CONTRACT DOCUMENTS

FOR THE CONSTRUCTION

OF

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

FOR

CITY OF WOODBURN,
OREGON

PROJECT NO. 2018-008-28.1
BID NO. 2022-03
FEBRUARY 2022

Contract Documents

For the Construction of the

Water Tower Repainting and Improvements Project

for

City of Woodburn, Oregon

February 2022

Project No. 2018-008-28.1
Bid No. 2022-03
Murraysmith #19-2574

Prepared by:

Murraysmith, Inc.
888 SW 5th Avenue, Suite 1170
Portland, Oregon 97204
(503) 225-9010

SECTION 1 - TABLE OF CONTENTS FOR

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

PROJECT No. 2018-008-28.1
BID No. 2022-03

SECTION 2 INVITATION TO BID

By the
CITY OF WOODBURN
for
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

PROJECT No. 2018-008-28.1
BID No. 2022-03

Sealed bids for the construction of ***"Water Tower Repainting and Improvements Project"*** will be received by the City of Woodburn, OR at City Hall Annex, 190 Garfield St. until **2:00 PM**, **Wednesday, March 9th, 2022,** and will thereafter be publicly opened and read.

Proposals shall be addressed to the Public Works Director, Curtis Stultz, City of Woodburn, 190 Garfield St., Woodburn, OR 97071. Bids shall be submitted in a plain sealed envelope bearing the Bidder's name, the name of the project and the date and time of the Bid opening, and shall be marked **"Bid No. 2022-03"** and bidders shall indicate on the Form of Proposal that ***"Bidder will comply with the provisions of Chapter 279C.800 through 279C.870, Oregon Revised Statutes"***.

The major items of work are as follows:

The work contemplated includes retrofitting various appurtenances, performing interior spot coating repairs, and performing exterior maintenance coating on an existing 750,000 gallon elevated, welded steel potable water storage tank. The work also includes conducting field measurements for creation of fabrication shop drawings, deferred structural design for new exterior ladders and access landings, miscellaneous telemetry conduit and wiring work, applying lettering on two locations of the elevated reservoir, and surface restoration.

Plans and specifications may be examined at the City Engineer's Office, City Hall Woodburn, OR on or after **Wednesday, February 9th, 2022**, by APPOINTMENT ONLY (City office is currently closed to the general public). Copies of the Bid Documents may be obtained from the City Engineer's Office upon deposit of a non-refundable fee of one hundred fifty dollars ($150.00) for each set. Additionally, electronic plan sets are available for viewing and downloading on the Engineering Division's website at https://www.woodburn-or.gov/publicworks/page/bids-and-rfps and/or have been downloaded by the following plan centers.

DJC Plan Center – Portland, OR
Contractor's Plan Center – Clackamas, OR
Salem Contractor's Exchange – Salem, OR

Prospective bidders must attend a MANDATORY Pre-Bid Conference, and shall register 72 hours in advance by contacting Dago Garcia by e-mail at dago.garcia@ci.woodburn.or.us. The Pre-Bid Conference will take place at the Project Site located at 106 Broadway Street, Woodburn, OR 97071 at 10:00 a.m. on **Tuesday, February 22nd, 2022**. If deemed appropriate by the Engineer, questions that cannot be addressed by direct reference to the bidding documents will be the subject of an addendum. **A BIDDER'S FAILURE TO ATTEND THE PRE-BID MEETING SHALL CAUSE ANY BID SUBMITTED BY THAT BIDDER TO BE DEEMED NON-RESPONSIVE AND THE BID WILL BE RETURNED UNOPENED.** Other interested parties (non-bidders) may attend but are not required.

Bidders must be pre-qualified in accordance with the laws of the State of Oregon. Completed pre-qualification forms or proof of pre-qualification shall conform to the Special Provisions and the other requirements of these Contract Documents. Only bids from pre-qualified Bidders will be opened.

No bid for a construction contract shall be received or considered unless the bidder is registered with the Construction Contractors Board. The Contractor and every Subcontractor must have a Public Works Bond filed with the CCB before starting work on the project.

