIME OF
EXPLORATION



GROUNDWATER AT THE END OF
EXPLORATION



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GPI TEST PIT - STRATA.GDT - 5/28/21 12:49 - V:\ENGINEERING\GINT FILES\2021\210419 MO21034A MOSCOW WELHOUSE #6.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	Remarks
GRAVEL SURFACING - POORLY GRADED GRAVEL, (GP) gray, dense, moist	0.0	GP							LL PI	Note: BGS = Below Ground Surface
UNCONTROLLED FILL - MIXED CLAY AND SILT WITH GRAVEL, (CL-ML) gray to dark brown, loose to medium dense, moist	2.5	CL-ML		RG						Wood, brick, and plastic debris observed in fill.
LOESS - CLAY, (CL) reddish brown, firm to very stiff, moist	5.0	CL		RG BK			27.4		32 12	ASTM D 1557: Max. D.D. = 114.0 pcf Opt. M.C. = 13.5% Soil pH = 7.7 Resistivity = 2,350 ohm-cm
Test Pit Terminated at 7.5 Feet.										

Test pit loosely backfilled with site soil.

Client: Welch Comer & Associates, Inc.	Test Pit Number: TP-21035A-1	 GeoProfessional Innovation.	EXPLORATORY TEST PIT LOG
Project: MO21034A	Date Excavated: 04-19-2021		
Backhoe: Mini Track	Bucket Width: 1.5 feet		Sheet 1 Of 1
Depth to Groundwater: N.E.	Logged By: AMC		

GPI TEST PIT - STRATA.GDT - 5/28/21 12:49 - VAENGINEERING\GINT FILES\2021\12\10419 MO21034A MOSCOW WELLHOUSE #6.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	Remarks
									LL PI	Note: BGS = Below Ground Surface
GRAVEL SURFACING - POORLY GRADED GRAVEL, (GP) gray, dense, moist	0.0	GP								
UNCONTROLLED FILL - MIXED CLAY AND SILT WITH GRAVEL, (CL-ML) gray to dark brown, loose to medium dense, moist	2.5	CL- ML								Wood, plastic, and brick debris observed in fill. Pipe observed in test pit at 3.0-feet BGS. Test pit terminated at 3.0-feet due to existing utility conflict.
Test Pit Terminated at 3.0 Feet. Test pit loosely backfilled with site soil.										

Client: Welch Comer & Associates, Inc. Project: MO21034A Backhoe: Mini Track Depth to Groundwater: N.E.	Test Pit Number: TP-21035A-2 Date Excavated: 04-19-2021 Bucket Width: 1.5 feet Logged By: AMC	 GeoProfessional Innovation.
		EXPLORATORY TEST PIT LOG Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 5/28/21 12:49 - V:\ENGINEERING\GINT FILES\2021\210419 MO21034A MOSCOW WELLHOUSE #6.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	Remarks
									LL PI	Note: BGS = Below Ground Surface
GRAVEL SURFACING - POORLY GRADED GRAVEL, (GP) gray, dense, moist	0.0	GP								
UNCONTROLLED FILL - MIXED CLAY AND SILT WITH GRAVEL, (CL-ML) gray to dark brown, loose to medium dense, moist	2.5									
Test Pit Terminated at 3.0 Feet. Test pit terminated due to water migration into the test pit causing caving sidewall conditions. Test pit loosely backfilled with site soil.										

Client: Welch Comer & Associates, Inc.

Project: MO21034A

Backhoe: Mini Track

Depth to Groundwater: 3'

Test Pit Number: TP-21035A-3

Date Excavated: 04-19-2021

Bucket Width: 1.5 feet

Logged By: AMC



EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

APPENDIX B

Laboratory Test Results

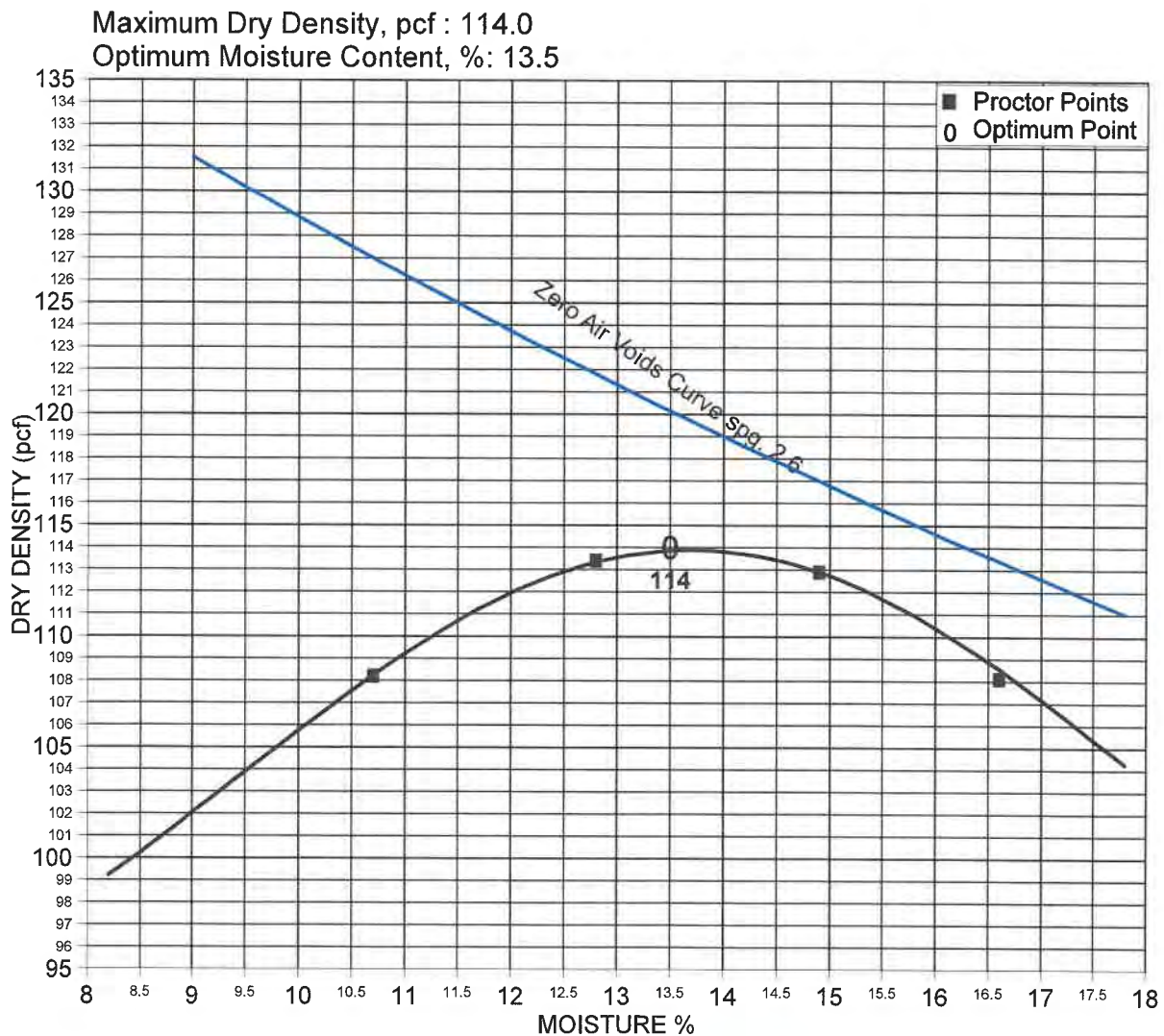
MOISTURE-DENSITY RELATIONSHIP CURVE

ASTM D 1557

Method A

Project: Well House #6
 Client: Welch Comer & Associates, Inc.
 File Name: MO21034A
 Lab Number: 10882
 Sample Location: TP-21-34A-1 @ 6.5 - 7.0 feet BGS
 Sample Description: Reddish Brown Clay (CL)
 Atterberg Limits: LL = 32; PI = 12
 In-situ Moisture: 27.4%
 Date Tested: 4/25/21 By: AJA
 Rammer Type: Manual

GRADING ANALYSIS		
SCREEN SIZE	% PASSING	AS TESTED
#200 Screen	96.2	96.2

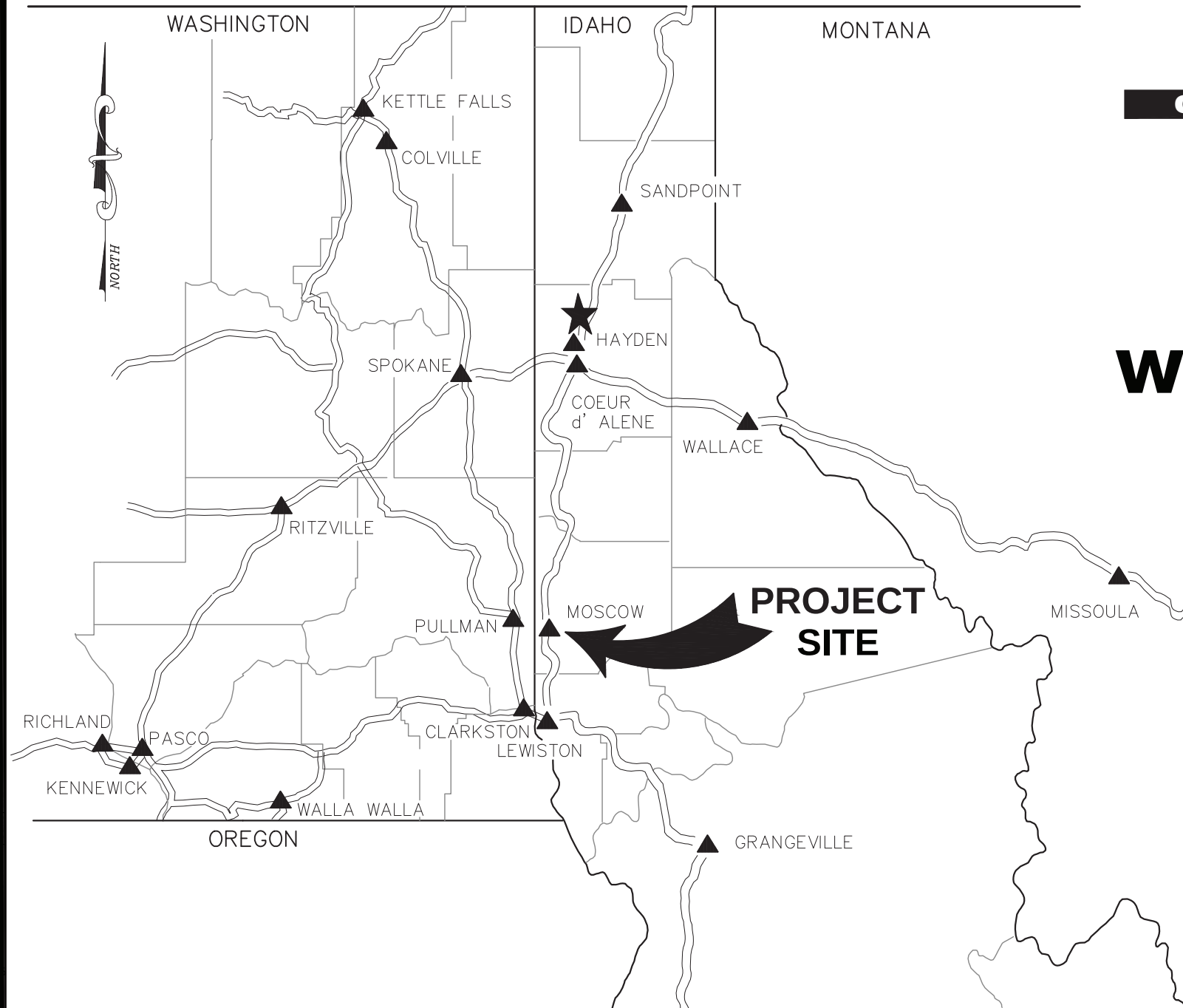


Reviewed By: _____


**GeoProfessional
Innovation.**
 6 O'Donnell Road Pullman, Washington 99163
 Phone.509.339.2000

PART 5

Drawings



CONSTRUCTION DRAWINGS

City of Moscow
Latah County, Idaho

WELL HOUSE NO. 6
REBID

Project No. 46016.030

April 2022

Nathan W. Wright

Digitally signed by Nathan Wright
DN: CN=Nathan Wright,
dnQualifier=A01410C00000178664DEFDA0000B8B9,
O=WELCH COMER AND ASSOCIATES, C=US
Reason: I am approving this document
Date: 2022.04.11 15:40:46-07'00'



04/11/22

QAQC PLAN REVIEW		
	REVIEWED BY	DATE
ENGINEERING	SBC	04/11/22
SURVEY	MH	04/11/22



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208-664-5946 (fax)
350 E. Kathleen Ave.
Coeur d'Alene, ID 83815

WELCH-COMER

PROJECT SITE



VICINITY MAP

NO SCALE

CONTROL POINT TABLE

CONTROL PT.	NORTHING	EASTING	ELEVATION	PT. DESCRIPTION
50	1852475.65	2312430.64	2604.00	CO P
51	1852196.43	2312493.08	2585.52	CO PK
52	1852616.96	2312825.12	2589.74	CO NAIL
53	1852357.71	2312811.11	2587.77	CO NAIL
101	852319.03	2312400.77	2595.28	CO REB 5 BPC
438	1852328.11	2312522.78	2587.01	CO NAIL
439	1852300.55	2312647.16	2586.36	CO NAIL

HORIZONTAL AND VERTICAL DATUM:

HORIZONTAL DATUM: NAD 83/11 AT GROUND WITH A GRID SCALE FACTOR OF 0.999931325

VERTICAL DATUM: NGVD 29

GENERAL PROJECT NOTES

1. ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE BASED ON BEST AVAILABLE INFORMATION, AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY OWNERS FOR ACTUAL FIELD LOCATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY ALL EXISTING PIPE SIZE, TYPE, INVERT ELEVATIONS AND PIPE DEPTHS AT CROSSINGS AND CONNECTIONS PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG – UTILITY ONE CALL NUMBER 811
2. DURING THE PREPARATION OF THE CONSTRUCTION DRAWINGS, REVIEW OF AVAILABLE RECORDS AND A FIELD SEARCH WAS CONDUCTED UNDER THE DIRECTION OF A PROFESSIONAL LAND SURVEYOR TO LOCATE EXISTING SURVEY MONUMENTS WITHIN AND ADJACENT TO THE PROJECT CONSTRUCTION LIMITS IN ACCORDANCE WITH IDAHO CODE 55-1613. EXISTING SURVEY MONUMENTS ARE IDENTIFIED WITHIN THE PLANS. MONUMENTS IDENTIFIED AS 'OWNER TO REPLACE' WILL BE REPLACED AT THE EXPENSE OF THE OWNER. ALL OTHER MONUMENTS ARE INTENDED TO BE PRESERVED AND IF DESTROYED THE REPLACEMENT OF SAID MONUMENTS IS THE RESPONSIBILITY OF THE CONTRACTOR. REF (IC 55-1613). IF MONUMENTS ARE REPLACED BY THE CONTRACTOR THE ENGINEER AND OWNER WILL BE NOTIFIED BY THE CONTRACTOR UPON RE-ESTABLISHMENT OF THE MONUMENTS.

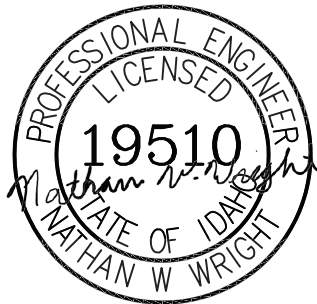
UNDERGROUND SERVICE ALERT

ONE-CALL NUMBER

811

CALL TWO BUSINESS DAYS BEFORE YOU DIG

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NO. DATE REVISION DESCRIPTION BY

CITY OF MOSCOW

WELL HOUSE NO. 6

REBID

SHEET INDEX, GENERAL PROJECT NOTES, DATUM AND VICINITY MAP

PROJ NO: 46014
DESIGNED BY: N.W.W.
DRAWN BY: J.A.L.
CHECKED BY: N.W.W.
DWG NAME: 46016.03OCS01.DWG
DATE: 04-11-22
SHEET NO:

N:\City\100-Drafts\16016-030\Drawings-Drafts\16016-030CS01.dwg, 4/11/2022 1:20:40 PM, Title: 1-2

LEGEND

	EXISTING SANITARY SEWER MANHOLE
	EXISTING SANITARY SEWER MANHOLE
	EXISTING ECCENTRIC SANITARY SEWER MANHOLE
	EXISTING CLEANOUT
	EXISTING AIR RELEASE VALVE
	EXISTING CATCH BASIN
	EXISTING DRYWELL
	EXISTING DRYWELL
	EXISTING STORM SEWER MANHOLE
	EXISTING STORM SEWER MANHOLE
	EXISTING ECCENTRIC STORM SEWER MANHOLE
	EXISTING SPRINKLER HEAD
	EXISTING FIRE HYDRANT
	EXISTING WELL
	EXISTING YARD HYDRANT
	EXISTING WATER VALVE
	EXISTING CURB STOP
	EXISTING WATER METER
	EXISTING POST INDICATOR VALVE
	EXISTING POWER POLE
	EXISTING GUY WIRE
	EXISTING LIGHT POLE
	EXISTING POWER WARNING SIGN
	EXISTING POWER VAULT
	EXISTING TELEPHONE PEDESTAL
	EXISTING JUNCTION BOX
	EXISTING TELEPHONE VAULT
	EXISTING TELEPHONE WARNING SIGN
	EXISTING GAS METER
	EXISTING GAS VALVE
	EXISTING GAS RISER
	EXISTING GAS WARNING SIGN
	EXISTING TELEPHONE MANHOLE
	EXISTING TELEPHONE MANHOLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING UNKNOWN
	EXISTING SHRUB
	EXISTING TREE
	EXISTING BUILDING
	WATER LEVEL

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED ECCENTRIC SANITARY SEWER MANHOLE
	PROPOSED CLEANOUT
	PROPOSED AIR RELEASE VALVE
	PROPOSED CATCH BASIN
	PROPOSED CATCH BASIN
	PROPOSED INLET CATCH BASIN
	PROPOSED STORM SEWER MANHOLE
	PROPOSED STORM SEWER MANHOLE
	PROPOSED ECCENTRIC STORM SEWER MANHOLE
	PROPOSED WATER VALVE
	PROPOSED CURB STOP
	PROPOSED FIRE HYDRANT
	PROPOSED DOWN SPOUT
	PROPOSED YARD HYDRANT
	PROPOSED BLOW OFF ASSEMBLY
	PROPOSED SINGLE WATER METER SERVICE
	PROPOSED WELL
	PROPOSED REDUCER
	PROPOSED BENDS/FITTINGS
	PROPOSED IRRIGATION BOX
	PROPOSED GAS METER
	PROPOSED GAS VALVE
	PROPOSED JUNCTION BOX
	PROPOSED GUY WIRE
	PROPOSED UTILITY POLE
	PROPOSED LIGHT
	PROPOSED LIGHT
	PROPOSED TELEPHONE PEDESTAL
	PROPOSED TV PEDESTAL
	PROPOSED SIGN
	PROPOSED MAILBOX
	OWNERSHIP DELINEATION
	DIRECTION AND SLOPE
	FOUND SURVEY MONUMENT
	SURVEY CONTROL MONUMENT
	TEST HOLE
	TYPICAL SECTION REFERENCE
	DETAIL SHEET REFERENCE

	EXISTING EASEMENT
	EXISTING RIGHT-OF-WAY
	EXISTING PROPERTY LINE
	EXISTING FENCE
	EXISTING CURB
	EXISTING CURB AND GUTTER
	EXISTING DITCH
	EXISTING CENTERLINE OF ROAD
	EXISTING SHOULDER
	EXISTING EDGE OR GRAVEL OR DIRT
	EXISTING EDGE OF ASPHALT
	EXISTING CULVERT
	EXISTING WATER LINE
	EXISTING SANITARY SEWER LINE
	EXISTING SEWER STUB
	EXISTING STORM SEWER LINE
	EXISTING BURIED TELEPHONE LINE
	EXISTING OVERHEAD TELEPHONE LINE
	EXISTING BURIED POWER LINE
	EXISTING POWER LINE
	EXISTING OVERHEAD POWER LINE
	EXISTING GAS LINE
	EXISTING BURIED CABLE TV LINE
	EXISTING OVERHEAD CABLE TV LINE
	EXISTING IRRIGATION LINE
	EXISTING 5' CONTOURS
	EXISTING 1' CONTOURS
	EXISTING TREE LINE
	EXISTING TOP OF BANK
	EXISTING TOE OF BANK
	PROPOSED EASEMENT
	PROPOSED RIGHT-OF-WAY
	PROPOSED PROPERTY LINE
	SECTION LINE
	PHASE BOUNDARIES
	PROPOSED FENCE
	PROPOSED SILT FENCE
	PROPOSED CURB
	PROPOSED CURB AND GUTTER
	PROPOSED GRADE BREAK
	PROPOSED DITCH
	PROPOSED CENTERLINE OF ROAD
	PROPOSED SHOULDER
	PROPOSED EDGE OF ASPHALT
	PROPOSED CULVERT

	PROPOSED WATER LINE
	PROPOSED SANITARY SEWER LINE
	PROPOSED SEWER STUB
	PROPOSED STORM SEWER LINE
	PROPOSED BURIED TELEPHONE LINE
	PROPOSED OVERHEAD TELEPHONE LINE
	PROPOSED BURIED POWER LINE
	PROPOSED OVERHEAD POWER LINE
	PROPOSED GAS LINE
	PROPOSED BURIED CABLE TV LINE
	PROPOSED OVERHEAD CABLE TV LINE
	PROPOSED IRRIGATION LINE
	PROPOSED SIDEWALK
	PROPOSED CURB DROP
	PROPOSED SIDEWALK UNDERDRAIN

ABBREVIATIONS

AC	ASPHALT CEMENT PAVEMENT
BOW	BOTTOM OF WALL
C1	CURVE DATA REFERENCE NUMBER
FG	FINISH GRADE ELEVATION
FL	FLOW LINE
FOC	FACE OF CURB
GIA	GRASSED INFILTRATION AREA
GRD BRK	GRADE BREAK
IE	INVERT ELEVATION
L1	LINE DATA REFERENCE NUMBER
L or LT	LEFT
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
ROW	RIGHT-OF-WAY
R or RT	RIGHT
SWR	SEWER
TA	TOP OF ASPHALT
TBC	TOP BACK OF CURB
TC	TOP CONCRETE
TFC	TOP FACE OF CURB
TOW	TOP OF WALL
WTR	WATER
XING	CROSSING

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NO.	DATE	REVISION DESCRIPTION	BY

CITY OF MOSCOW
WELL HOUSE NO. 6
REBID
LEGEND AND ABBREVIATIONS

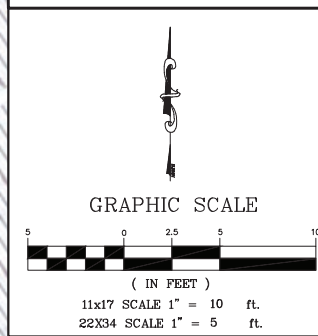
PROJ NO:	46016.030
DESIGNED BY:	N.W.W.
DRAWN BY:	J.A.L.
CHECKED BY:	N.W.W.
DWG NAME:	46016.030CS01.DWG
DATE:	04-11-22
SHEET NO:	

1. FINISHED GRADE SHALL BE COMPACTED TO NOT LESS THAN 95% MODIFIED PROCTOR DENSITY.

A circular prohibition sign with a diagonal slash. Inside the circle is a shovel and a section of a cable or pipe, indicating that digging or excavation is prohibited.