All proposals shall be made on the proposal forms. All proposals shall be accompanied by a Bid Bond, equal to ten percent (10%) of the total bid. Bid Bond shall be forfeited to the City if the Contractor fails to execute the contract within time allotted under the specifications.

Pursuant to ORS 279C.370, bidders on public works projects with a contract value of $100,000 or more are required to disclose, 2-hours after bid opening, the bidders first-tier subcontractors. The bidder shall provide the information as required on City of Woodburn first-tier disclosure form, provided in the contract documents**.**

Special minimum experience qualifications apply to portions of this project. **Tank Painting Contractors and Metal Fabricators and Installers** who are not already listed as pre-qualified by the Engineer in the Instructions to Bidders Section shall submit a Statement of Qualifications complying in form and content to the requirements of the bid documents. The minimum qualifications and submittal requirements are specified in the Contract Documents. Requests for qualification shall be presented to Engineer no later than **5:00 PM**, **Wednesday, March 2nd, 2022**. All Statements of Qualification shall be sent directly to Justin Ford, Murraysmith, Inc., by email at Justin.Ford@Murraysmith.us. **PROPOSALS SUBMITTED WITHOUT LISTING AN APPROVED TANK PAINTING CONTRACTOR AND RESERVOIR CONTRACTOR SHALL BE CONSIDERED NON-RESPONSIVE AND SHALL BE REJECTED.**

At the discretion of the Project Manager, Addenda (um) and Contract clarifications shall either be posted on the City, Engineering Division website or delivered to Plan Holders via facsimile. Potential Bidders should check the website on a daily basis until the Bid Opening date. The website can be found at https://www.woodburn-or.gov/publicworks/page/bids-and-rfps. Addenda must be signed and submitted with the Bid Proposal to be considered a responsive offer.

Although contract award is expected to be made by the City Council on **Monday, March 28th, 2022**, the City of Woodburn reserves the right to reject any and all bids not in compliance with prescribed bidding procedures and requirements, and may reject for good cause any and all bids upon a finding of the Agency if it is in the public interest to do so. The three (3) lowest bidders may not withdraw or modify his bid prior to the lapse of 35-days after the bid opening.

This project must be substantially completed within **two hundred and six (206) calendar days** after the date of "Notice to Proceed".

Heather Pierson
City Recorder
City of Woodburn, OR 97071

SECTION 3
INSTRUCTIONS TO BIDDERS
PROJECT No. 2018-008-28.1
BID No. 2022-03

1. GENERAL:

A. SPECIFICATIONS – The Specifications applicable to the Work on this Project are the 2021 edition of the "Oregon Standard Specifications for Construction" as modified by Special Provisions, and the "Technical Specifications" specific to this Project.

B. This is a formal procure. Faxed bids will not be accepted.

C. Bidding requirements and obligations shall comply and conform to Part 00100 of the General Conditions of the Standard Specifications or as modified by the Special Provisions or herein.

2. SECURING CONTRACT DOCUMENTS:

A. Copies of the Contract Documents are on file with the Public Works Department - Engineering Division, located at:

City Hall Annex
190 Garfield Street
Woodburn, OR 97071.

B. Questions regarding bidding requirements should be directed to the Project Manager:

Dago Garcia, PE, City Engineer
190 Garfield St.
Woodburn, OR 97071
Phone: 503.982.5248
Email: dago.garcia@ci.woodburn.or.us

Or

Curtis Stultz, Public Works Operations Director
190 Garfield St.
Woodburn, OR 97071
Phone: 503.982.5268
Email: curtis.stultz@ci.woodburn.or.us

C. Questions regarding technical requirements should be directed to the Engineer at:

Justin Ford, P.E.
888 SW 5th Avenue, Suite 1170
Portland, OR 97204
Phone: 503.310.9671
Email: Justin.Ford@Murraysmith.us

D. Bidder is responsible for completing and returning all page(s), attachment(s) which require a response.

E. Plan Holder's List – An electronic copy of the "Plan Holders List" is provided on the Agency website and will be periodically updated. Contractors, suppliers and others wishing to be added to this list should contact the City Project Manager as identified in 2.B.

F. Project Notifications – Addenda, clarifications, etc. shall be posted on the Agency website and are the responsibility of the Contractor to download before submission of bids. Contractor shall sign and submit with offer all Addenda associated (posted on website) with the project.

3. PROJECT FINANCING:

A. This project is financed and paid for by the City of Woodburn.

B. The Engineer's cost estimated range for the construction of this project is $975,000 to $1,075,000.

C. This project is subject to the prevailing wages rates under the Oregon Prevailing Wages Law (BOLI).

D. The applicable BOLI prevailing wage rates are included with the Special Provisions.

Applicable link is as follows:

https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx

and listed as "Prevailing Wage Rates for Public Works Contracts in Oregon effective January 1, 2022", including any amendments thereto.

4. CONSTRUCTION AGREEMENT

A. The construction contract between Owner and Contractor shall be provided by The City of Woodburn. A sample Agreement is included in these documents.

5. PREBID CONFERENCE:

A. Prospective bidders must attend a MANDATORY Pre-Bid Conference, and must register 72 hours in advance by contacting Dago Garcia by e-mail at dago.garcia@ci.woodburn.or.us. The Pre-Bid Conference will take place at the Project Site located at 106 Broadway Street, Woodburn, OR 97071 at 10:00 a.m. on **Tuesday, February 22nd, 2022**.

6. AWARD OF THE CONTRACT:

A. Award of the Contract, by the Contract Review Board (City Council), will be by recommendation of the Public Works Department, based on the lowest cost offer of the responsive and responsible Bidder in accordance with Section 00130 of the

Oregon Standard Construction Specifications and all modifications by Special Provisions.

B. Notice to Proceed will be provided by the City to the Contractor within 90 days of Contract Award. **The target Notice to Proceed Date is Tuesday, May 3rd, 2022**. This will allow the project to be completed during the 2022 calendar year.

7. TIME OF COMPLETION:

A. The project shall be substantially completed within two hundred and six (206) calendar days after the dated 'Notice to Proceed". Substantial completion is defined as all metalwork and tank upgrades being installed and operational, the exterior coating upgrades being complete and approved, and the interior coating repairs being complete and approved, and the tank is in service. Final completion shall be two weeks after the substantial completion date, or two hundred and twenty (220) days after the date of the "Notice to Proceed".

8. PRE-QUALIFICATION OF SPECIALTY CONTRACTORS:

A. Special minimum experience qualifications apply to portions of this project. The Tank Painting Contractor and Metal Fabricator and Installer must be qualified by the ENGINEER prior to bidding. Only Tank Painting Contractors and Metal Fabricator and Installers who have received qualification prior to bidding may be named in the Proposal. Tank Painting Contractors and Metal Fabricator and Installers who desire to be qualified for specialty work shall submit a Statement of Qualifications Form to the ENGINEER no later than **Wednesday, March 2nd, 2022**. The ENGINEER will evaluate the Statements of Qualifications and notify any planholder of its decision with respect to the qualification of any prospective Tank Painting Contractor and Metal Fabricator and Installer by addendum.

Such submissions will be evaluated against the responsibility criteria listed at ORS 279C.375 and ORS 279C.430, and minimum qualifications. See Statement of Qualifications Forms for special minimum qualifications for the Tank Painting Contractor and Metal Fabrication and Installer, respectively. Prospective Tank Painting Contractors and Metal Fabricator and Installers will not be considered for qualification if the required information is not submitted.

The ENGINEER shall have the right to require a prospective Tank Painter Contractor and Metal Fabricator and Installer to clarify any portion of its Statement of Qualifications Form. Response to such a request must be made in writing and shall become a part of the Statement of Qualifications Form. Failure to respond to such a request within the time frame required by the ENGINEER shall be cause for rejection of the Statement of Qualifications Form. Tank Painting Contractors and Metal Fabricators and Installers who have not successfully completed the qualification process as evidenced by the Addendum will not be accepted on this project.