811

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BEFORE YOU DIG



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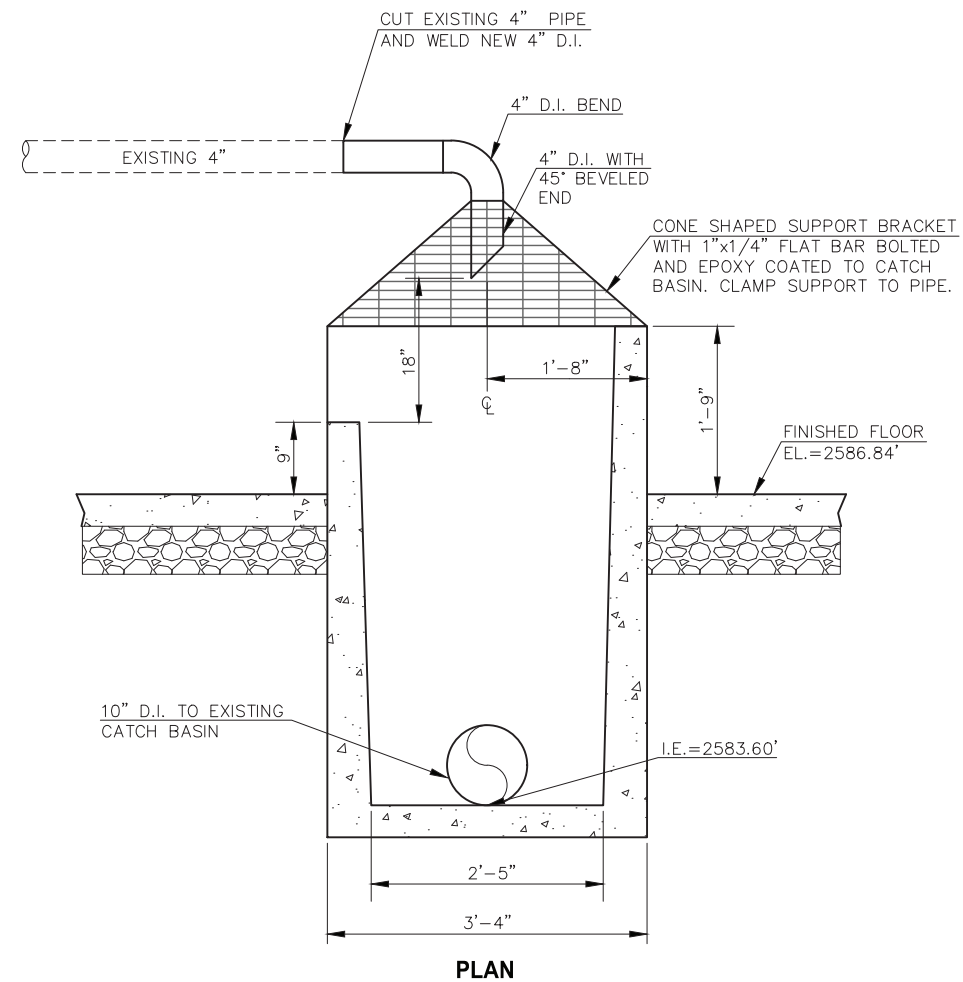
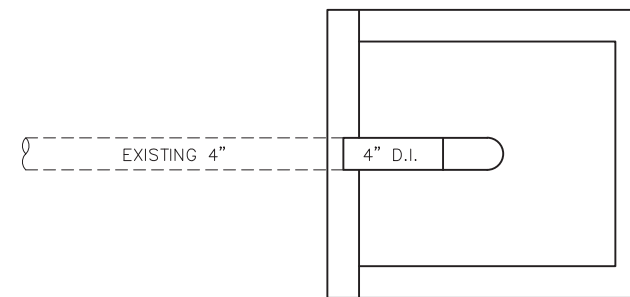
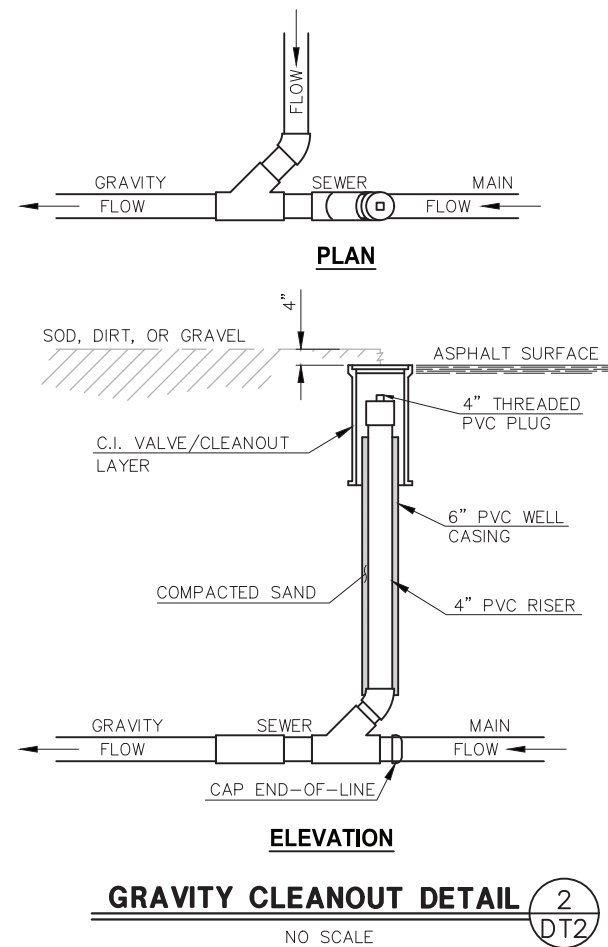
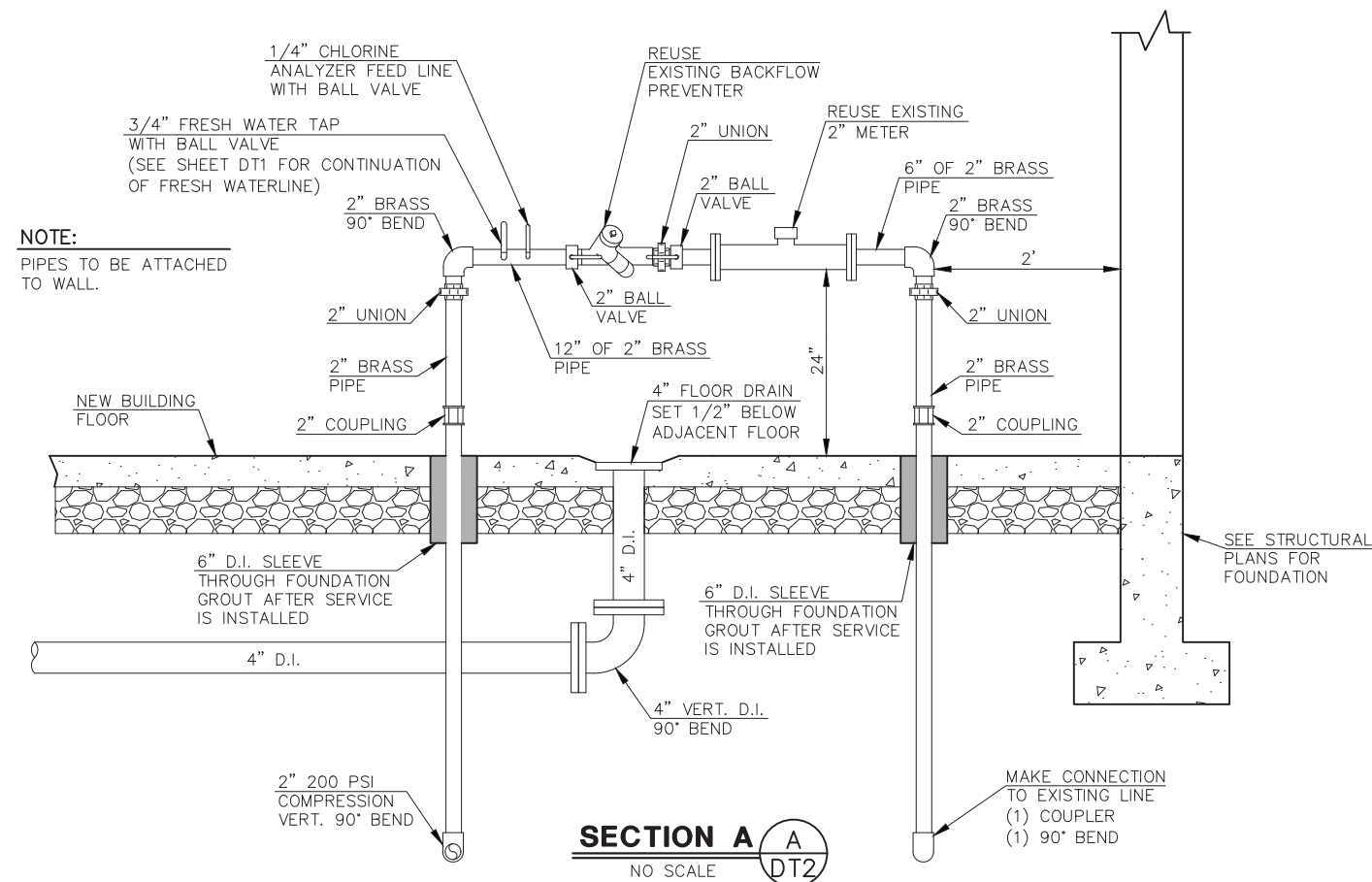
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CITY OF MOSCOW
WELL HOUSE NO. 6
REBID

GRADING PLAN

PROJ NO:	46016.030
DESIGNED BY:	N.W.W.
DRAWN BY:	J.A.L.
CHECKED BY:	N.W.W.
DWG NAME:	46016.030PLO2.DWG
DATE:	04-11-22
SHEET NO:	

C2



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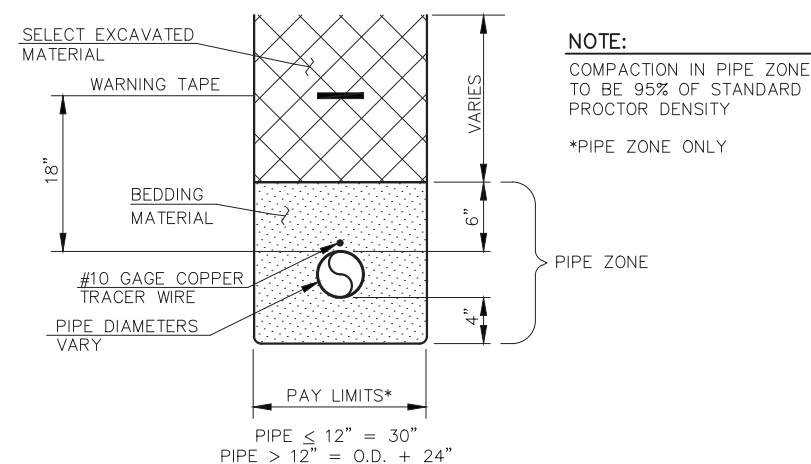
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	REVISION DESCRIPTION	BY	
DATE			

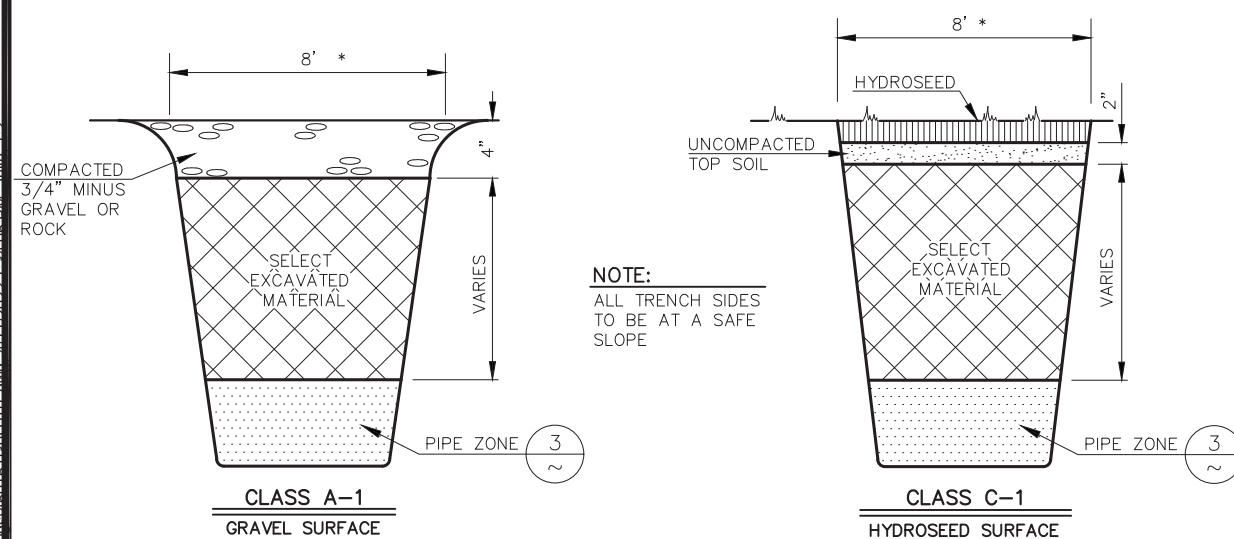
CITY OF MOSCOW
WELL HOUSE NO. 6
REBID

DETAILS

PROJ NO:	46016.030
DESIGNED BY:	N.W.W.
DRAWN BY:	J.A.L.
CHECKED BY:	
DWG NAME:	46016.030DT01.DWG
DATE:	04-11-22
SHEET NO:	