B. Contractors qualified for inclusion in the Bid Proposal as the Tank Painting Contractor are:

A. Coatings Unlimited, Inc., Kent, WA
B. S & K Painting, Inc., Oregon City, OR
C. J & L Co. Northeast, Inc., Spokane, WA
D. HCI Industrial & Marine Coatings, Inc., Brush Prairie, WA
E. Long Painting Company, Portland, OR
F. Purcell Painting & Coatings, Vancouver, WA
G. National Industrial Painting, Inc, University Place, WA
H. Coastal Services, Inc, Vancouver, WA

C. Contractors qualified for inclusion in the Bid Proposal as the Metal Fabricator and Installer are:

A. T Bailey, Inc., Anacortes, WA
B. CB&I (McDermott), Everett, WA
C. Paso Robles Tank, Inc., Paso Robles, CA

SECTION 4
CERTIFICATION PAGE

Each Bidder (offeror) must read and comply with the following Sections. Failure to do so may result in bid/proposal (offer) rejection.

RESIDENCY INFORMATION

ORS 279A.120 (2) states "For the purposes of awarding a public contract, a contracting agency shall: (a) Give preference to goods or services that have been manufactured or produced in this state if price, fitness, availability and quality are otherwise equal; and (b) Add a percent increase to the bid of a nonresident bidder equal to the percent, if any, of the preference given to the bidder in the state in which the bidder resides."

"Resident bidder" means a bidder that has paid unemployment taxes or income taxes in this state during the 12 calendar months immediately preceding submission of the bid, has a business address in this state and has stated in the bid whether the bidder is a "resident bidder" [ORS 279A.120(1)(b)].

"Non-resident bidder" means a bidder who is not a "resident bidder" as defined above [ORS 279A.120 (1)(b)].

Check one: Bidder is a (☐) RESIDENT bidder (☐) NON-RESIDENT bidder.

CERTIFICATION OF COMPLIANCE WITH DISCRIMINATION LAWS

By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in this matter, and to the best of my knowledge the Contractor has not discriminated against minority, women or emerging small business enterprises certified under ORS 200.055, in obtaining any required subcontract or against a business enterprise that is owned or controlled by or that employs a disable veteran as defined in ORS 408.225.

CERTIFICATION OF COMPLIANCE WITH OREGON TAX LAWS

By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in this matter that I have authority and knowledge regarding the payment of taxes, and that Contractor is, to the best of my knowledge, not in violation of any Oregon Tax Laws.

For purposes of this certificate, 'Oregon Tax Laws' means those programs listed in ORS 305.380(4) which is incorporated herein by this reference. Examples include the state inheritance tax, personal income tax, withholding tax, corporation income and excise taxes, amusement device tax, timber taxes, cigarette tax, other tobacco tax, 9-1-1 emergency communications tax, the homeowners and renters property tax relief program and local taxes administered by the Department of Revenue.

VERIFICATION OF RESPONSIBILITY

The City reserves the right, pursuant to ORS 279C.375 and OAR 137-049-0390, to investigate and evaluate, at any time prior to award and execution of the contract, the lowest bidder's (apparent successful offeror's) ability to perform the contract. Submission of a signed offer shall constitute approval for the City to obtain any information the City deems necessary to conduct the evaluation. The City shall notify the apparent successful offeror, in writing, of any other documentation required. Being a responsible bidder may include having the appropriate financial, material, equipment, facility and personnel resources and expertise, or ability to obtain the resources and expertise to perform the contract. Contractor shall have a satisfactory record of contract performance. The Contractor shall also have a satisfactory record of integrity. An unsatisfactory record of integrity may include previous violations of state environmental laws or false certifications made to any Public Agency. The Contractor is to be qualified legally to contract with the City of Woodburn. Failure to promptly provide any requested information may result in bid/proposal rejection.

The City may postpone the award of the contract after announcement of the apparent successful offeror in order to complete its investigation and evaluation. Failure of the apparent successful offer or to demonstrate responsibility, as required under ORS 279C.375 and OAR 137-049-0390, may render the offeror non-responsible and shall constitute grounds for offer rejection.

DRUG TESTING POLICY CERTIFICATION

DRUG-TESTING POLICY CERTIFICATION:
By my signature in Form of Proposal, I hereby attest or affirm under penalty of perjury that I am authorized to act on behalf of Contractor in the matter, and to the best of my knowledge the Contractor has a drug-testing program in place which applies to all employees. Contractor shall maintain a drug-testing program at all times during the performance of the Contract awarded. Failure to maintain such a program shall constitute a material breach of contract. [ORS 279C.505J]

SECTION 5
FORM OF PROPOSAL
For
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

PROJECT No. 2018-008-28.1
BID No. 2022-03

Honorable Mayor and City Council
City Hall
Woodburn, Oregon 97071

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Proposal are those named herein, that the Proposal is in all respects fair and without fraud, which it is made without any connection or collusion with any person making another Proposal on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the proposed improvements; that he has personally inspected the site; that he has satisfied himself as to the quantities of materials, items of equipment, and conditions or work involved, including the fact that the description of work and materials as included herein, is brief and is intended only to indicate the general nature of such items and to identify the said quantities with the detailed requirements of the Contract Documents; and that this Proposal is made according to the provisions and the terms of the Contract Documents, which Documents are herein attached and are hereby made a part of this Proposal.

The Bidder further agrees to complete construction of all work in all respects in accordance with the Special Provisions incorporated herein.

In the event the Bidder is awarded the Contract and shall fail to complete the work within the time limit set under the "TIME OF COMPLETION" in the Instructions to Bidders Specification Section of this document or extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the City of Woodburn, Oregon, using the rate formula outlined in the Special Provisions, and not less than $1,000.00 per day, until the work shall have been finished, as provided by the Contract Documents.

The Bidder further proposes to accept as full payment for the work proposed herein the amount computed under the provisions of the Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved, that they represent a true measure of the labor and material required to perform the work, including all allowance for overhead and profit for each type and unit of work called for in these Contract Documents.

The amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

It is declared that the Bidder will comply with all provisions of ORS 279C.840. The workmen on the project will be paid Oregon Prevailing Wage Rates (also called "PWR").

It is agreed that if the Bidder is awarded the Contract for the work herein proposed and shall fail or refuse to execute the Contract and furnish the specified Performance Bond within ten (10) calendar days after receipt of notification of acceptance of his Proposal, then, in that event, the bid security in the sum of (not less than 10% of the total bid):

(In Words):_____

(In Numbers): $_____

deposited herewith according to the conditions of the Advertisement for Bids and Instructions to Bidders, shall be retained by the City of Woodburn, Oregon, as liquidated damages; and it is agreed that the said sum is a fair measure of the amount of damage the City of Woodburn will sustain in case the Bidder shall fail or refuse to enter into the contract for the said work and to furnish the Performance Bond as specified in the Contract Documents. Bid security in the form of a certified check shall be subject to the same requirements as a bid bond.

If the Bidder is awarded a construction contract on this proposal, the surety who will provide the Performance Bond will be:

_____ Whose address is:

_____, _____, _____
Street City State Zip

Agent's Name:_____ _____
Phone

The address for all communications concerned with this Proposal and where the Contract shall be sent is:

Contractor: _____ doing business at:
(Company Name)

_____ , _____, _____
Street City State Zip

_____ , _____, _____
Contact Name and Email Title Phone

Bid Form

City of Woodburn, OR
Water Tower Repainting and Improvements Project

Item No.	Items of Work and Materials	Quan-tity	Units	Unit Price	Extended Price
1	Mobilization, demobilization, bonds, insurance, and work area and facility protection	1	LS	$	$
2	Exterior surface preparation, and application of spot repair and overcoat system	1	LS	$	$
3	Application of "Woodburn" lettering on elevated reservoir, two locations	1	LS	$	$
4	Interior surface preparation, and application of spot repair coating system for locations damaged from exterior welding	1	LS	$	$
5	Disinfection of reservoir interior prior to placing into service and sealing of all openings	1	LS	$	$
6	Contractor field measurement, fabrication shop drawings, stamped structural design and calculations, and approvals	1	LS	$	$
7	Lower ladder replacement, including new climb prevention shield, fall prevention system, and landing platform	1	LS	$	$
8	Upper ladder replacement, including new fall prevention system, stairway, angle treads, handrail to and around center vent, and reconnection of catwalk conduit crossing	1	LS	$	$
9	Roof center vent upsizing and replacement	1	LS	$	$
10	Roof hatch and lower ladder intrusion switch replacement, including new conduit mounting brackets from ground up to hatch, connect wiring in Telemetry Building	1	LS	$	$
11	Reroute of existing police antenna to new roof handrail, including new conduit mounting from ground up to catwalk	1	LS	$	$
12	New welded standoffs and unistrut conduit mounting for railroad radio antenna from ground up to catwalk	1	LS	$	$
13	Surface stabilization and restoration	1	LS	$	$
14	Extra work as authorized	1	LS	$ 25,000	$ 25,000
				TOTAL BID =	***$***