TRENCH / PIPE ZONE DETAIL 1
NO SCALE DT3

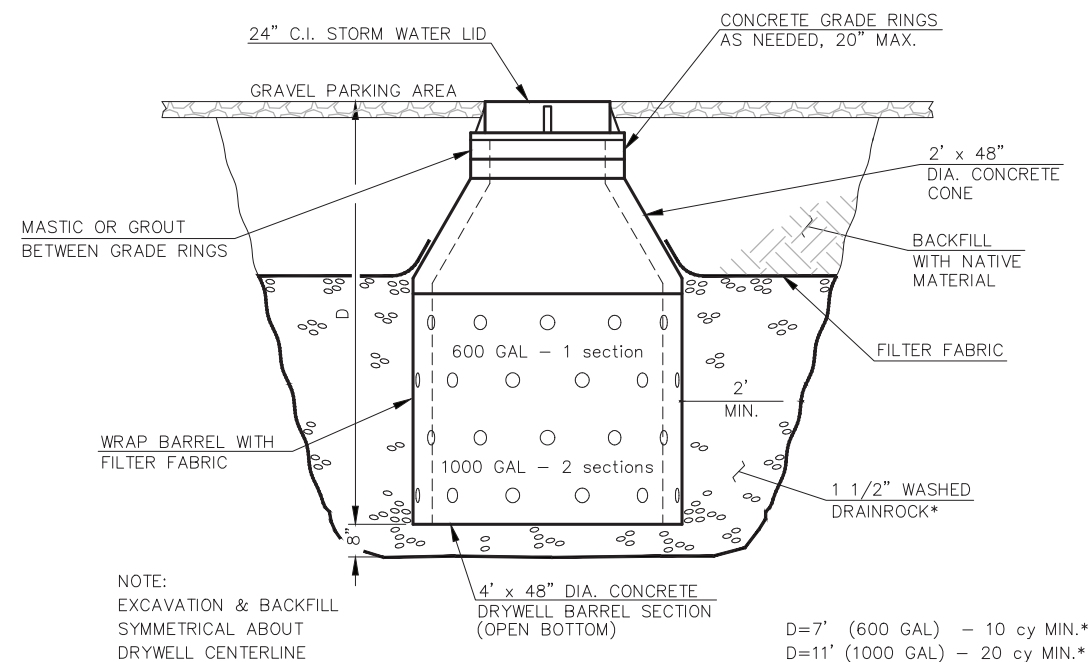


*PAY LIMIT FOR SURFACE RESTORATION

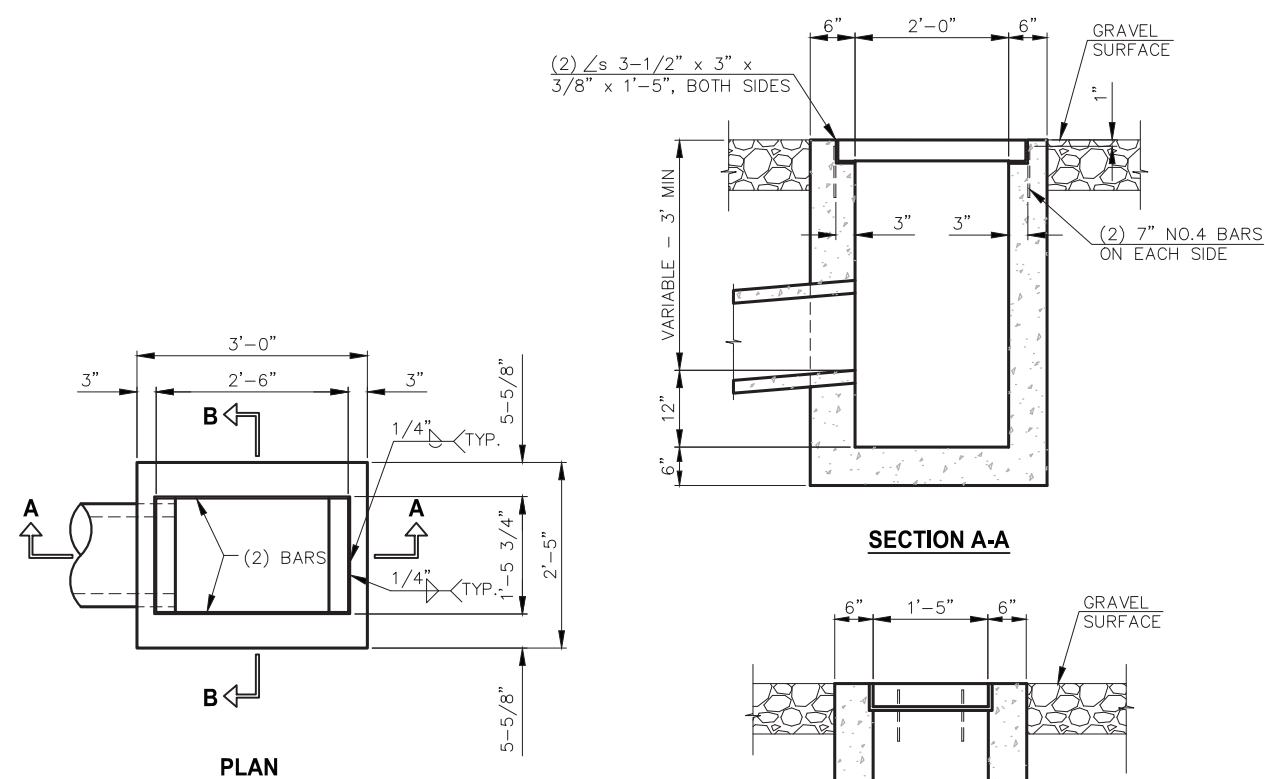
TRENCH BACKFILL & SURFACE RESTORATION

NO SCALE

2
DT3

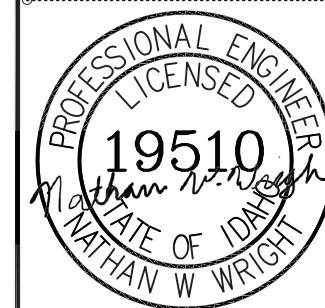


DRYWELL DETAIL 3
NO SCALE DT3



CATCH BASIN DETAIL 4
NO SCALE DT3

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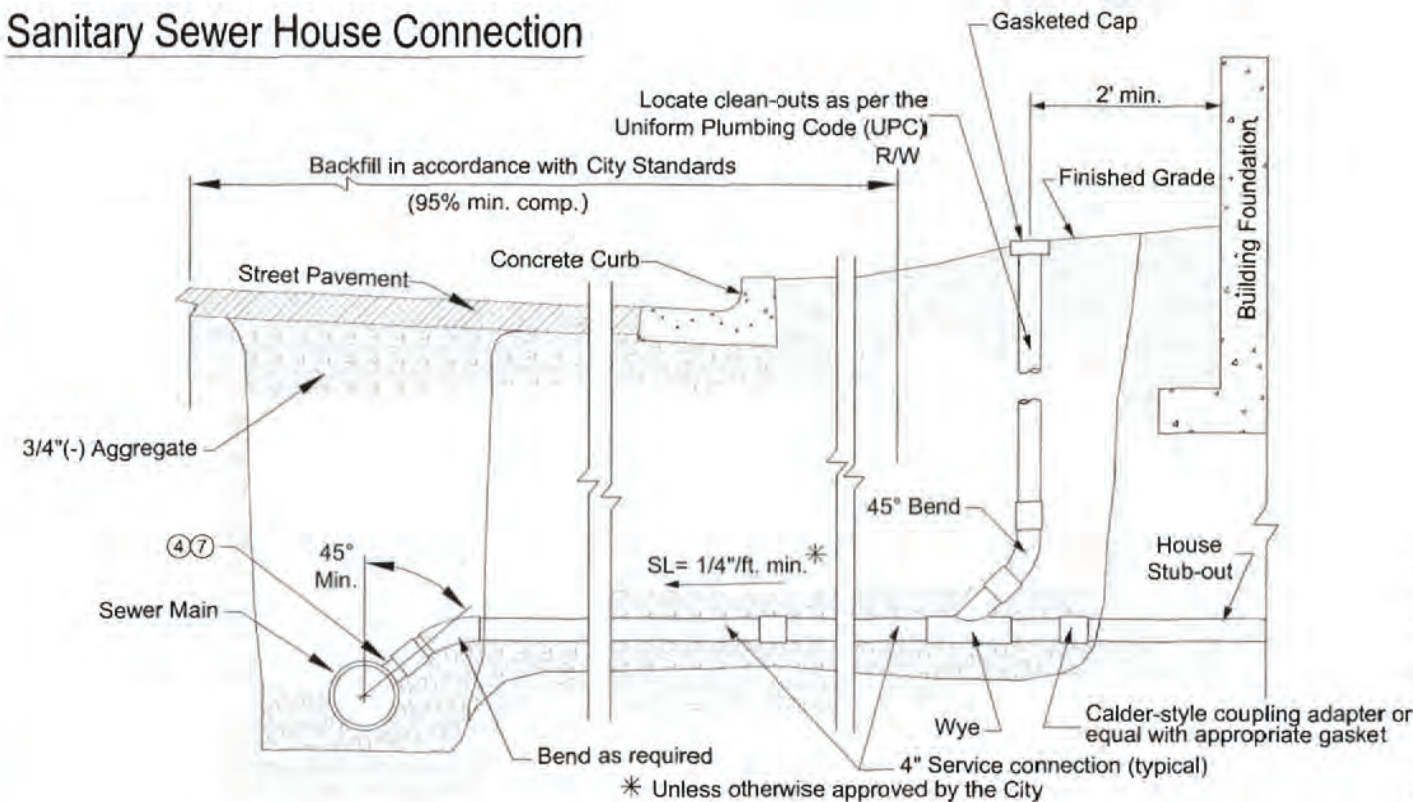
CITY OF MOSCOW
WELL HOUSE NO. 6
REBID

DETAILS

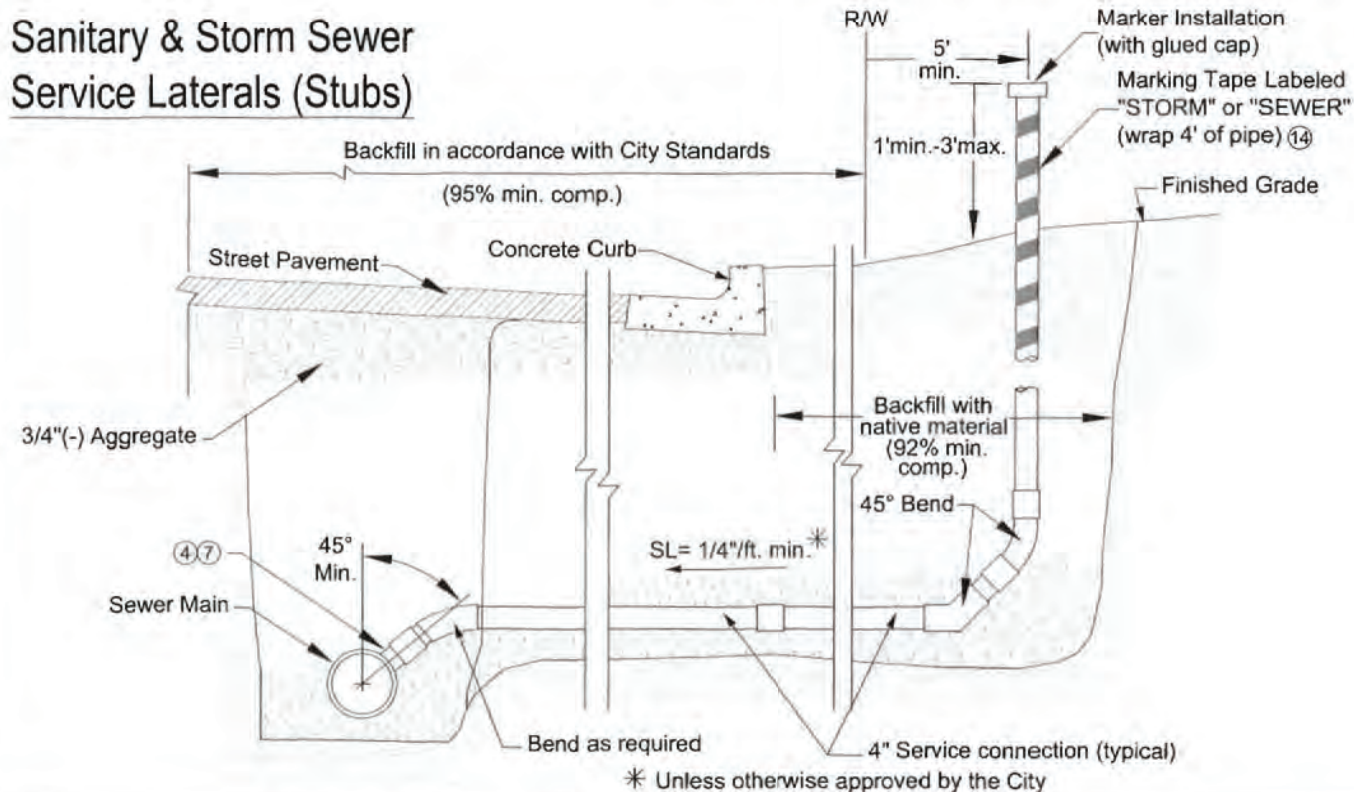
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DT3

Sanitary Sewer House Connection



Sanitary & Storm Sewer Service Laterals (Stubs)



NOTES:

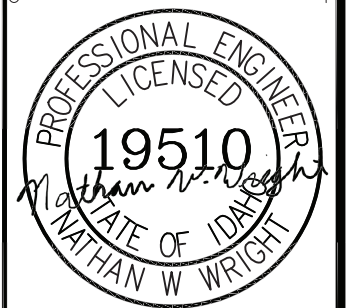
1. Pipe materials shall be as follows:
 - a. Within public right-of-way: SDR 35 PVC, (ASTM D-3034), with integral gasketed bell and spigot joints.
 - b. From right-of way to within two feet (2') of the house: SDR 35 PVC, (ASTM D-3034), with integral gasketed bell and spigot joints or Schedule 40 ABS plastic pipe with glued fittings.

If the water service line and sanitary or storm drain service lines from the right-of-way to the house are installed in the same trench, the piping material shall be Schedule 40 ABS with glued fittings unless all three of the following requirements are met:

 - a. The bottom of the water pipe, at all joints, shall be at least twelve inches (12") above the top of the sanitary or storm drain service line.
 - b. The water pipe shall be placed on a solid shelf, excavated at one side of the common trench, with a minimum clear horizontal distance of at least twelve inches (12") from the sanitary or storm drain service line.
 - c. Where the sanitary or storm drain line crosses the water service line, the top of the sanitary or the storm drain line is a minimum of twelve inches (12") below the water service line.
2. Trench bottom to be prepared, as required, for a firm bed.
3. Existing sewer mains shall be tapped by the City, at the Owner's expense.
4. Sewer service laterals shall be connected to the new mains with manufactured wyes. Connection to existing mains require ROMAC 'CB' saddles, or equivalent.
5. Owner to obtain the necessary permits from the Moscow Community Development Department and Public Works Department.
6. This work shall comply with the Uniform Plumbing Code (UPC).
7. Sewer services shall connect to the sanitary sewer main at a point above the centerline of the pipe.
8. Construction to be inspected by the City.
9. Sanitary service laterals (stubs) shall be air tested with the sanitary sewer main.
10. All backfill under sidewalks shall be crushed aggregate. (95% minimum compaction)
11. The service lateral (from main to house) shall be bedded in sand or 3/4"(-) crushed aggregate; from two inches (2") under the pipe to two inches (2") over the pipe.
12. **SANITARY** service laterals shall be green pipe from the main to the house, including stub outs and markers.
13. **STORM** service laterals shall be white pipe from the main to the house, including stub outs and markers.
14. Marking tape shall be three inch (3") wide commercially manufactured, and labeled "STORM DRAIN" for storm sewer and "SEWER" for sanitary sewer use.
15. Storm drain and sanitary sewer services (private) located within public street right-of-way or public utility easements shall have a 2.5' minimum burial depth unless specifically allowed otherwise by the City Engineer.

SANITARY & STORM SEWER SERVICE CONNECTIONS CITY OF MOSCOW ENGINEERING DEPARTMENT	DRAFTED BY: KWK		SIGNED AND DATED		REVISIONS	
	CHECKED BY: K. Lilly		DATE	DESCRIPTION		
	DRAWING SCALE: NTS					
	DATE: 2-3-2012					
DRAWING NUMBER:			28			

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CITY OF MOSCOW
WELL HOUSE NO. 6
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DETAILS

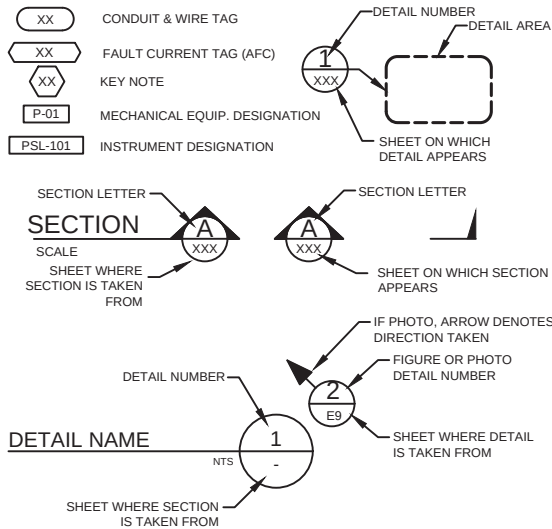
PROJ NO:	46016.030
DESIGNED BY:	N.W.W.
DRAWN BY:	J.A.L.
CHECKED BY:	
DWG NAME:	46016.030DT01.DWG
DATE:	08-05-21
SHEET NO:	

DT4

AF	AVAILABLE FAULT CURRENT
AFG	ABOVE FINISHED GRADE
AF	AMP FRAME
AFCI	ARC FLASH CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT POINT
AIC	AMPERE INTERRUPTING CAPACITY
AHJ	AUTHORITY HAVING JURISDICTION
AO	ANALOG OUTPUT POINT
ATS	AUTOMATIC TRANSFER SWITCH
BC	BATTERY CHARGER
BH	BLOCK HEATER
C	CONDUIT
CB	CIRCUIT BREAKER
COMM	COMMUNICATIONS
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DI	AC DIGITAL INPUT POINT
DO	AC DIGITAL OUTPUT POINT
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EMT	ELECTRICAL METALLIC TUBING
FAFP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
HH	HANDHOLE
HOA	HAND-OFF-AUTO
IC	ISOLATION CONTACT
IMC	INTERMEDIATE METALLIC CONDUIT
JBOX	JUNCTION BOX
LCP	LIGHTING CONTROL PANEL
LTG	LIGHTING
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
NL	NIGHT LIGHT

NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
OIT	OPERATOR INTERFACE TERMINAL
OS	OCCUPANCY SENSOR
PB	PUSH BUTTON
PIV	POST INDICATOR VALVE
PNL	PANEL
PS	POWER SUPPLY
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
PVC	POLYVINYL CHLORIDE
RCPT	RECEPTACLE
RMC	RIGID METAL CONDUIT
RTM	RUN TIME METER
SA	SURGE ARRESTOR
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
STP	SHIELDED TWISTED PAIR
SV	SOLENOID VALVE
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED PAIR
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER

REFERENCE SYMBOLS



RECEPTACLES

	SPECIAL PURPOSE RECEPTACLE, RATING AS INDICATED / = TWISTLOCK
	STANDARD RECEPTACLES: 125V, 20A 18" AFF, UON. TYPES: SIMPLEX /DUPLX /QUADRUPLEX /FLOOR DUPLEX /FLOOR QUADRUPLEX
	GFCI RECEPTACLES: 125V, 20A 18" AFF, UON. TYPES: SIMPLEX /DUPLX /QUADRUPLEX
C	= CEILING MOUNTED
S	= HALF SWITCHED
I	= ISOLATED GROUND
TR	= TAMPER RESISTANT
a	= LOWER CASE LETTER INDICATES SWITCH CONTROL
2"	= MEASUREMENT INDICATES HEIGHT ABOVE BACKSPASH/MILLWORK
A	= INDICATES MOUNT ABOVE BACKSPASH/MILLWORK. COORDINATE HEIGHT WITH TRADES.
USB	= INDICATES 20A 120V DUPLEX RECEPTACLE WITH USB CHARGER.
CT	= SWITCHED RECEP, INDICATES FULL CONTROLLED DEDICATED 20A 125V DUPLEX
CH	= SWITCHED RECEP, INDICATES HALF CONTROLLED DEDICATED 20A 125V DUPLEX
	SURFACE METAL RACEWAY WITH RECEPTACLE @ "X" O.C.

SHEET INDEX

E1	ELECTRICAL LEGEND
E2	ELECTRICAL SITE PLAN
E3	REVISED ELECTRICAL SITE PLAN AND DETAILS
E4	REVISED ONE-LINE DIAGRAM AND LOAD SCHEDULES
E5	EXISTING ELECTRICAL PLAN
E6	ELECTRICAL POWER AND CONTROL PLAN
E7	ELECTRICAL LIGHTING AND RECEPTACLE PLAN
E9	ELECTRICAL SCHEDULES
E10	ELECTRICAL PHOTO DETAILS
E11	ELECTRICAL CONTROL WIRING DIAGRAM
E12	ELECTRICAL DETAILS

SECURITY

	ACCESS CONTROL PANEL
	IP SECURITY CAMERA
	ADA PUSH BUTTON
	DOOR BELL CHIME
	CARD SWIPE
	PROXIMITY CARD READER
	KEYPAD
	REQUEST TO EXIT
	WINDOW CONTACT
	DOOR CONTACT
	OVERHEAD DOOR CONTACT
	MAGNETIC DOOR HOLD (SECURITY)
	MAGNETIC LOCK
	MOTION DETECTOR
	SIREN
	ELECTRIC STRIKE

LIGHTING

	LUMINAIRE, PENDANT
	LUMINAIRE, SURFACE
	LUMINAIRE, RECESSED
	STRIP, SURFACE OR PENDANT AS INDICATED IN LUMINAIRE SCHEDULE
	LUMINAIRE, EMERGENCY
	LUMINAIRE, WALL MOUNT
	LIGHTED EXIT SIGN, ARROW INDICATES DIRECTION
	EMERGENCY WALL PACK
	LUMINAIRE, POLE MOUNTED

CIRCUIT DESIGNATION

LUMINAIRE, TYPICAL:	
	1 E NL a
"1"	INDICATES TYPE PER LUMINAIRE SCHEDULE.
"NL"	INDICATES NIGHT LIGHT LUMINAIRE.
"X-X"	INDICATES PANELBOARD AND CIRCUIT PROVIDING POWER TO SWITCH/LEG INDICATED FOR LUMINAIRES CONTAINED IN SAME ROOM/AREA.
"a"	INDICATES CONTROL PER SWITCH.
"E"	INDICATES POWER TO EMERGENCY LIGHTING CONTAINED IN SAME ROOM/AREA.

RECEPTACLE, TYPICAL:	
"PNL"	INDICATES POWER SOURCE.
"4"	INDICATES CIRCUIT NUMBER.

LUMINAIRE CONTROLS

	SWITCH
2	= DOUBLE POLE SWITCH
3	= THREE WAY SWITCH
4	= FOUR WAY SWITCH
P	= SWITCH AND PILOT LAMP
K	= KEY OPERATED SWITCH
T	= SWITCH WITH TIMER
MS	= MASTER SWITCH TO CONTROL ALL FIXED LUMINAIRES IN GUEST UNIT
	PHOTOCELL
	PHOTO ELECTRIC SENSOR
	NEW LUMINAIRE CONTROL. SEE LIGHTING CONTROL LEGEND LOCATED ON LIGHTING SHEETS.
	CEILING MOUNTED OCCUPANCY SENSOR(S).

CONTROLS & INSTRUMENTATION

SCHEMATIC	PLAN	
		SOLENOID VALVE
		DIGITAL METERING SYSTEM
		CR = CONTROL RELAY
		TDR = TIME DELAY RELAY
		TR = TIMER RELAY
		RUN TIME METER
INDICATING LIGHT:		
W = WHITE G = GREEN		
A = AMBER R = RED		
B = BLUE		
		SELECTOR SWITCH:
HOR = HAND/OFF/REMOTE		
HOA = HAND/OFF/AUTO		
RO = RUN/OFF		
		PUSHBUTTON SWITCH, MOMENTARY ON
		PRESSURE SWITCH, NORMALLY CLOSED
		FLOW SWITCH, NORMALLY CLOSED
		LIMIT SWITCH, NORMALLY OPEN
		LEVEL SWITCH, CLOSSES ON RISING LEVEL
		TS, TEMP. SWITCH, CLOSSES ON FALLING TEMP
		NORMALLY OPEN, TIMED CLOSE CONTACT
		NORMALLY CLOSED, TIMED OPEN CONTACT
		NORMALLY OPEN, TIMED OPEN CONTACT
		NORMALLY CLOSED, TIMED CLOSED CONTACT
		POTENTIOMETER
		LT = LEVEL TRANSMITTER
		PT = PRESSURE TRANSMITTER
		SI = SPEED INDICATOR
		FT = FLOW TRANSMITTER
		VB = VIBRATION TRANSMITTER
		TT = TEMPERATURE TRANSMITTER
		FI = FLOW INDICATOR
		DOOR SWITCH
		OVERTEMPERATURE CUTOUT

POWER

	VARIABLE FREQUENCY DRIVE
	SOLID STATE STARTER, REDUCED VOLTAGE WITH ISOLATION & BYPASS CONTACTORS
	CONDUCTORS NOT CONNECTED.
	CONDUCTORS CONNECTED.
	PULL OUT SWITCH/PLUG-RECEPTACLE CONNECTION
	NORMALLY OPEN CONTACT (WHEN DE-ENERGIZED)
	NORMALLY CLOSED CONTACT (WHEN DE-ENERGIZED)
	UNIT HEATER
	HARDWIRED CONNECTION
	EQUIPMENT TO BE REMOVED
	SHUNT TRIP PUSHBUTTON OR KEY-SWITCH
	THERMOSTAT
	PANELBOARD, SWITCHBOARD, OR SWITCHGEAR, DASHED BOX INDICATES CODE REQUIRED WORKING CLEARANCE
	CONDUIT CONCEALED IN WALL, CEILING, UNDER FLOOR, IN FLOOR SLAB, OR ROUTED UNDERGROUND
	CONDUIT EXPOSED
	EXISTING CONDUIT ROUTED UNDERGROUND
	OVERHEAD ELECTRICAL
	EXTRA-HARD USAGE FLEXIBLE CORD
	CONDUIT FLEXIBLE.
	CONDUIT TURNED UP OR TOWARD
	CONDUIT TURNED DOWN OR AWAY
	CONDUIT CAPPED
	CONDUIT SEALS. CLASS . 1 DIV. 1 OR DIV 2 EXPLOSION PROOF
	CONDUIT HOME RUN 3/4"C, 2#12 & 1#12 GND, UNLESS SHOWN OTHERWISE. (EXAMPLE SHOWN: TO PANEL P1, CIRCUIT 1)
	CONDUIT HOME RUN - SEE CONDUIT AND WIRE SCHEDULE.
	HANDHOLE WITH DESIGNATION
	JUNCTION BOX
	MANUAL OR AUTOMATIC TRANSFER SWITCH.