The proposal will be evaluated using the extended price of all bid items, as noted above. All blanks must be filled in with the price for that item. The bid proposal may be declared non-responsive if all the blanks are not filled in properly.

Total Bid: $_____

(Use words)

Abbreviations: LS – Lump sum

BIDDER intends to provide the services of the following (enter the names of the proposed pre-qualified Tank Painting Contractor and Metal Fabricator and Installer):

Tank Painting Contractor _____

(Do not leave blank. If BIDDER is an approved Tank Painting Contractor, enter BIDDER's name)

Metal Fabricator and Installer _____

(Do not leave blank. If BIDDER is an approved Metal Fabricator and Installer, enter BIDDER's name)

The names of the principal officers of the corporation submitting this Proposal, or of the partnership, or of all persons interested in this Proposal as principals are as follows:

_____

_____

_____

(If Sole Proprietor or Partnership)

In witness hereto the undersigned has set his (its) hand this_____ day of _____, 2022.

_____ _____

Signature of Bidder Title (If Corporation)

In witness whereof the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officer this_____ day of _____, 2022.

Name of Corp: _____

Oregon Corp. No: _____

By: _____

Title: _____

CCB No: _____

Attest: _____

Secretary

_____*"Bidder will comply with the provisions of Oregon Revised Statutes (ORS) 279C.840".*

Initial

Attest: _____

Bidder

SECTION 6
BID BOND
For
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

PROJECT No. 2018-008-28.1
BID No. 2022-03

KNOW ALL PEOPLE BY THESE PRESENTS:

That we,_____, hereinafter called
(Name of Contractor)
the PRINCIPAL, as Principal, and _____ ,
(Name of Surety)
a corporation and existing under and by virtue of the laws of the State of _____
and authorized to transact a surety business in the State of Oregon, hereinafter called the SURETY, as Surety, are held and firmly bound unto the City of Woodburn, a Municipal Corporation of the State of Oregon, hereinafter called the OBLIGEE, in the

penal sum of _____ Dollars

($_____) , not less than 10% of the total bid, for the payment of which sum well and truly to be made, the said PRINCIPAL and the said SURETY bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS the PRINCIPAL has submitted a Bid Proposal for the Water Tower Repainting and Improvements Project, City of Woodburn, Oregon.

NOW, THEREFORE, if the Bid Proposal submitted by the PRINCIPAL is accepted, and the Contract awarded to the PRINCIPAL, and if the PRINCIPAL shall execute the proposed Agreement and shall furnish such Performance and Payment Bonds as required by the Contract Documents within the time fixed by the Documents, then this obligation shall be void; if the PRINCIPAL shall fail to execute the proposed Agreement and furnish the bonds, the SURETY hereby agrees to pay to the OBLIGEE the penal sum as liquidated damages, within ten (10) days of such failure.

Signed and sealed this _____ day of _____ , 2022.

CONTRACTOR AS PRINCIPAL:	SURETY:
(Corp. Seal)	(Corp. Seal)
Company: _____	Company: _____
Signature: _____	Signature: _____
Name: _____	Name: _____
Title: _____	Title: _____

(Attach Power of Attorney)

SECTION 7
STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered, and the data given must be clear and comprehensive. Questions may be answered on separate attached sheets. The Bidder may submit additional information beyond that requested below to document the Bidder's Qualifications. Any information the Bidder desires to keep confidential must be clearly marked.