SCHEMATIC PLAN

	CIRCUIT BREAKER, RATING/NO. OF POLES WITH THERMAL MAGNETIC CIRCUIT BREAKER TRIP, UNLESS OTHERWISE NOTED
	GROUND ROD IN GROUND ROD BOX
	BATTERY
	TRANSFORMER
	CURRENT TRANSFORMER, NUMBER INDICATES NUMBER OF C.T.'S
	MOTOR, NUMBER INDICATES HORSEPOWER
	ELECTRIC HEATER, WATTAGE INDICATED
	GENERATOR
	MAGNETIC MOTOR STARTER FVNR = FULL VOLTAGE NON-REVERSING FULL VOLTAGE REVERSING NEMA SIZE
	MAGNETIC MOTOR STARTER W/DISCONNECT
	DISCONNECT SWITCH, NON FUSED (60A) INDICATES AMPERAGE RATING
	DISCONNECT SWITCH, FUSED 200=SWITCH RATING, 100=FUZE RATING
	CIRCUIT BREAKER DISCONNECT (60A) INDICATES AMPERAGE RATING
	UTILITY WATT HOUR METER
	MOTOR RATED SWITCH. WHERE "M" INDICATED, PROVIDE A MANUAL MOTOR STARTER W/OVERLOAD
	MOTORIZED LOUVER
	EXHAUST FAN

GENERAL NOTES

- "GENERAL NOTES" APPLY TO ALL DRAWINGS. "SHEET NOTES" APPLY TO ALL OF THE SHEETS ON WHICH THEY OCCUR. "KEYNOTES" APPLY ONLY WHERE CALLED OUT.
- ALL EQUIPMENT SHOWN IN BOLD IS TO BE PROVIDED BY CONTRACTOR UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL PROVIDE CONDUIT AND WIRE FROM ALL CONTROL DEVICES TO LUMINAIRES FOR CONTROL OF LUMINAIRES SHOWN.
- BRANCH CIRCUIT CONDUCTORS, NOT OTHERWISE IDENTIFIED SHALL BE A MINIMUM 12 AWG FOR RUNS 70 FEET OR LESS AND A MINIMUM 10 AWG FOR RUNS GREATER THAN 70 FEET. QUANTITY AND SIZE SHALL BE "AS REQUIRED" TO SERVE AND CONTROL DEVICE(S) OR EQUIPMENT WITH A MAXIMUM VOLTAGE DROP OF THREE PERCENT. WHERE CONTRACTOR CHOOSES TO RUN MORE THAN THREE CURRENT CARRYING CONDUCTORS WITHIN ONE RACEWAY OR CABLE, CONDUCTORS SHALL BE INCREASED IN SIZE TO COMPENSATE FOR THE DERATING REQUIRED PER NEC SECTION 310.15. CONDUCTOR AMPACITIES SHALL BE TAKEN FROM THE 75°C COLUMN.
- MINIMUM CONDUIT IN EXTERIOR AND UNDERGROUND LOCATIONS TO BE 1". MINIMUM CONDUIT FOR INTERIOR BRANCH CIRCUITS TO BE 3/4". CONDUITS FROM LUMINAIRES TO LOCAL USER CONTROL DEVICES (SWITCHES, OCCUPANCY SENSORS, ETC.) MAY BE 1/2" OR AS INDICATED IN SPECIFICATIONS. PROVIDE ADDITIONAL CONDUCTOR FOR UNSWITCHED "HOT" TO LIGHTING LUMINAIRES WITH EMERGENCY POWER BATTERIES OR GENERATOR TRANSFER DEVICES.
- WIRING FOR EMERGENCY LIGHTING CIRCUITS OR OTHER EMERGENCY EQUIPMENT SHALL BE KEPT ENTIRELY INDEPENDENT OF ALL OTHER WIRING AND EQUIPMENT AND SHALL MEET ALL REQUIREMENTS OF NEC SECTION 700.10.
- CONTRACTOR SHALL PROVIDE CONDUIT AND WIRE FOR ALL CIRCUITS SHOWN ON DRAWINGS.
- WHERE EQUIPMENT PART NUMBERS ARE SHOWN ON THESE PLANS THEY SHALL SUPERCEDE THE REQUIREMENTS OF THE SPECIFICATIONS.
- PROVIDE DEDICATED NEUTRAL CONDUCTOR FOR ALL BRANCH CIRCUITS.
- ALL EQUIPMENT SHOWN IN BOLD LINEWEIGHT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED. EXISTING ELECTRICAL EQUIPMENT, BACKGROUND AND/OR WORK/EQUIPMENT THAT IS TO BE PROVIDED BY OTHERS IS SHOWN IN LIGHTER LINEWEIGHTS.
- CONTRACTOR SHALL KEEP A FULL-SIZE DRAWING SET ON SITE AND NOTE ALL DEVIATIONS TO THE CONSTRUCTION DRAWINGS AS WELL AS NOTE LOCATIONS OF CONDUIT RUNS (OR OTHER ITEMS) WHICH ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. THESE DRAWINGS SHALL BE TRANSCRIBED UPON COMPLETION OF THE PROJECT ONTO A CLEAN SET AND BECOME THE PROJECTS RECORD DRAWINGS. THEY SHALL BE TURNED OVER TO THE OWNER PRIOR TO FINAL PAYMENT.
- THE SYMBOLS, ABBREVIATIONS AND NOTES ON THIS SHEET ARE INTENDED TO BE GENERAL AND COMPREHENSIVE AND DO NOT ALL APPLY TO THIS PROJECT.

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PROFESSIONAL ENGINEER
LICENSED
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Grady J. Weisz
STATE OF IDAHO

4/8/2022

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Coeur d'Alene, ID 83814

NO. DATE REVISION DESCRIPTION

CITY OF MOSCOW
WELL NO. 6 IMPROVEMENTS

ELECTRICAL
LEGEND

PROJ NO: 46016.030
DESIGNED BY: T.M.S.
DRAWN BY: J.T.R.
CHECKED BY: G.J.W.
DWG NAME: 60010.004.01.DWG
DATE: 05-05-21
SHEET NO: 418 of 451

E1



2120 LAKEWOOD DRIVE, SUITE B
COEUR D'ALENE, IDAHO 83814
(208) 417-2967



1. COORDINATE ALL MODIFICATIONS, CONNECTIONS, AND UTILITY SERVICE WORK WITH RANDY WIDMAN OF AVISTA UTILITIES. CONTACT INFORMATION
RANDY.WIDMAN@AVISTACORP.COM OR 509-867-8790.
2. COORDINATE ALL BUILDING, STORAGE, DEACTIVATIONS, AND ALL OTHER FACILITY ACTIVITIES WITH MIKE PARKER, CITY OF MOSCOW WATER UTILITY SUPERVISOR. CONTACT INFORMATION
MPARKER@CI.MOSCOW.ID.US OR 208-892-8624.
3. NOT ALL CONDUIT IS SHOWN FOR CLARITY. REFERENCE CONDUIT AND WIRE SCHEDULE FOR ADDITIONAL CONDUIT ROUTING AND CIRCUITING INFORMATION.

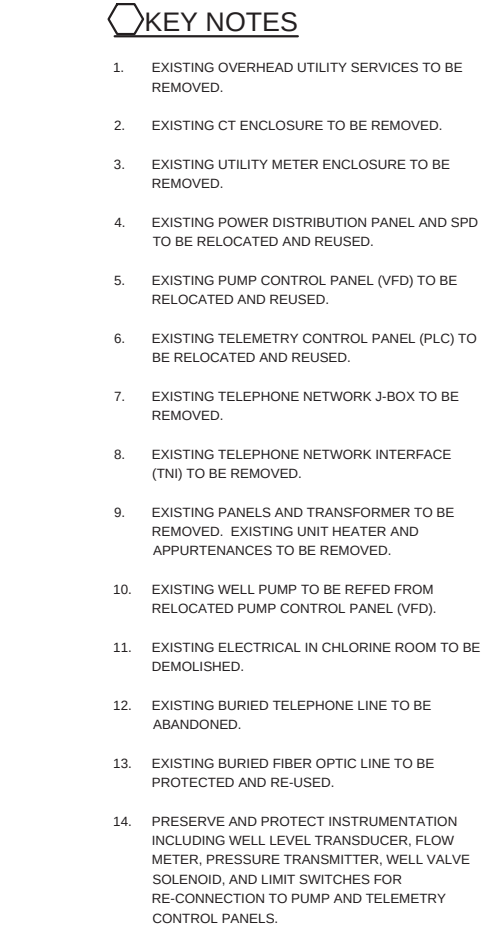
1. ELECTRICAL RACK WITH UTILITY CT ENCLOSURE AND UTILITY METER. ALL FASTENING HARDWARE SHALL BE STAINLESS STEEL. PROVIDE AND INSTALL PER UTILITY REQUIREMENTS.
2. UNISTRUT, 1-5/8" x 1-5/8", LENGTH AS REQUIRED, STAINLESS STEEL. CLAMP UNISTRUT TO SERVICE POLE BY UTILIZING 3/8" Ø THREADED BOLTS, WASHERS AND NUTS. DOUBLE-BACK STRUT AS REQUIRED. ALL FASTENING HARDWARE SHALL BE STAINLESS STEEL.
3. POLE STRAPS, STAINLESS STEEL, TYPICAL.
4. UTILITY CT ENCLOSURE.
5. UTILITY METER ENCLOSURE.

[illegible]

PROJ NO:	46016.030
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DWG NAME:	60010.004.01.DWG
DATE:	05-05-21
SHEET NO:	420 of 451

E3





EXISTING EQUIPMENT SCHEDULE	
EQUIPMENT TO BE RE-USED IN THIS PROJECT	
PANELBOARD MDP	
480 VOLT SURGE PROTECTIVE DEVICE	
PUMP CONTROL PANEL WITH VFD	
WELL PUMP	
MIOX SYSTEM	
CHEMICAL FEED PUMPS	
TELEMETRY CONTROL PANEL	
DOOR SWITCH	
WELL LEVEL TRANSDUCER	
PRESSURE TRANSMITTER	
PUMP CONTROL VALVE SOLENOID AND LIMIT SWITCHES	
FLOW METER	
F.BER OPTIC LINE	

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CITY OF MOSCOW

WELL NO. 6 IMPROVEMENTS

EXISTING ELECTRICAL PLAN

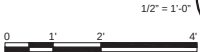
PROJ NO:	46016.030
DESIGNED BY:	T.M.S.
DRAWN BY:	J.T.R.
CHECKED BY:	G.J.W.
DWG NAME:	60010.004.01.DWG
DATE:	05-05-21
SHEET NO:	



2120 LAKEWOOD DRIVE, SUITE B
COEUR D'ALENE, IDAHO 83814
(208) 417-2967

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E5



KEY NOTES

1. BID ADDITIVE ALTERNATE #1.
2. BASE BID: TO INCLUDE TRENCHING, BACKFILL, AND CONDUIT, INCLUDING PULL CORD AND CAPS FOR FUTURE GENERATOR INSTALLATION. NO WIRE.
BID ADDITIVE ALTERNATE #1: COMPLETE CONDUIT AND WIRE AS SCHEDULED FOR FULL STANDBY POWER SYSTEMS INSTALLATION.

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NO.

DATE

REVISION DESCRIPTION

BY

CONDUIT AND WIRE SCHEDULE				
TAG	CONDUIT SIZE	WIRE SIZE	FROM	TO
F0	BY UTILITY	BY UTILITY	AREA UTILITY PRIMARY TAP BOX	UTILITY TRANSFORMER
F1	(2) 3"	(2) SETS - (4) 350 KCMIL	UTILITY TRANSFORMER	CT ENCLOSURE
F2	(2) 3"	(2) SETS - (4) 350 KCMIL	CT ENCLOSURE	SERVICE ENTRANCE RATED MAIN CIRCUIT BREAKER "MCB"
F3	2"	(10) 12 AWG, (1) 12 AWG EGC	CT ENCLOSURE	UTILITY METER
P1	(2) 3"	(2) SETS - (4) 350 KCMIL, (1) 1 AWG EGC	SERVICE ENTRANCE RATED MAIN CIRCUIT BREAKER "MCB"	AUTOMATIC TRANSFER SWITCH "ATS-W"
P2	(2) 3"	(2) SETS - (4) 350 KCMIL, (1) 1 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-W"	STANDBY GENERATOR (600 AMP CIRCUIT BREAKER)
P3	(2) 3"	(2) SETS - (4) 350 KCMIL, (1) 1 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-W"	PANELBOARD "MDP"
P4	(2) 3"	(2) SETS - (4) 350 KCMIL, (1) 1 AWG EGC	PANELBOARD "MDP"	PUMP CONTROL PANEL
P5	(2) 3"	(2) SETS - (3) 4/0 AWG, (1) 1 AWG EGC	PUMP CONTROL PANEL	WELL PUMP JUNCTION BOX
P6	3/4"	(2) 8 AWG, (1) 10 AWG EGC	PANELBOARD "MDP"	TRANSFORMER "A"
P7	1"	(3) 4 AWG, (1) 10 AWG EGC	TRANSFORMER "A"	PANELBOARD "A"
P8	(2) 2"	(2) SETS - (2) 10 AWG, (1) 10 AWG EGC	PANELBOARD "A"	GENERATOR BATTERY CHARGER, ENGINE BLOCK HEATER
P9	3/4"	(3) 12 AWG, (1) 12 AWG EGC	PANELBOARD "MDP"	SURGE PROTECTIVE DEVICE
P10	3/4"	(3) 12 AWG, (1) 12 AWG EGC	PANELBOARD "MDP"	HEATING AND AIR CONDITIONING UNIT
P11	3/4"	(2) 12 AWG, (1) 12 AWG EGC	PANELBOARD "A"	TELEMETRY CONTROL PANEL
P12	3/4"	(2) 12 AWG, (1) 12 AWG EGC	PANELBOARD "A"	OVERHEAD DOOR OPERATOR
P13	3/4"	(3) 10 AWG, (1) 10 AWG EGC	PANELBOARD "MDP"	MOX CONTROLLER
P20	1"	(3) 6 AWG, (1) 10 AWG EGC	DISCONNECT SWITCH "SP"	STANDBY GENERATOR (60 AMP CIRCUIT BREAKER)
P21	3/4"	(3) 6 AWG, (1) 10 AWG EGC	DISCONNECT SWITCH "SP"	TRANSFORMER "XFMR-SP"
P22	1-1/4"	(3) 3 AWG, (1) 8 AWG EGC	TRANSFORMER "XFMR-SP"	AUTOMATIC TRANSFER SWITCH "ATS-S"
P23A	1-1/4"	(3) 3 AWG, (1) 8 AWG EGC	EXISTING WIREWAY	DISCONNECT SWITCH "SP"
P23B	1-1/4"	(3) 3 AWG, (1) 8 AWG EGC	DISCONNECT SWITCH "SP"	AUTOMATIC TRANSFER SWITCH "ATS-S"
P24	1-1/4"	(3) 3 AWG, (1) 8 AWG EGC	PANELBOARD "SP"	AUTOMATIC TRANSFER SWITCH "ATS-S"
C1	1"	(12) 14 AWG, (1) 12 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-W"	TELEMETRY CONTROL PANEL (ATS AND GENERATOR STATUS)
C2	2"	(12) 14 AWG, (1) 12 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-W"	GENERATOR CONTROL PANEL (CALL, E-STOP, GENERATOR STATUS)
C3	1"	(18) 14 AWG, (1) 12 AWG EGC	PUMP CONTROL PANEL	TELEMETRY CONTROL PANEL (PUMP RUNNING, FAULT STATUS, RPE STRING J-BOX I/O)
C4	1"	(4) 14 AWG, (1) 12 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-S"	TELEMETRY CONTROL PANEL (ATS STATUS)
C5	1"	(4) 14 AWG, (1) 12 AWG EGC	AUTOMATIC TRANSFER SWITCH "ATS-S"	GENERATOR CONTROL PANEL (CALL, E-STOP)
O6	1"	(14) 14 AWG, (1) 12 AWG EGC	PIPE STRING JUNCTION BOX	PUMP CONTROL PANEL (TOTAL FLOW, LIMIT SWITCHES, SOLENOID VALVE, DOOR SWITCH)
C7	1"	(2) 14 AWG, (1) 12 AWG EGC	PIPE STRING JUNCTION BOX	DOOR SWITCH
O8	3/4"	MANUFACTURER RECOMMENDED CABLE	HVAC UNIT	TEMPERATURE CONTROLLER
O9	3/4"	(4) 14 AWG, (1) 12 AWG EGC	MOX CONTROLLER	TELEMETRY CONTROL PANEL
S1	2"	(4) 16 AWG STP, (1) 12 AWG EGC	PUMP CONTROL PANEL	TELEMETRY CONTROL PANEL (SPEED CONTROL, SPEED FEEDBACK, FLOW, WELL LEVEL)
S2	1"	(1) 16 AWG STP, (1) 12 AWG EGC	WELL LEVEL TRANSDUCER	PUMP CONTROL PANEL
S3	1"	(1) 16 AWG STP, (1) 12 AWG EGC	FLOW METER	PUMP CONTROL PANEL
S4	1"	(1) 16 AWG STP, (1) 12 AWG EGC	TEMPERATURE TRANSMITTER	TELEMETRY CONTROL PANEL
S5	1-1/2"	(4) 16 AWG STP, (1) 12 AWG EGC	CHEMICAL FEED PUMPS	TELEMETRY CONTROL PANEL
T1	1"	EXISTING FIBER OPTIC CABLE	CITY FIBER INTERFACE POINT	TELEMETRY CONTROL PANEL
G1	1"	2/0 AWG BARE CU	SERVICE ENTRANCE RATED MAIN DISCONNECT	GROUND ROD
G2		2 AWG BARE CU	GROUND ROD	GROUND ROD
G3		4 AWG BARE CU	GROUND ROD	STANDBY GENERATOR CONCRETE PAD REBAR
G4		8 AWG BARE CU	TRANSFORMER "XFMR-SP"	CITY SHOP GROUNDING ELECTRODE SYSTEM

CITY OF MOSCOW

WELL NO. 6 IMPROVEMENTS

ELECTRICAL SCHEDULES

PROJ NO: 46016.030
DESIGNED BY: T.M.S.
DRAWN BY: J.T.R.
CHECKED BY: G.J.W.
DWG NAME: 60010.004.01.DWG
DATE: 05-05-21
SHEET NO:

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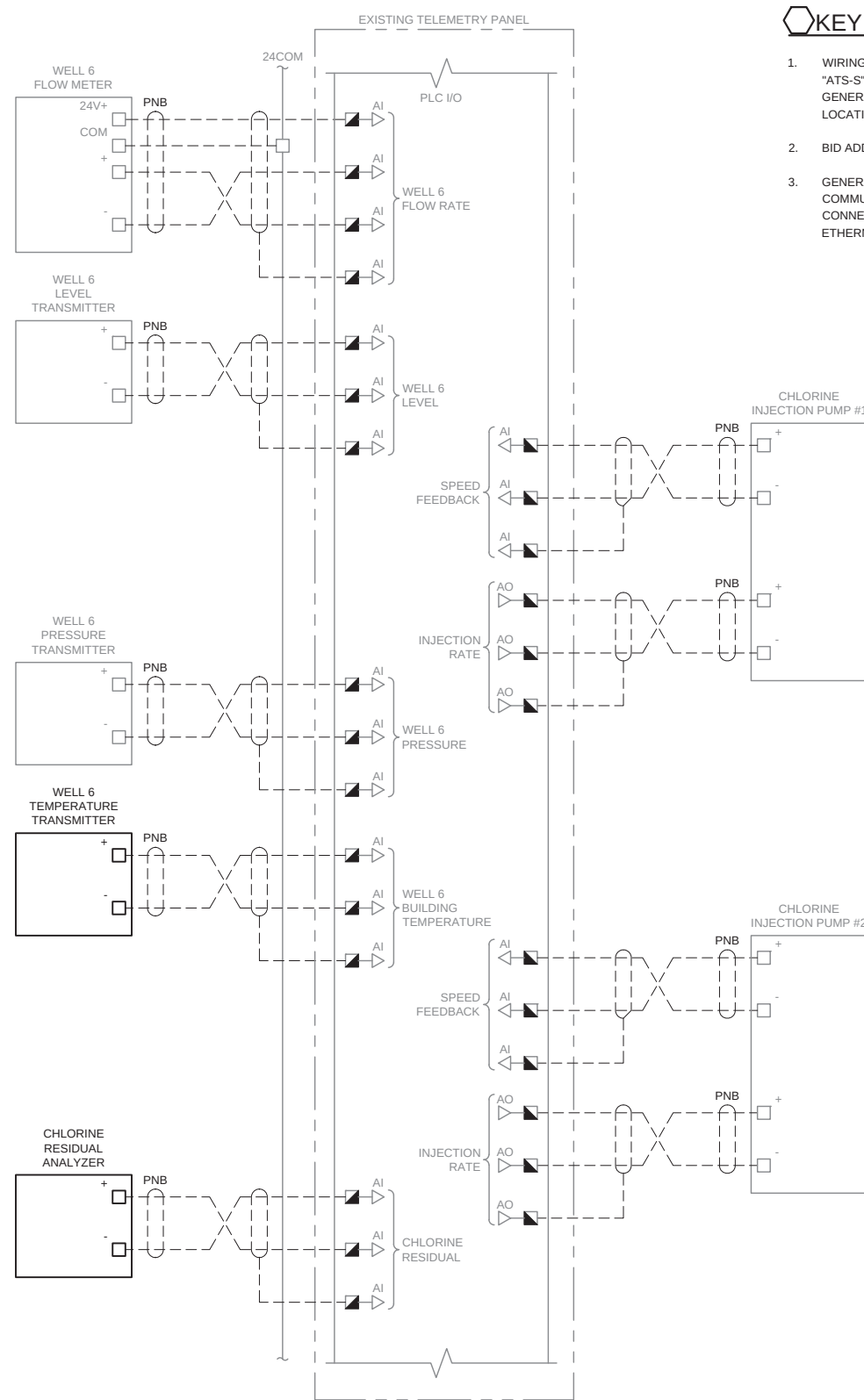
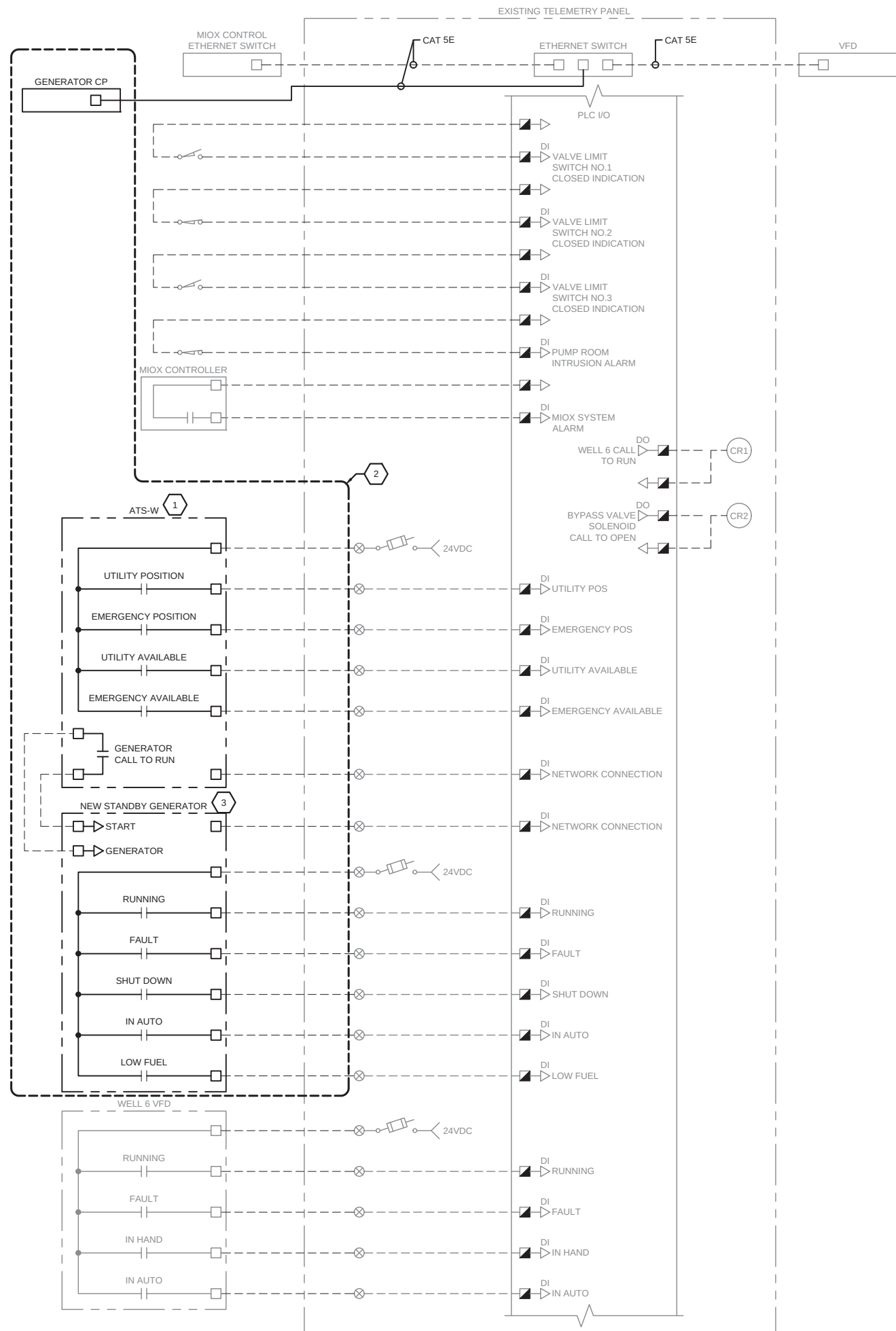
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NO. DATE REVISION DESCRIPTION BY

ELECTRICAL
PHOTO DETAILS

E10





KEY NOTES

1. WIRING FOR "ATS-W" SHOWN. WIRING FOR "ATS-S" SIMILAR. FURNISH AND INSTALL GENERATOR E-STOP AT EACH TRANSFER SWITCH LOCATION.
2. BID ADDITIVE ALTERNATE #1.
3. GENERATOR TO INCLUDE ETHERNET/IP COMMUNICATION MODULE AND CAT5E CONNECTION TO EXISTING TELEMETRY PANEL ETHERNET SWITCH.

TERMINAL SYMBOLS	
☐	DEVICE TERMINAL
☒	PLC
☒	PUMP CONTROL PANEL
☒	TELEMETRY CONTROL PANEL
☒	FIELD DEVICE

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CITY OF MOSCOW
WELL NO. 6 IMPROVEMENTS

ELECTRICAL
CONTROL WIRING DIAGRAM

PROJ NO:	46016.030
DESIGNED BY:	T.M.S.
DRAWN BY:	J.T.R.
CHECKED BY:	G.J.W.
DWG NAME:	60010.004.01.DWG
DATE:	05-05-21
SHEET NO:	E11



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1. BID ADDITIVE ALTERNATE #1.

[illegible]

WELL NO. 6 IMPROVEMENTS

PROJ NO:	46016.030
DESIGNED BY:	T.M.S.
DRAWN BY:	J.T.R.
CHECKED BY:	G.J.W.
DWG NAME:	60010.004.01.DWG
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SHEET NO:	

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GENERAL

The General Contractor shall verify all dimensions and site conditions before starting work. The Structural Engineer shall be notified of any discrepancy. Use details marked "Typical" wherever applicable. Changes, omissions or substitutions are not permitted without written approval of the Structural Engineer. Refer to specifications for further requirements. In the case of conflicts between plans and specifications, the more restrictive requirements shall apply.

All materials and workmanship shall conform to the 2018 edition of the International Building Code and the 2016 edition of "Minimum Design Loads for Buildings and Other Structures" by the American Society of Civil Engineers.

The Contractor shall coordinate the size and locations of all openings in roofs, floors and walls. Openings shall not penetrate any structural elements such as beams, columns, walls, slabs, etc. unless noted on the drawings or approved by the Structural Engineer.

The Contract structural drawings represent the finished structure. The Contractor is responsible for the means, methods and sequence of construction. The design, adequacy and safety of erection bracing, shoring, temporary supports, etc., is the sole responsibility of the Contractor, and has not been considered by the Structural Engineer. The Contractor is responsible for the stability of the structure prior to the completion of all shear walls, roof and floor diaphragms and finish materials. The Contractor shall provide the necessary bracing to provide stability to the structure prior to the installation of the permanent lateral force resisting system. Observation visits to the site by the Structural Engineer shall not include inspection of temporary bracing, shoring, etc.

EXISTING CONSTRUCTION

Existing structural dimensions and member sizes are for reference only. The contractor shall field verify all dimensions, member sizes, and existing conditions prior to the commencement of new work and modifications to existing construction. Notify the Civil Engineer and Structural Engineer of any discrepancies and unsound conditions found.

DEFERRED SUBMITTALS

Items designed by a specialty structural engineer shall be submitted to the Structural Engineer for review and shall bear the seal and signature of an engineer registered in the state of Idaho. Submittals shall include calculations, design drawings, product data and shop drawings. Design shall be based on information provided on the drawings for gravity, wind and seismic forces unless noted otherwise.

The contractor shall coordinate the seismic restraint of mechanical, plumbing and electrical equipment and the associated piping to the structure. Connections to the structure shall conform to SMACNA standards, be detailed on the contract drawings or be designed by an engineer registered in the state of Idaho and submitted for Civil and Structural engineer review prior to fabrication.

SHOP DRAWINGS

Shop drawings are to be checked and approved by the General Contractor prior to submitting for Structural Engineer review. General Contractor is responsible for verification and coordination of dimensions and details for each Subcontractor. Quantities and dimensions are not reviewed by the Structural Engineer and therefore must be verified by the General Contractor. No fabrication shall proceed until shop drawings have been approved. Review of the Specialty Structural Engineer's design submittals and shop drawings is for general compliance with design criteria and compatibility with the design of the primary structure and does not relieve the Specialty Structural Engineer of responsibility for that design.

DESIGN LOADS

Building Risk Category ----- IV

Snow Loading

Roof Design:	
Snow Load -----	60 PSF + Drifting
Minimum Uniform Load -----	40 PSF (City requirement)
Ground Snow Load, P _g -----	64 PSF
Flat Roof Snow Load, P _f -----	60 PSF
Snow Exposure Factor, C _e -----	1.0
Thermal factor, C _t -----	1.1
Snow Load Importance Factor, I _s -----	1.2

See plans for special mechanical unit loading.

Wind Loading

Basic Wind Speed (3-second gust) -----	115 MPH (City minimum)
Wind Exposure -----	C (City minimum B)
Enclosure Classification -----	Enclosed

Seismic Loading - Equivalent Lateral Force Procedure

Seismic Importance Factor, I _e -----	1.5
Spectral Response Accelerations -----	S _s = 0.311 S ₁ = 0.096
Site Class -----	D
Seismic Design Category -----	D (City minimum is B)
Site Coefficient F _a -----	1.55
Site Coefficient F _v -----	2.40
Spectral Response Coefficients -----	S _{as} = 0.321 S _{ds} = 0.153
Basic Seismic Force-Resisting System: Special Reinforced Masonry Shear Walls	
Response Modification Factor, R -----	5.00
Overstrength Factor, Ω ₀ -----	2.50
Deflection Amplification Factor C _d -----	3.50
Seismic Response Coefficient, C _s -----	0.097 (LRFD)

FOUNDATION

Design allowable soil bearing pressure = 2,000 PSF based upon the Geotechnical Report provided by GeoProfessional Innovation dated May 28, 2021, project M021034A. Bottom of all footings to bear on native, inorganic, undisturbed soil or Structural Fill. See Geotechnical Report for Structural Fill requirements. All footings to extend 1'-0" minimum below existing grade. Extend all exterior footings 2'-6" minimum below finished grade. No footing shall bear higher than a 1 vertical to 1.5 horizontal slope above any excavation, existing or planned. Contractor shall provide temporary shoring to prevent movement of walls if backfill is placed before floor system is in place. Site preparation, grading, backfilling, etc. shall be as recommended by the Geotechnical Report. There shall be 95% compaction (ASTM D1557 Modified Proctor Density) of all backfill soil under slabs on grade.

CAST-IN-PLACE CONCRETE

Concrete mix proportions in accordance with ACI 301 to meet or exceed the requirements as listed below:

	Minimum 28 Day Compressive Strength	Maximum Air Entrainment	Maximum Size Aggregate	Maximum Water/Cement Ratio
All structural conc, UNO	3000 PSI	None	3/4"	
Footings	3000 PSI	None	1-1/2"	
Foundation stem walls	4500 PSI	5%	3/4"	
Topping slabs	5000 PSI	None	3/8"	
Interior slab on grade	5000 PSI	None	3/4"	.50(*)
Exterior slab on grade	4500 PSI	6%	3/4"	.45

Maximum Slump: 3" for slabs and footings; 4" for walls. Slumps given are for un-plasticized concrete. Larger slumps may be allowed through the use of a super plasticizer.

Construction to be in accordance with the latest edition of ACI 318, "Part 2 - Standards for Tests and Materials" and "Part 3 - Construction Requirements".

Location of construction or pour joints for walls, beams, columns, and structural slabs must be approved by the Structural Engineer if different from that shown on plans.

(*) Use a maximum water/cement ratio of 0.45 for interior slabs on grade that could be subject to freeze/thaw cycling while saturated during the construction period.

CONCRETE SLABS ON GRADE

The General Contractor shall control and monitor construction procedures and conditions as required to provide a high quality finished slab with minimal cracks, curling, and surface defects. Procedures and conditions under the control of the General Contractor include, but are not limited to: provisions for ambient weather conditions, curing methods selected, rate of placement, joint arrangement and installation, temperature control, subgrade preparation, and reinforcing placement (where indicated).

GENERAL STRUCTURAL NOTES

CONTROLLED DENSITY FILL

Control Density Fill (CDF) shall be a mixture of Portland cement, fly ash, aggregates, water and admixtures proportioned to provide a non-segregating, self-consolidating, free-flowing and excavatable material which will result in a hardened, dense, non-settling fill.

Portland Cement: ASTM C150

Fly Ash: Class C or F

Aggregates: ASTM C33 with 3/8" maximum size.

Control Density Fill shall be Class B, normal flowability with a 6-8" slump and a maximum compressive strength of 300 psi.

MASONRY

Design Compressive Strength: CMU masonry f_m = 2000 PSI at 28 days.

Concrete Masonry Units: ASTM C90-14, medium weight(115 pcf), running bond. Minimum compressive strength = 2000 PSI.

Mortar: ASTM C270, Type S, with a minimum compressive strength of 1800 PSI at 28 days.

Grout: ASTM C476 with a minimum compressive strength of 2000 PSI at 28 days with a maximum aggregate size of 3/8".

Fill all cells containing reinforcing with grout in lifts not exceeding 4'-0" in height. Stop each grout lift 1 ½" below the top course in the lift except at the top of the wall. Fill other cells with grout as indicated on drawings. Unless noted otherwise, lap all bar splices 48 diameters minimum. All reinforcement shall be in place prior to grouting with vertical bars held at top, bottom and 192 diameters maximum on center. Contractor shall provide temporary bracing for masonry walls, as required, until connections to floor and/or roof diaphragms are completed.

REINFORCING STEEL

Truss Type Joint Reinforcement: 9 gage, ASTM A1064 & A951, Fy = 30,000 PSI with hot dipped galvanized finish per ASTM A153, Class B2. Lap side rods 6" minimum at splices.

Deformed Bars: ASTM A615, Grade 40 for #3; Grade 60 for #4 & larger.

Securely tie in place with double annealed 16 gauge iron wire or approved clips. Provide chairs, bolsters, etc. to place reinforcement in the proper positions as indicated on the drawings. Unless noted otherwise on these drawings, provide clear cover at reinforcing bars as follows:

- Concrete cast against soil = 3".
- Formed concrete against soil = 2".
- Walls, columns and beams exposed to weather = 2".
- Walls, columns and beams not exposed to weather = 1½".
- Slab on grade = 2" top, sides, and bottom.

Hook lengths shall be as noted on the drawings. Where hook lengths are not noted, provide ACI standard lengths.

Detailing of concrete reinforcement bars and accessories shall conform to the recommendations of ACI 315 "Details and Detailing of Concrete Reinforcement" and ACI SP-66 "Detailing Manual". Placing of reinforcement shall conform to ACI 315R "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures" and CRSI "Manual of Standard Practice". Reinforcement bars shall not be tack welded, heated, or cut unless specifically detailed on the drawings or as approved by the Structural Engineer. Submit shop drawings of reinforcing steel for review by the Structural Engineer prior to fabrication. All wall reinforcement shop drawings shall be shown in elevation.

STRUCTURAL AND MISCELLANEOUS STEEL

C & L Shapes, plates and bars: ASTM A36, Fy = 36 KSI

Bolts: ASTM A307 machine bolts (MB).

Anchor Rods (AR): Headed or threaded rod with heavy hex nut, ASTM F1554, Fy = 36 KSI with A563C

(A563DH for galvanized) heavy hex nuts and F436-1 washers.

Anchor Bolts (AB): Headed A307, Grade A or hooked ASTM A36.

Threaded rod: ASTM A36, Fy = 36 KSI.

WOOD

Sawn Lumber: Douglas Fir-Larch S-Dry 19% MC, WPPA 2017 Western Lumber grading rules furnished to the following minimum standards:

- Top & Sill Plates & Blocking: #2 or Construction Grade
- Treated Framing: Hem-Fir #2 or better

Structural members shall not be cut for pipes, ducts, etc., unless specifically noted or detailed.

Roof Sheathing: 5/8" (19/32" minimum) APA rated sheathing, Exposure 1, PRP-108, ESR-2586, Span Rating 40/20. Lay sheathing with face grain perpendicular to supports continuous over 2 or more spans with end joints staggered. Allow 1/8" spacing at panel ends and edges. Attach to framing with 8d @ 6" oc at panel edges and 12" oc at intermediate supports unless noted otherwise.

Framing anchors and connectors: "Simpson" or approved equal as indicated on drawings. Install per manufacturer's recommendations. Bolt heads and nuts in contact with wood shall have washers. For nailing not shown on drawings, use IBC Fastening Schedule, Table 2304.10.1.

Nails shall not be overdriven.

Preservative-Treated Wood:

All preservative-treated wood (PT) and fire-treated wood (FT) shall be treated in compliance with the American Wood Protection Association (AWPA) standard U1-09. The AWPA Use Category System (UCS) shall be used to determine an appropriate AWPA-approved preservative system and retention level for specific commodities and end-uses. Unless otherwise specified, species and retention levels used in the preservative system shall be compliant with those listed in Section 6 of AWPA-U1-09. Treatments CCA-C, ACQ-A, and ACQ-B are prohibited. All framing hardware, connectors, etc. in contact with treated wood shall be galvanized per ASTM A653 or stainless steel. All framing hardware fasteners into treated wood shall be galvanized per ASTM A153 or stainless steel.

METAL PLATE CONNECTED WOOD TRUSSES

Maximum truss spacing: 24" o.c.

Truss loading unless noted otherwise on drawings:

- Top chord snow load = 60 PSF
- Top chord dead load = 8 PSF
- Bottom chord live load = 20 PSF
- Bottom chord dead load = 8 PSF

Design trusses for wind uplift for components and cladding per ASCE 7-16, Section 30.4 (enclosed)

Verify weight and locations of all mechanical equipment to be supported by trusses prior to fabrication. Camber trusses for dead load deflection.

Live load deflection should not exceed L/360.

Trusses to be fabricated by a certified member of the Structural Building Components Association (SBCA) meeting the requirements of an "Approved Fabricator" per IBC 1704.2.5.1 or where "Special Inspection" at the fabrication site is provided.

Design and fabrication to conform to the Truss Plate Institute Standard ANSI/TPI 1-2007. Connector plates shall be ICC approved. Connector plates shall be sized for 150% of member forces with a minimum size of 3"x5". Truss designs and shop drawings shall be stamped by a professional engineer registered in the State of Idaho. Shop drawings shall include, for each type of truss, dimensions and configurations, nominal lumber size and grade, specifications for connector plates used, size and location of each connector at each joint and amount of camber if required.

Shop drawings shall include erection plans showing truss spacing, truss mark numbers (corresponding to the design calculations), concentrated loads, and permanent bracing/bridging as required by the truss design. Erection bracing shall comply with Truss Plate Institute "Building Component Safety Information, BCSI 2006: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Connected Wood Trusses". Design calculations and shop drawings shall be submitted for review by the Structural Engineer prior to fabrication.