The statement of Bidder's qualifications must be submitted to the City of Woodburn at the SAME time the bids are due on Wednesday, March 9th, 2022, at the City of Woodburn City Hall Annex at 190 Garfield Street, Woodburn, OR 97071.

Failure to meet the following criteria will result in the submitted bid being designated as non-responsive. All answers must be "Yes" on question #5 and all information must be provided for all questions presented in this section.

1. Company Name:_____

2. Company Address:_____

3. Company Email:_____ Company Phone:_____

4. Date Organized and Any Prior Company Names:_____

5. Has your company performed construction work on at least three (3) potable water reservoir projects (metalwork or coatings application) in the last seven (7) years, with each contract value totaling $500,000 or more – and of those, one of the projects listed shall involve the installation of welded reservoir appurtenance upgrades on an elevated water tank? (Circle One YES/NO below and Complete)

YES

1. Name of Project:_____

Client Name and Phone:_____

Reservoir Size:_____ Gallons

2. Name of Project:_____

Client Name and Phone:_____

Reservoir Size:_____ Gallons

3. Name of Project:_____

Client Name and Phone:_____

Reservoir Size:_____ Gallons

NO

6. Bidder attests that:

a. Bidder is a licensed Commercial General Contractor Level 1 (CGC1) in the State of Oregon.

b. The person submitting this offer has the authority to submit the offer and to represent Bidder in all phases of this procurement process;

c. The information provided herein is true and accurate;

d. Bidder is a "resident bidder", as described in ORS 279A.120 in the State of Oregon, or is a "non-resident bidder" of _____ (insert state) and has not discriminated against any minority, women, or emerging small business enterprises in obtaining any required subcontracts in accordance with ORS 279A.110. Non-resident bidder also agrees to report their participation in this contract, if awarded, to the Oregon Department of Revenue as required by ORS 279A.120 (3).

e. Any false statement may disqualify this offer from further consideration or be the cause of contract termination;

f. Bidder has the appropriate financial, material, equipment, facility, personnel resources, and expertise or the ability to obtain the resources and expertise necessary to meet all contractual responsibilities;

g. Bidder has an employee drug testing program in place as required by ORS 279C.505 (2);

h. If awarded a contract, Bidder will notify the City of Woodburn within 30 days of any change in information provided on this form.

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Woodburn in verification if recitals comprising this statement of Bidder's Qualification.

I hereby certify that the answers to the foregoing statements attached hereto including any supplemental data, are true and correct to the best of my knowledge.

BY:_____ _____

Signature Company Name

_____ _____

Title Date

CITY OF WOODBURN, OR

SECTION 8
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

PROJECT NAME:	**Water Tower Repainting and Improvements Project**		
PROJECT No:	**2018-008-28.1**	BID No:	**2022-03**
BID CLOSING DATE:	**March 9th, 2022**	TIME:	**2:00 PM**
DISCLOSURE DEADLINE DATE:	**March 9th, 2022**	TIME:	**4:00 PM**

This form must be submitted at the location specified in the Invitation to Bid on the advertised bid closing date with in two working hours after the advertised bid closing.

List below the name of each subcontractor that will be furnishing labor or materials and that is required to be disclosed, the category of work that the subcontractor will be performing and the dollar value of the subcontract. Enter "None" if there are no subcontractors that need to be disclosed. (IF NEEDED, ATTACH ADDITIONAL SHEETS.)

	NAME	DOLLAR VALUE	CATEGORY OF WORK
1		$	
2		$	
3		$	
4		$	
5		$	

The above listed first-tier subcontractor(s) are providing labor and/or materials with a Dollar Value equal to or greater:

a. 5% of the total contract price or $15,000 (including all alternates), whichever is greater; or
b. $350,000.00 regardless of the percentage of the total Contract Price.

FAILURE TO SUBMIT THIS FORM FILLED OUT BY THE DISCLOSURE DEADLINE WILL RESULT IN A NON-RESPONSIVE BID. A NON-RESPONSIVE BID WILL NOT BE CONSIDERED FOR AWARD.