POST-INSTALLED ANCHORS

All post-installed anchors shall have current ICC ESR Reports indicating code-approved installation requirements. Contractor shall comply with all requirements of the ESR report. Substitution of post-installed anchors for anchor bolts, anchor rods, or rebar dowels is not allowed without written approval of the Structural Engineer. Special Inspection is required for all post-installed anchors. Special Inspection for Contractor-requested substitutions (if approved) shall be provided at no additional cost to the Owner.

Adhesive Anchors (AA) in Concrete: ASTM A307, Grade C threaded rod with Simpson SET-3G adhesive or approved equal. Concrete is to have aged a minimum of 7 days prior to anchor installation.

Adhesive Dowels (AD) in Concrete: ASTM A615 deformed bar with Simpson SET-3G adhesive or approved equal. Concrete is to have aged a minimum of 7 days prior to anchor installation.

Adhesive Anchors (AA) in Solid-Grouted Concrete Masonry: ASTM F1554, Grade 36 threaded rod with Simpson SET-XP adhesive or Hilti "HIS" threaded rod or Grade C threaded rod with HIT-HY 70 adhesive or approved equal.

Adhesive Anchors (AA) in Hollow Concrete Masonry: ASTM F1554, Grade 36 threaded rod with Simpson SET-XP adhesive in screen tube or Hilti "HIT-IC" threaded rod with HIT-HY 70 adhesive in HIT-SC screen tube or approved equal.

Expansion Bolts (EB) in Solid-Grouted Concrete Masonry: Simpson Wedge-All or Hilti Kwik Bolt 3 or approved equal.

Screw-In Anchors (SA) in Concrete: Simpson Titen HD or Hilti KWIK HUS-EZ or approved equal.

SPECIAL STRUCTURAL INSPECTIONS

A qualified special inspector(s) shall be engaged by the Owner or Owner's representative to conduct continuous and periodic inspections as tabulated below. Construction activity shall be coordinated with required inspections and testing requirements by the Contractor. Construction deficiencies identified by the special inspection process shall be remedied by the Contractor at no cost to the Owner.

Reinforced Concrete: Inspection required for reinforcement and placement except for footings and slabs on grade.

Expansion Bolts: Periodic inspection is required.

Adhesive Anchors: Inspection required.

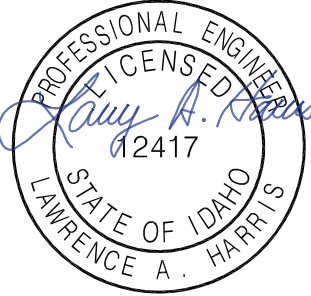
Structural Masonry: Inspection required. Verification of the compressive strength of masonry f_m shall be in accordance with IBC Chapter 17 and TMS-602 Unit Strength Method.

Special Grading, Excavation and Filling: Special Inspection as required per Geotechnical Report prepared by GeoProfessional Innovation and as required by the Building Official.

ABBREVIATIONS

AA	ADHESIVE ANCHOR	JST	JOIST
AB	ANCHOR BOLT	JT	JOINT
AD	ADHESIVE DOWEL		
ADDL	ADDITIONAL		
AFF	ABOVE FINISH FLOOR	K	KIP
ALT	ALTERNATE	KSF	KIPS PER SQUARE FOOT
&	AND		
APPROX	APPROXIMATE	L OR L	ANGLE
AR	ANCHOR ROD	LBS	POUNDS
ARCH	ARCHITECT	LL	LIVE LOAD
ARCH-L	ARCHITECTURAL	LNTL	LINTEL
@	AT	LONG	LONGITUDINAL
		MAS	MASONRY
		MAX	MAXIMUM
		MB	MACHINE BOLT
B.O.	BOTTOM OF	MECH	MECHANICAL
BOT	BOTTOM	MFR	MANUFACTURER
BLDG	BUILDING	MIN	MINIMUM
BLKG	BLOCKING	MISC	MISCELLANEOUS
BM	BEAM	MO	MASONRY OPENING
BO	BOTTOM OF	MTL	METAL
BRG	BEARING		
BTWN	BETWEEN	# OR NO.	NUMBER
		NOM	NOMINAL
C	CHANNEL	NS	NEAR SIDE
CB	CARRIAGE BOLT	NTS	NOT TO SCALE
CDF	CONTROLLED DENSITY FILL		
CL OR C	CENTERLINE		
CLG	CEILING	OC	ON CENTER
C-C	CENTER TO CENTER	OD	OUTSIDE DIAMETER
CF	CUBIC FEET	O.F.	OUTSIDE FACE
CIP	CAST-IN-PLACE	OH	OVERHEAD
CJ	CONTROL JOINT	O-O	OUT TO OUT
CLR	CLEAR	OPNG	OPENING
CMU	CONCRETE MASONRY UNIT	OPP	OPPOSITE
CNTRD	CENTERED		
COL	COLUMN	PC	PRECAST
CONC	CONCRETE	PL OR P	PLATE
CONN	CONNECTION	PLF	POUNDS PER LINEAL FT
CONSTR	CONSTRUCTION	PCF	POUNDS PER CUBIC FT
CONT	CONTINUOUS	PLYWD	PLYWOOD
CONTR	CONTRACTOR	PLCS	PLACES
CTSK	COUNTERSINK	PSF	POUNDS PER SQ FT
CTR	CENTER	PSI	POUNDS PER SQ IN
CY	CUBIC YARD	PT	PRESSURE TREATED
DBA	DEFORMED BAR ANCHOR	RAD	RADIUS
DBL	DOUBLE	R	RISER
DEG	DEGREE	REINF	REINFORCEMENT
DIAG	DIAGONAL	REF	REFERENCE
DIA	DIAMETER	REQD	REQUIRED
DIM	DIMENSION	REQMTS	REQUIREMENTS
DL	DEAD LOAD	REV	REVISION
DN	DOWN	RO	ROUGH OPENING
DP	DEEP	RM	ROOM
DTL	DETAIL		
DWG	DRAWING	SA	SCREW-IN ANCHOR
DWL	DOWEL	SCHED	SCHEDULE
		SF	SQUARE FEET
(E)	EXISTING	SHT	SHEET
EA	EACH	SHTG	SHEATHING
EB	EXPANSION BOLT	SIM	SIMILAR
EF	EACH FACE	SPCS	SPACES
ELEV	ELEVATION	SPECS	SPECIFICATIONS
EMBED	EMBEDMENT	SQ	SQUARE
EN	EDGE NAIL	SJ	SLAB JOINT
ENGR	ENGINEER	STD	STANDARD
EQ	EQUAL	STIFF	STIFFENER
EW	EACH WAY	STGRD	STAGGERED
EXP	EXPANSION	STL	STEEL
EXIST	EXISTING	STRUC	STRUCTURAL
EXTR	EXTERIOR	SYM	SYMMETRICAL
FD	FLOOR DRAIN	TAS	THREADED ANCHOR STUD
FDN	FOUNDATION	T&B	TOP & BOTTOM
FIN	FINISH	THK	THICK
FLR	FLOOR	THRD	THREADED
FN	FIELD NAIL	TN	TOE NAIL
FO	FACE OF	TO	TOP OF
FOC	FACE OF CONCRETE	TRANS	TRANSVERSE
FRG	FRAMING	TYP	TYPICAL
FS	FAR SIDE		
FT	FEET	UNO	UNLESS NOTED OTHERWISE
FTG	FOOTING		
GA	GAGE	V	VERTICAL
GALV	GALVANIZE	(V)	VERIFY
GR	GRADE	VERT	VERTICAL
GWB	GYPSPUM WALLBOARD		
H	HORIZONTAL	W/	WITH
HAS	HEADED ANCHOR STUD	W/O	WITHOUT
HDR	HEADER	WD	WOOD
HORIZ	HORIZONTAL	WS	WEATHERSTOP
HT	HEIGHT	WT	WEIGHT
HWH	HEX WASHER HEAD	WWF	WELED WIRE FABRIC
ID	INSIDE DIAMETER	x	TIMES OR BY
I.F.	INSIDE FACE		
IN	INCHES		
INTR	INTERIOR		

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Coeur d'Alene, ID 83815

CITY OF MOSCOW
WELL NO.6
BUILDING

GENERAL STRUCTURAL NOTES
& ABBREVIATIONS

PROJECT NO.: 46016.030
DESIGNED BY: JMD
DRAWN BY: JAQ
CHECKED BY: LAH
DWG NAME:
DATE: 4/1/2022
SHEET NO:

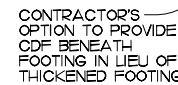
SD1



PLAN



PLAN



NOTE:

1. NO PIPES, CONDUIT, ETC. SHALL PASS THROUGH FOOTING EXCEPT AS SHOWN.
2. NO PIPES, CONDUIT, ETC. SHALL PASS THROUGH OR UNDER COLUMN PAD FOOTINGS.

3 TYPICAL PIPE/CONDUIT THROUGH STEM WALL OR UNDER FOOTING NTS

EITHER ROUND-BAR OR DIAMOND-PLATE DOWELS
MAY BE USED AT CONTRACTOR'S OPTION.

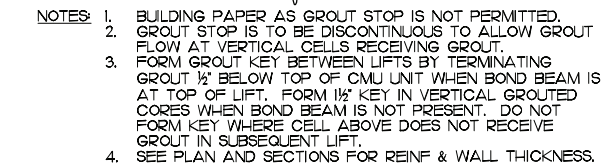
ROUND BAR NOTES:

1. PROVIDE SMOOTH STEEL DOWELS W/ SAWN & DEBURRED END EDGES. GREASE OR WRAP ONE END TO PREVENT BOND.
2. DOWELS SHALL BE SUPPORTED SO AS TO REMAIN LEVEL AND PERPENDICULAR TO JOINT LINE.
3. DOWELS SHALL BE PLACED NO CLOSER THAN 12" FROM JOINT INTERSECTIONS.

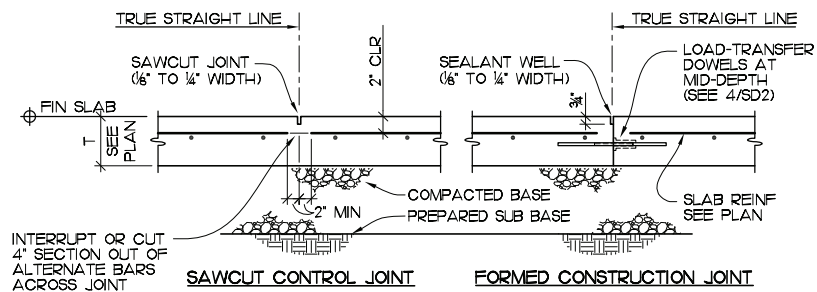
DIAMOND PLATE NOTES:

1. DIAMOND-DOWEL SYSTEM SHALL BE PROVIDED BY PNA CONSTRUCTION TECHNOLOGIES, OR APPROVED EQUIVALENT.
2. INSTALL DOWELS AS RECOMMENDED BY MANUFACTURER.

TYPICAL SCHEDULE FOR LOAD-TRANSFER DOWELS
AT SLAB-ON-GRADE CONSTRUCTION JOINTS



TYPICAL CMU BOND BEAM



- NOTES:**
1. SEE GENERAL STRUCTURAL NOTES FOR SLAB JOINT LAYOUT REQUIREMENTS.
 2. SEE GEOTECHNICAL REPORT FOR COMPACTED BASE AND PREPARED SUB BASE REQUIREMENTS.
 3. WHEREVER POSSIBLE, ALIGN JOINTS WITH RE-ENTRANT SLAB CORNERS AND INTERIOR COLUMNS.
 4. ALL SLAB REINFORCEMENT SHALL BE DISCONTINUOUS AT FORMED JOINTS.
 5. FILL SAWCUT WELLS WITH SEM-RIGID JOINT SEALANT.
 6. AT CONTROL JOINTS, SAWCUT ALONG SHORT DIRECTION OF POUR FIRST. FOR EARLY-ENTRY DRY-CUT SAWS, USE AS SOON AS POSSIBLE WITHOUT CAUSING RAVELING OF CONCRETE EDGES.

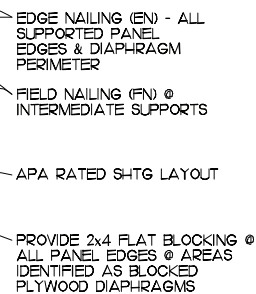
5 TYPICAL CONCRETE SLAB ON GRADE W/ STEEL-BAR REINFORCEMENT



SECTION

NOTE: MASONRY CONTROL JOINTS SHALL NOT BE LOCATED CLOSER THAN 5'-0" TO JAMB

② TYPICAL CMU LINTEL REINFORCEMENT



12 TYPICAL SHEATHED ROOF DIAPHRAGM CONSTRUCTION



NOTE:
PROVIDE 'T' BRACING FOR ALL WEB MEMBERS REQUIRING
LATERAL BRACING THAT CANNOT BE BRACED BY HORIZONTAL
BRIDGING AS SHOWN IN X/SX

10 TYPICAL TRUSS WEB LATERAL 'T' BRACING

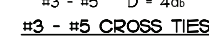


ELEVATION

12 TYPICAL TRUSS WEB LATERAL BRACING

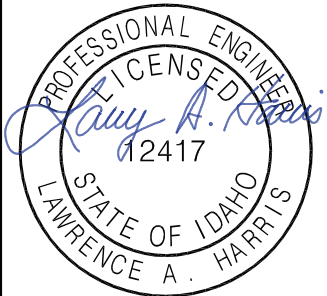


TYPICAL TRUSS TOP CHORD BLOCKING

STIRRUP OR TIE

d_b = DIAMETER OF BAR

TYPICAL REBAR STANDARD HOOKS, STIRRUPS & TIES



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0.	DATE	REVISION DESCRIPTION	BY

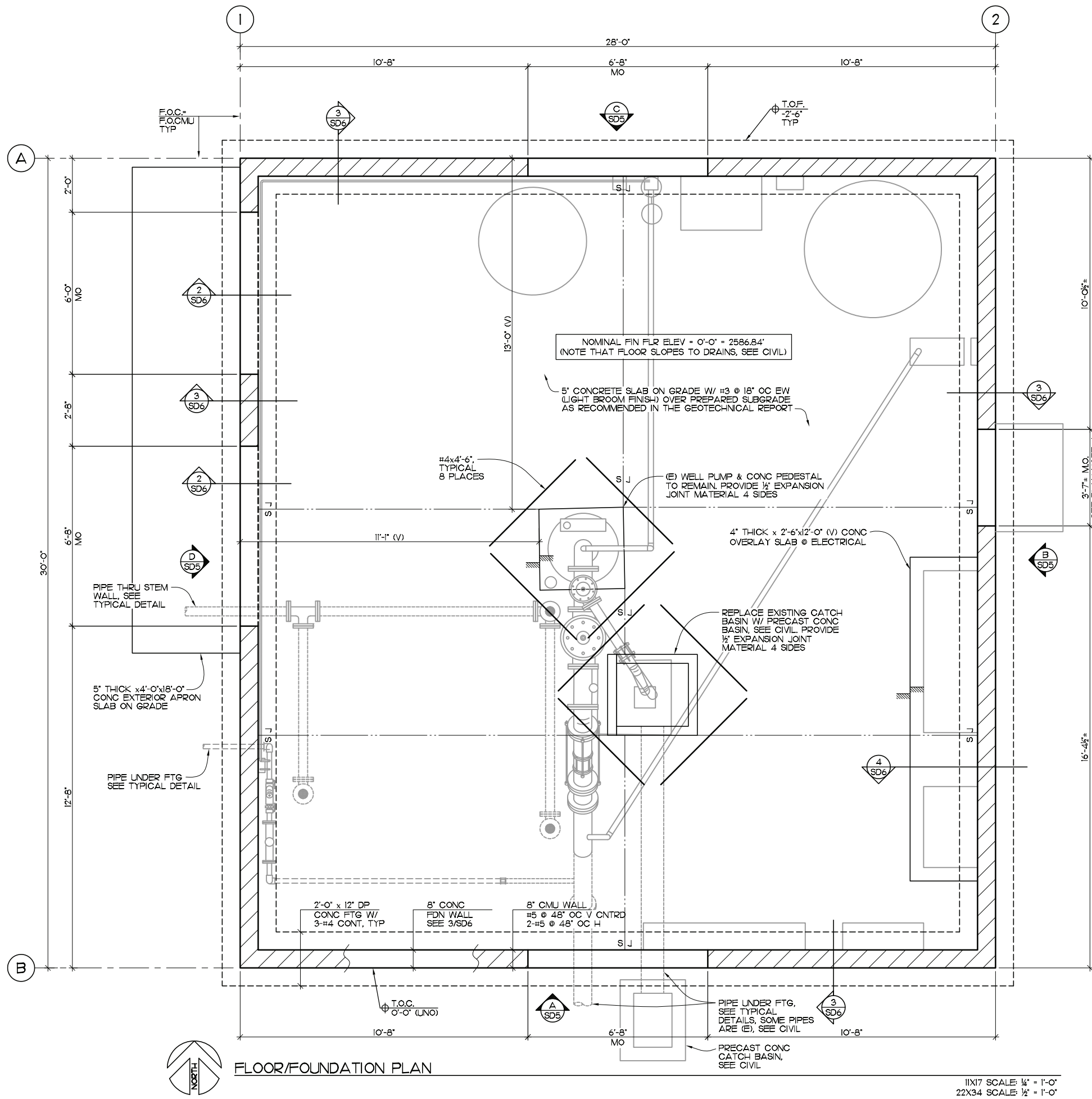
CITY OF MOSCOW

**WELL NO.6
BUILDING**

TYPICAL STRUCTURAL DETAILS

PROJECT NO.:	46016.030
DESIGNED BY:	JMD
DRAWN BY:	JAQ
CHECKED BY:	LAH
DWG NAME:	
DATE:	4/1/2022
SHEET NO:	

SD2



- PLAN NOTES**
- COORDINATE & VERIFY ALL DIMENSIONS AND ELEVATIONS WITH CIVIL DRAWINGS.
 - SEE SHEET SD1 FOR GENERAL NOTES/ABBREVIATIONS.
 - SEE SHEET SD2 FOR TYPICAL DETAILS.
 - COORDINATE ALL MECHANICAL WALL PENETRATION SIZES AND LOCATIONS WITH MECH/ELEC.
 - ALL UNGROUTED BLOCK CELLS TO BE FILLED WITH FOAMED-IN-PLACE INSULATION "CORE-FILL 500" BY TAYLOR CHEMICAL PRODUCTS OR APPROVED EQUAL.
 - INSTALL FLUID-APPLIED SEALANT ON BOTH SIDES OF CMU WALLS.

- LEGEND**
- T.O.W. TOP OF WALL ELEVATION
 - T.O.S. TOP OF SLAB ELEVATION
 - T.O.C. TOP OF CONCRETE ELEVATION
 - T.O.F. TOP OF FOOTING ELEVATION
 - ELEVATION CHANGE
 - CMU WALL
 - REVISION MARK
 - SLAB JOINT
 - 2558.56' FINISH FLOOR ELEVATION
 - 800# MECH UNIT MOUNTED UNDER AND FROM FRAMING W/WEIGHT
 - ELEVATION LETTER
 - SHEET NUMBER
 - SECTION NUMBER
 - BUILDING SECTION
 - SHEET NUMBER
 - DETAIL NUMBER
 - DETAIL
 - SHEET NUMBER

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BY

REVISION DESCRIPTION

NO.

DATE

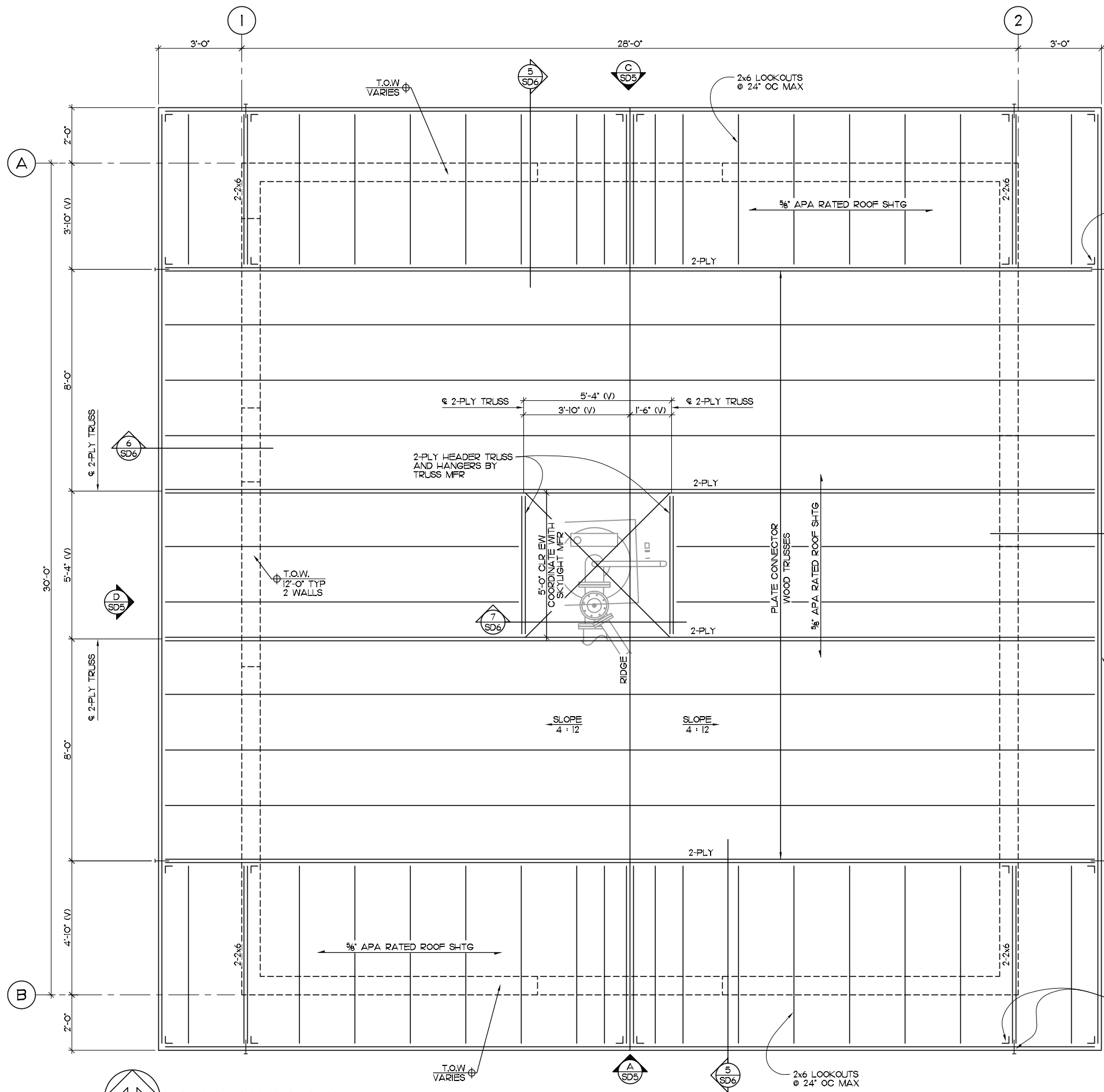
CITY OF MOSCOW

**WELL NO. 6
BUILDING**

FLOOR/FOUNDATION PLAN

PROJECT NO.: 46016.030
DESIGNED BY: JMD
DRAWN BY: JAQ
CHECKED BY: LAH
DWG NAME:
DATE: 4/1/2022
SHEET NO:

SD3

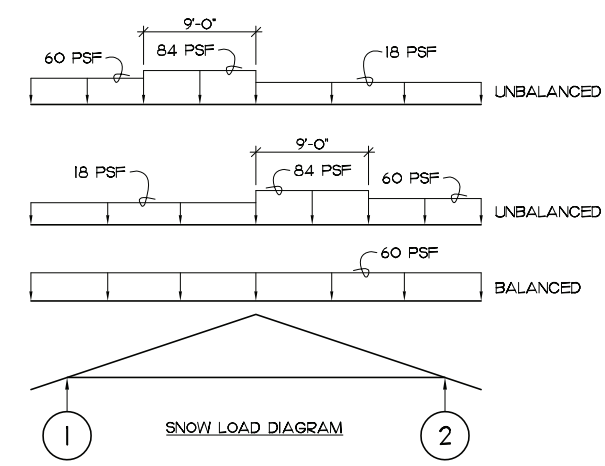


PLAN NOTES

1. COORDINATE & VERIFY ALL DIMENSIONS AND ELEVATIONS WITH CIVIL DRAWINGS.
2. SEE SHEET SD1 FOR GENERAL NOTES/ABBREVIATIONS.
3. SEE SHEET SD2 FOR TYPICAL DETAILS.
4. COORDINATE ALL MECHANICAL WALL PENETRATION SIZES AND LOCATIONS WITH MECH/ELEC.

PREFABRICATED METAL PLATE CONNECTED WOOD TRUSSES

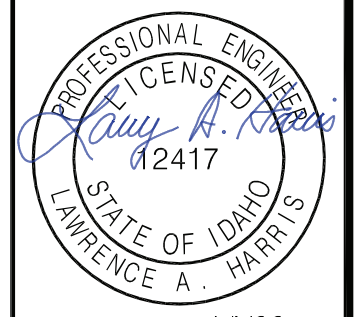
1. MAXIMUM TRUSS SPACING SHALL BE 24' ON CENTER.
2. PROVIDE MINIMUM 2x6 TOP CHORD FOR ALL TRUSSES UNO.
3. THE TRUSS DESIGNER SHALL SPECIFY ALL REQUIRED STEEL HANGERS FOR TRUSS TO TRUSS CONNECTIONS. TOE-NAILED CONNECTIONS ARE NOT AN APPROVED ALTERNATIVE TO STEEL HANGERS.
4. THE TRUSS DESIGNER SHALL SPECIFY CONNECTION REQUIREMENTS FOR ALL MULTI-PLY TRUSSES.
5. HIP TRUSSES SHALL BE DESIGNED SO WEB MEMBERS DO NOT REQUIRE INTERMEDIATE LATERAL BRACING.
6. ANCHOR WEB LATERAL BRACING MEMBERS PER TYPICAL DETAILS.
7. EAVE OVERHANGS TO BE DESIGNED FOR 2x THE DESIGN ROOF SNOW LOAD PER ASCE7-16, SECTION 7.4.5.
8. TRUSS CHORDS OR WEBS SHALL NOT BE CUT OR NOTCHED FOR ROOF OPENINGS, PIPES, DUCTS, ETC.
9. TRUSS FABRICATION SHALL NOT COMMENCE UNTIL TRUSS DESIGN SHOP DRAWINGS HAVE BEEN RETURNED BY THE STRUCTURAL ENGINEER NOTED AS "APPROVED" OR "APPROVED AS NOTED".



ROOF FRAMING PLAN

11X17 SCALE: 1/4" = 1'-0"
22X34 SCALE: 1/2" = 1'-0"

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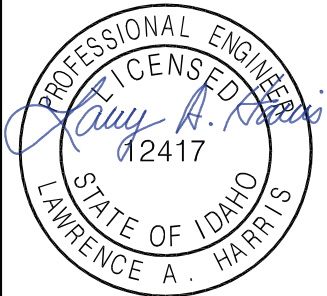
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CITY OF MOSCOW
WELL NO.6
BUILDING

ROOF FRAMING PLAN

PROJECT NO.: 46016.030
DESIGNED BY: JMD
DRAWN BY: JAQ
CHECKED BY: LAH
DWG NAME:
DATE: 4/1/2022
SHEET NO:

SD4



4/1/22

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NO. DATE REVISION DESCRIPTION BY

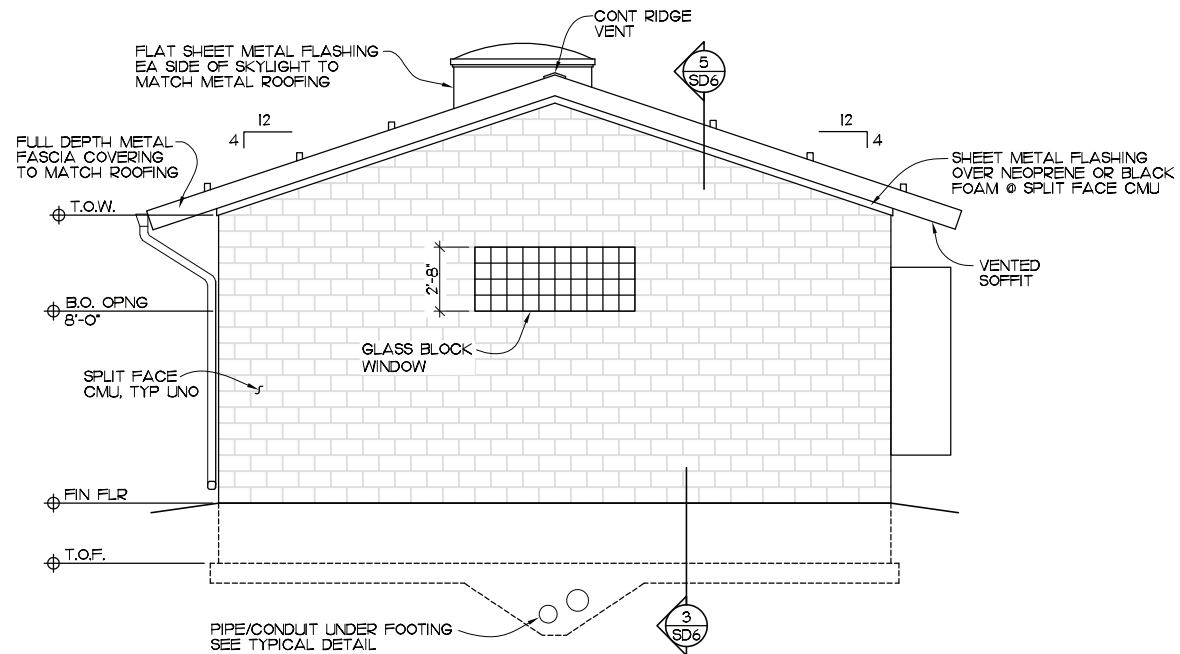
CITY OF MOSCOW

WELL NO.6
BUILDING

ELEVATIONS

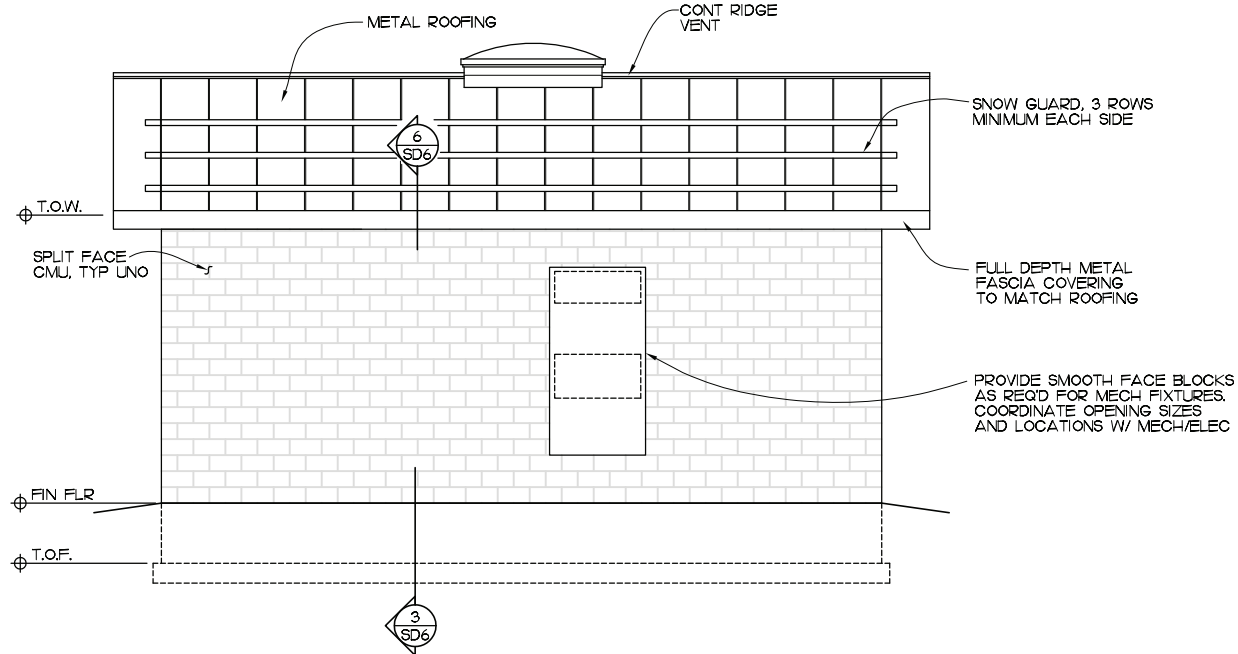
PROJECT NO.: 46016.030
DESIGNED BY: JMD
DRAWN BY: JAQ
CHECKED BY: LAH
DWG NAME:
DATE: 4/1/2022
SHEET NO:

SD5



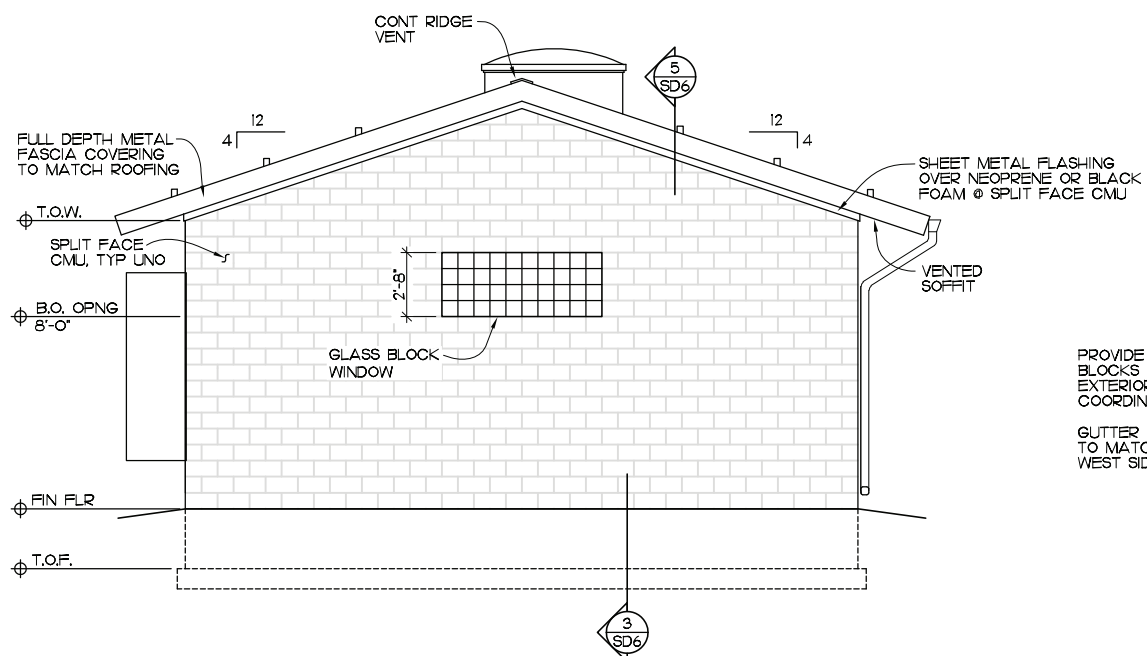
A SOUTH ELEVATION

11X17 SCALE: 1/8"=1'-0"
22X34 SCALE: 1/4"=1'-0"



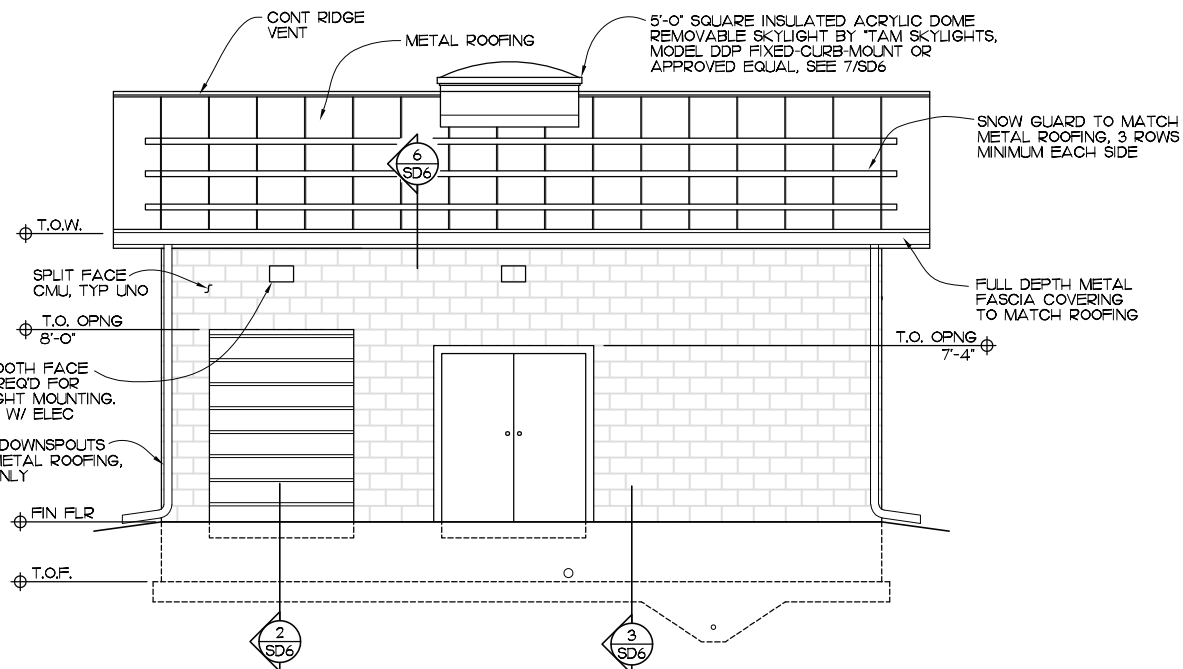
B EAST ELEVATION

11X17 SCALE: 1/8"=1'-0"
22X34 SCALE: 1/4"=1'-0"



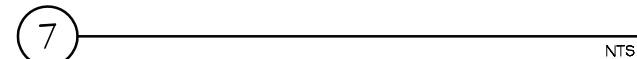
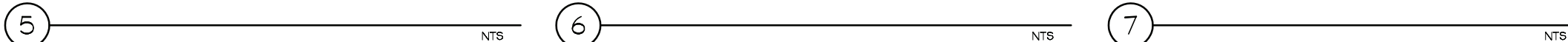
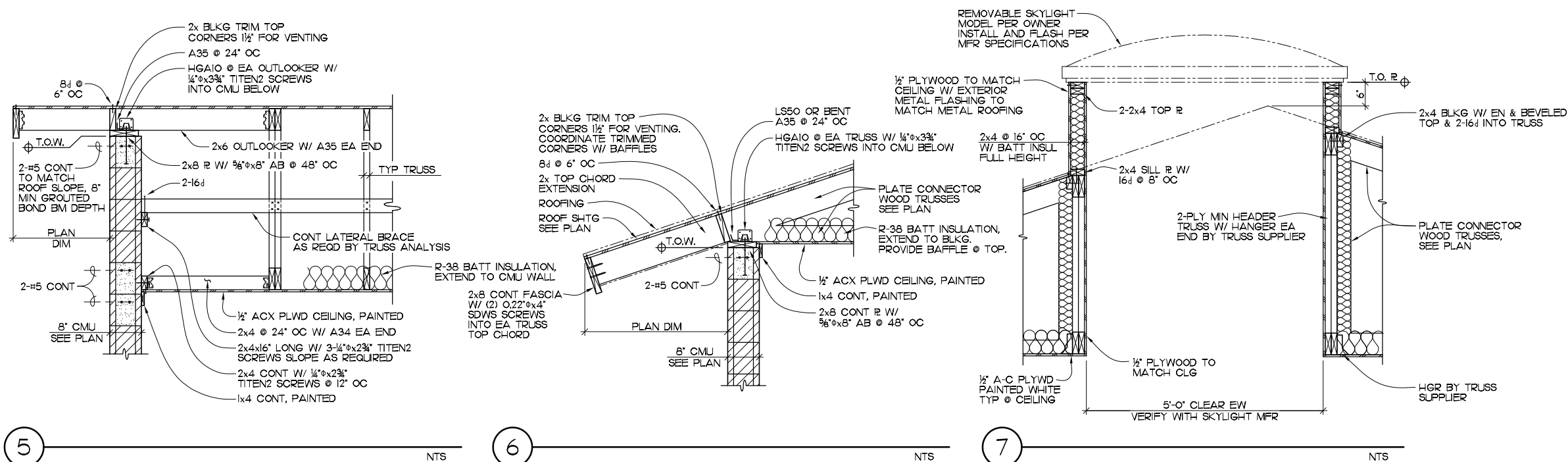
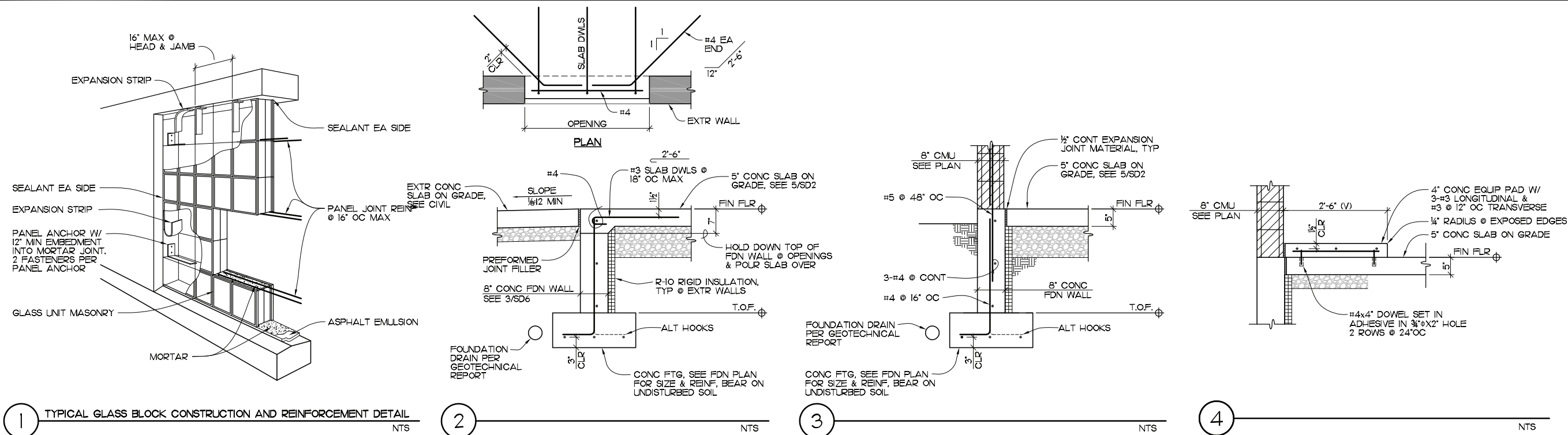
C NORTH ELEVATION

11X17 SCALE: 1/8"=1'-0"
22X34 SCALE: 1/4"=1'-0"



D WEST ELEVATION

11X17 SCALE: 1/8"=1'-0"
22X34 SCALE: 1/4"=1'-0"



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[illegible]

CITY OF MOSCOW
WELL NO.6
BUILDING

STRUCTURAL DETAILS

PROJECT NO.:	46016.030
DESIGNED BY:	JMD
DRAWN BY:	JAQ
CHECKED BY:	LAH
DWG NAME:	
DATE:	4/1/2022
SHEET NO:	

SD6

SECTION 00 4100 - BID FORM

PROJECT: WELL HOUSE NO. 6 REBID

THIS BID IS SUBMITTED TO: CITY OF MOSCOW
221 E. SECOND STREET
MOSCOW, ID 83843

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and with the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement for Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for thirty (30) days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within **ten (10)** days after the date of OWNER's Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - 3.1. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged: (List Addendum Number and Date of Issuance):

Addendum 1 - 4/25/21
Addendum 2 - 4/28/22
 - 3.2. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
 - 3.3. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work;
 - 3.4. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. BIDDER accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which BIDDER is entitled to rely as provided in paragraph 4.2 of the General Conditions. BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER's purposes. BIDDER acknowledges that OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.
 - 3.5. BIDDER is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

- 3.6. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 3.7. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
- 3.8. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.
4. BIDDER will complete the Work in accordance with the Contract Documents for the following price:

BASE BID: \$ 636,915

ADD ALTERNATE NO. 1: \$ 197,000

TOTAL BASE BID + ADD ALT. NO. 1: \$ 833,915

Unit Prices have been completed in accordance with paragraph 11.03.B of the General Conditions.

Bidder acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.

5. BIDDER agrees that the Work will be substantially completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.
7. The following documents are attached to and made a condition of this Bid:
- 7.1. Required Bid Security in the form of bid bond.
- 7.2. List of Subcontractors
- 7.3. Non-Collusion Affidavit
- 7.4. Contractor for Public Works to Pay and Secure All Taxes
- 7.5. Affidavit of Payment or Securement of All Taxes
8. Communications concerning this Bid shall be addressed to:
- ☒ The address of the BIDDER indicated below.
- ☐ The following address: _____
9. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED ON May 3, 2022

State of Idaho Public Works Contractors License No. 14401-4-1-3-5

Idaho State Tax Commission Use Tax Reporting No. 000801006

BIDDER is an individual/partnership/corporation/joint venture: Corporation

BIDDER: TML Construction, Inc. (SEAL)

Signature: Sydney Petersen Name/Title: Sydney Petersen VP

Signature: _____ Name/Title: _____

Phone Number and Address for receipt of official communications:

Po Box 2970
Hayden, ID 83835

Phone: 208 762-3611

Fax: _____

Email: Brian@tmlconst.com

SECTION 00 4322 – UNIT PRICES FORM

CITY OF MOSCOW WELL HOUSE NO. 6 REBID

BASE BID					
Pay Item No.	Description	Unit	Estimated Quantity	Unit Price	Price
015050.01	Mobilization	LS	1	\$ 30,000	\$ 30,000
024100.01	Demolition	LS	1	\$ 21,000	\$ 21,000
221007.01	Sodium Hypochlorite Generation System Coordination and Utility Connections	LS	1	\$ 17,000	\$ 17,000
238100.01	Heating and Ventilation	LS	1	\$ 14,000	\$ 14,000
260000.01	General Electrical	LS	1	\$ 154,000	\$ 154,000
312200.01	Site Grading	LS	1	\$ 13,000	\$ 13,000
331116.01	2" Poly Water Line	LF	59	\$ 175	\$ 10,325
331116.02	2" Service Meter Piping	LS	1	\$ 10,000	\$ 10,000
333111.01	Sanitary Sewer Service Connection	LF	70	\$ 235	\$ 16,450
334111.01	Catch Basin	EA	1	\$ 4,000	\$ 4,000
334111.02	Pump to Waste Basin	LS	1	\$ 12,400	\$ 12,400
334111.03	10" Ductile Iron Drain Pipe	LF	10	\$ 400	\$ 4,000
334111.04	Drywell	EA	2	\$ 5,750	\$ 11,500
334111.05	4-Inch Floor Drain and Pipe	LS	1	\$ 20,000	\$ 20,000
334111.06	4-Inch Footing Drain Discharge Pipe	LF	16	\$ 140	\$ 2,240
061010.01	Building	LS	1	\$ 297,000	\$ 297,000
				\$	\$
				\$	\$
				\$	\$
				\$	\$
TOTAL BASE BID PRICE:					\$ 630,915

ADD ALTERNATE NO. 1					
Pay Item No.	Description	Unit	Estimated Quantity	Unit Price	Price
263213.01	Standby Power System	LS	1	\$ 197,000	\$ 197,000
				\$	\$
				\$	\$
				\$	\$
TOTAL ADD ALTERNATE NO. 1 PRICE:					\$ 197,000

SECTION 00 4350 - BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER (Name and Address):

TML Construction, Inc.
10186 N. Atlas Road, Hayden, ID 83835

SURETY (Name and Address of Principal Place of Business):

Travelers Casualty and Surety Company of America
One Tower Square, Hartford, CT 06183

OWNER (Name and Address):

City of Moscow
504 South Washington Street, Moscow, ID 83843

BID

Bid Due Date: May 3, 2022

Description (Project Name and Include Location): Well House No. 6 Rebid, #107-020, Moscow ID

BOND

Bond Number: Bid Bond

Date: May 3, 2022

Penal sum: Five Percent of Amount Bid
(Words)

\$ 5%
(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

TML Construction, Inc. (Seal)
Bidder's Name and Corporate Seal

By: Brian Petersen
Signature

Brian Petersen
Print Name

President
Title

Attest: Sydney Peltz
Signature

VP
Title

SURETY

Travelers Casualty and Surety Company of America (Seal)
Surety's Name and Corporate Seal

By: Shelly Donovan
Signature (Attach Power of Attorney)

Shelly Donovan
Print Name

Attorney-in-Fact
Title

Attest: Shawn M. Wilson
Signature Shawn M. Wilson

Surety Account Executive
Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2. All Bids are rejected by Owner, or

3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.



Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company
Farmington Casualty Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, St. Paul Fire and Marine Insurance Company, and Farmington Casualty 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 Shelly Donovan of Spokane, WA, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge the following bond:

Surety Bond No.: Bid Bond

OR

Principal: TML Construction, Inc.

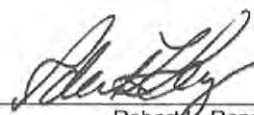
Obligee: City of Moscow

Project Description: Well House No. 6 Rebid, #107-020, Moscow ID

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.



State of Connecticut

By: 
 Robert L. Raney, Senior Vice President

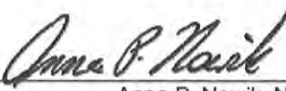
City of Hartford ss.

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

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

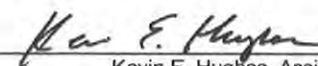
FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice 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 **3rd** day of **May**, 2022.




 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.

SECTION 00 4400 - LIST OF SUBCONTRACTORS

(TO BE SUBMITTED WITH PROPOSAL)

Pursuant to Section 67-2310, Idaho Code, commonly known as the naming law, the names and addresses of the entities who will perform the plumbing, heating and air conditioning and electrical work, subject to approval of Owner and Engineer, if Undersigned is awarded the Contract, are as follows:

Plumbing (Name): BL Jacobs Plumbing Inc.

(Address): PO Box 2770 Hayden Lake ID 83835

Idaho Public Works Contractors License No.: 12056-B-4

Idaho Plumbing Contractors License No.: ~~PLB~~ PLB-C-9227

Warm Air Heating & Air Conditioning (Category 2)(Name): Air Tech Mechanical Company

(Address): 7820 W Franklin Street Coeur d'Alene, ID 83815

Idaho Public Works Contractors License No.: 12273-A-4

Electrical (Name): Strom Electric Inc.

(Address): PO Box 370 Troy, ID 83871

Idaho Public Works Contractors License No.: 022495-AA-4

Idaho Electrical Contractors License No.: 021665

Failure to name a properly license contractor in each of the above categories will render the bid unresponsive and void.

The Undersigned notifies that he is of this date duly licensed as an Idaho Public Works Contractor and further that he possesses Idaho Public Works Contractor's License No. 14401-U-1-3-5

Dated this 3rd day of May, 2022

TML Construction, Inc
(Company)

PO Box 2970
(Address)

Hayden, ID 83835

Sydney Petersen
(Authorized Signature)

Sydney Petersen VP
(Printed Name and Title)

Please note that if any of this work is being provided on the project the licensed contractor must be noted. This means Subs to Subcontractors MUST be listed if they are performing work in one of these categories, no matter what the bid item encompasses. If you are unsure if an item of work would qualify as HVAC, Plumbing, or Electrical it is your responsibility to contact the Division of Building Safety for clarification. The Engineer will not provide this determination.

SECTION 00 4500 – NON-COLLUSION AFFIDAVIT

State of Idaho)
County of Kootenai) :SS

Sydney Petersen, being first duly sworn, deposes and says that he/she is
VP (sole owner, a partner, president,
secretary, etc.) of TML Construction, Inc.

the party making the foregoing bid, that such Bid is not made in the interest of or on behalf of any undisclosed person, partnership, company association, organization, or corporation; that such Bid is genuine and not collusive or sham; that said Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, nor that anyone shall refrain from bidding; that said Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of said Bidder or of any other bidder, nor to fix any overhead, profit, or cost advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such Bid are true; and, further, that said Bidder has not directly or indirectly, submitted its bid price or any breakdown thereof, nor the contents thereof, nor divulged information or data relative thereto, not paid and will not pay fee in connection therewith to any corporation, partnership, company association, organization, bid depository, nor to any member or agent thereof, not to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his/her general business.

Signed: Sydney Pet

Title: VP

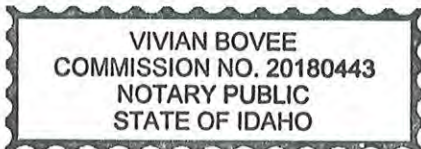
Subscribed and sworn to before me this 27th day of April, 2022

Vivian Bonell
Notary Public in and for the State

of Idaho

Residing at: 305 W. Prairie Ave Hayden ID 83835

My Commission expires: 3/12/24



SECTION 00 4550 - CONTRACTOR FOR PUBLIC WORKS TO PAY OR SECURE ALL TAXES

The Contractor, in consideration of securing the business of erecting or constructing public works in this State, recognizing that the business in which he is engaged is of a transitory character, and that in the pursuit thereof, his property used therein may be without the State when taxes, excises, or license fees to which he is liable become payable agrees:

1. To pay promptly when due all taxes (other than on real property) excises and license fees due to the State, its subdivisions, and municipal and quasi-municipal corporations therein, accrued or accruing during the term of this contract, whether or not the same shall be payable at the end of such term;
2. That if the said taxes, excises and license fees are not payable at the end of said term, but liability for the payment thereof exists, even though the same constitute liens upon his property, to secure the same to the satisfaction of the respective officers charged with the collection thereof;
3. That, in the event of his default in the payment or securing of such taxes, excises and license fees, to consent that the Department, Officer, Board or Taxing Unit entering into this contract may withhold from any payment due him hereunder the estimated amount of such accrued and accruing taxing units to which said contractor is liable.

CONTRACTOR: TML Construction, Inc.

By: Sydney Petersen

Name: Sydney Petersen

Address: PO Box 2970

Hayden, ID 83835

(SEAL)

ATTEST:

Name: BFL

SECTION 00 4600 - AFFIDAVIT OF PAYMENT OR
SECUREMENT OF ALL TAXES

State of Idaho)
County of Kootenai) :SS

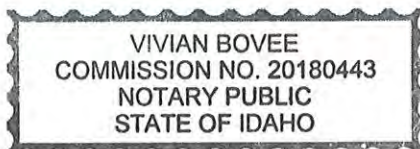
Sydney Petersen (Name), being first duly sworn, deposes
and says that I am VP (sole owner, a partner, president,
secretary, etc.) of TML Construction Inc. the party making the foregoing bid;
that said Contractor is in conformance with Idaho Code 63-1502; that it has paid or secured to
the satisfaction of the respective taxing units all taxes for which he or his property is liable now
due or delinquent including assessments, excises, and license fees levied by the State of Idaho
or any taxing unit within the State of Idaho.

Dated this 27th day of April, 2022

Signed: Sydney Petersen

Title: VP

Subscribed and sworn to before me this 27th day of April,
2022



Vivian Bovee

Notary Public in and for the State

of Idaho

Residing at: 305 W. Prairie Ave Hayden ID 83835

My Commission expires: 3/12/24

ADDENDUM NO. 1

APRIL 25, 2021

RE: WELL HOUSE NO. 6 RE-BID

OWNER: CITY OF MOSCOW

FROM: Welch, Comer & Associates, Inc.
330 E. Lakeside Ave., Ste. 101
Coeur d'Alene, Idaho 83814
Phone: (208) 664-9382 Fax: (208) 664-5946

TO: ALL PLAN HOLDERS

The following modifications, clarifications and information are hereby made a part of the contract provisions and shall be fully binding.

This Addendum consists of **4** pages.

IMPORTANT: Bidders must acknowledge receipt of this Addendum as well as all other issued addenda on the Bid Form provided with the Contract Documents, which must be utilized by Bidder for bid to be considered responsive. Failure to do so may subject Bidder to disqualification.

TECHNICAL SPECIFICATIONS:

Specification 26 32 13 – POWER GENERATION

Replace line item 3 in Section 2.1, paragraph A. with the following:

“1. MTU, a Rolls-Royce Solution”

DRAWINGS:

Sheet #E4

1. Include a Key Note 6 call out for conduit run “P2”.

Sheet #E9

1. Add the following conduit runs in the conduit and wire schedule:

T2	1"	CAT 5E UTP	GENERATOR CONTROL PANEL	TELEMETRY CONTROL PANEL
T3	1"	CAT 5E UTP	MIOX CONTROL PANEL	TELEMETRY CONTROL PANEL
T4	1"	CAT 5E UTP	PUMP CONTROL PANEL	TELEMETRY CONTROL PANEL

2. Include a Key Note 2 call out for conduit run “T2”.

CLARIFICATIONS:

1. Meeting notes from Pre-Construction Meeting (attached).
2. Substantial Completion can be pushed back to May 31, 2023.
3. The well needs to be online by May 1, 2023, and no impacts to water production or related activities will be acceptable.
4. Contractor shall agree not to disturb well operations – no shut downs will be allowed after May 1, 2023 without written direction from the City.

Attachments:

Pre-Con Meeting Roster
Pre-Con Meeting Notes

END OF ADDENDUM 1

107-020 MOSCOW WELL HOUSE NO. 6

CITY OF MOSCOW

PRE-BID MEETING ROSTER

Date: 04/22/2022 Time: 10:00 a.m. Location: City of Moscow/GoTo/Project Site

NAME	COMPANY	ADDRESS	PHONE	EMAIL
Nathan Wright, P.E.	Welch Comer Engineers	330 E. Lakeside Ave., Ste. 101, Coeur d'Alene, ID 83814	(208) 664-1841	nwright@welchcomer.com
Scott Bontrager, P.E.	City of Moscow	504 S. Washington, Moscow, ID 83843	(208) 883-7030	sbontrager@ci.moscow.id.us
Demetre Makratzakis	City of Moscow	504 S. Washington, Moscow, ID 83843		dmakratzakis@ci.moscow.id.us
Brian Petersen	TML Construction		208-762-3611	brian@tmlconst.com
Shawn Johnson	S & L Underground			shawn@slunder.com
Michael Dix	RAZ Construction		509-951-7139	miked@RAZZconstruction.com
Aaron Mangum	Aaron Mangum Construction			aaron@mangumconstruction.com
Evan Timar	City Moscow			
Grady Weiss	Trindera			
Jed Druffel	LSB			
Bob Buvel	City Engineer			
Tracy Ortiz	Engineering Dept.			
Jed Duffel				



Meeting notes

City of Moscow – Engineering Department

Date 4-22-2022 | Time 10:00 | Meeting called to order by: *Welch Comer Engineers*

Project Number: 107-020

In Attendance:

City of Moscow Employees:

- Bob Buvel, Engineering
- Demetre Makratzakis, Engineering
- Tracy Ortiz, Engineering

Additional Attendees:

Nathan Wright, Welch Comer Engineers

Purpose of the Meeting:

- Well House No. 6 Rebid Pre-Bid Meeting

Agenda Topic & Discussion:

- Well House No. 6

Notes:

- Nathan Wright from Welch Comer opened the meeting for questions from the contractors.
- Michael Dix from Razz Construction asked if the meeting notes, along with the agenda sheet would be posted
 - o Tracy Ortiz clarified that Welch Comer and the City will coordinate to have the meeting notes and the agenda included with the first addendum and posted to Quest CDN early next week.
- Michael also asked if there would be an opportunity to go on a site visit outside of the scheduled post pre-bid meeting time.
 - o Demetre let the group know that a separate time could be coordinated with the all parties involved to do a site visit.
- A question was posed in regard to whom is responsible for the permitting of the project.
 - o Nathan clarified that the contractor is responsible for obtaining the permits for the project.
- Nathan made a point to reiterate that Well House No. 6 is the cities cleanest well and is expected to be operational until September 1 2022 and then turn on again after May 1 2023. Construction will be able to move forward before September 1 and after May 1 but the well must remain on.
 - o Demetre also noted that the City is flexible with the timeline of the project.
- Nathan highlighted a portion within the specs mentioning the importance of ordering the generator within 30 days of the notice to award. He explained that with long lead times on the generator this is a crucial portion of the project and should be noted.
- Demetre explained that the previous time Well House No. 6 was billed that it included the removal and installation of the Sodium Hypochlorite Generation System. With this Rebid of the project this is no longer included. The City will purchase, deinstall and install the system but coordination of the connection will still need to occur between the contractor, installation team, and water department.

ADDENDUM NO. 2

APRIL 28, 2021

RE: WELL HOUSE NO. 6 RE-BID

OWNER: CITY OF MOSCOW

FROM: Welch, Comer & Associates, Inc.
330 E. Lakeside Ave., Ste. 101
Coeur d'Alene, Idaho 83814
Phone: (208) 664-9382 Fax: (208) 664-5946

TO: ALL PLAN HOLDERS

The following modifications, clarifications and information are hereby made a part of the contract provisions and shall be fully binding.

This Addendum consists of **1** page.

IMPORTANT: Bidders must acknowledge receipt of this Addendum as well as all other issued addenda on the Bid Form provided with the Contract Documents, which must be utilized by Bidder for bid to be considered responsive. Failure to do so may subject Bidder to disqualification.

TECHNICAL SPECIFICATIONS:

In reference to **Section 01 1000, Paragraph 1.05**, add the following:

- G.** The City well shall remain fully operational through September 1, 2022. From September 1, 2022 – May 1, 2023 the well may remain offline. The contractor shall give the City written notice of at least 7 days prior to taking the well offline or turning the well back on.

In reference to **Section 01 1000, Paragraph 1.07, C.**, revise as follows:

- C.** Base Bid Substantial Completion: The work shall be substantially completed no later than ~~April 1st, 2023~~ **May 31, 2023**. Substantial completion includes the completion of the new wellhouse, and all utility work required for the well to be fully operational including all services, chlorine injection, electrical equipment, etc. **The well needs to be online by May 1, 2023, and no impacts to water production or related activities will be acceptable. Contractor shall agree not to disturb well operations – no well shut downs will be allowed after May 1, 2023 without written direction from the City.**

END OF ADDENDUM 2