Form Submitted by (Bidder Name): _____

Contact Name: _____ **Phone No:** _____

Deliver Form to Agency: CITY OF WOODBURN
Person Designated to Receive Form: CITY ENGINEER
Agency's Address: 190 Garfield Street, Woodburn, OR 97071

UNLESS OTHERWISE STATED IN THE ORIGINAL SOLICITATION, THIS DOCUMENT SHALL NOT BE FAXED.

SECTION 9
BID SUBMITTAL CHECKLIST

The following is a checklist of the items that shall be submitted with the Bidder's Bid Proposal

- ❑ Form of Proposal
- ❑ Bid Bond
- ❑ First Tier Subcontractor Disclosure Form (Submit within two hours after bid opening time)
- ❑ Certification Page
- ❑ Statement of Bidder's Qualifications

SECTION 10
CONSTRUCTION AGREEMENT

THIS AGREEMENT, made this_____ day of _____, **2022**, by and between _____., hereinafter called "CONTRACTOR" and the CITY OF WOODBURN, an Oregon Municipal Corporation, hereinafter called "City" or "Owner".

The Contractor, for the consideration hereinafter named, does hereby agree to furnish all materials, equipment, labor and necessary implements for the construction of the **Water Tower Repainting and Improvements Project** and doing such other work as is necessary to make an appropriate and complete improvement.

All of said work shall be done according to the terms, conditions, and requirements of the Contract Documents including the: Advertisement of Bids, Contractor's signed Proposal, information to bidders, special specifications, general conditions, standard specifications, general specifications, and plans and Addendum Nos. **( )** for said improvement, which Contract Documents by this reference are made a part of this agreement.

Said improvement shall be completed by the date specified in said Contract Documents and if not so completed, unless said time for completion is extended, as provided in the Contract Documents, or if extended, if the same is not completed within time extended, the City will suffer liquidated damages as specified in the Contract Documents, which liquidated damages shall be retained out of any monies due or to become due under this agreement.

Payments shall be made as provided in the Contract Documents. The contract amount, as approved by the Council on **Monday, March 28th, 2022**, and agreed by the Contractor, is **$_____**.

The City will pay the required fee to the Bureau of Labor and Industries equal to one-tenth of one percent (0.1 percent) of the price of this contract, minimum fee in the amount of $250.00 and maximum fee of $7,500.00.

The Contractor will pay the prevailing wage rates in accordance with ORS279C.830.

NOW, THEREFORE, in consideration of the faithful performance of the covenants and agreements hereinbefore made by the Contractor, the City hereby covenants and agrees to pay the Contractor as in said Contract Documents provided.

IN WITNESS WHEREOF, the respective parties hereto have each caused these presents to be executed in duplicate the day and year first above written.

CITY OF WOODBURN, OREGON

ATTESTED: _____ _____.
Heather Pierson, *CITY RECORDER* Eric Swenson, *MAYOR*

CONTRACTOR: _____.
Organization

By:_____. Title:_____.

Bond No. _____

Solicitation _____

Project BID#: **2022-03**

SECTION 11
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the City of Woodburn, the, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Woodburn, be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapter 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

Contractor

BY:_____

TITLE: _____

Surety

BY: _____
Attorney-In-Fact

Bond No. _____

Solicitation:_____

Project Bid#: **2022-03**

SECTION 12
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the sureties, including the conditions listed in ORS 279.310 to 279.320, and shall indemnify and save harmless the City of Woodburn, its officers, employees and agents, against any claim for direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its Subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its Subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contributions due the State Industrial Accident Fund and the State

Unemployment Compensation Fund from the Principal or its Subcontractor in connection with the performance of the Contract; and shall pay over to the Oregon Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its Subcontractors pursuant to ORS 316.167, and shall permit no lien nor claim to be filed or prosecuted against the City of Woodburn on account of any labor or materials furnished; and shall do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Woodburn, be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapter 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

Contractor

BY:_____

TITLE: _____

Surety

BY: _____
Attorney-In-Fact

Bond No. _____

Solicitation _____

Project Bid No. **2022-03**

Project Name: **Water Tower Repainting and Improvements Project**

SECTION 13
MAINTENANCE / WARRANTY BOND

KNOW ALL MEN BY THESE PRESENTS that, _____, as the Principal, and _____, a corporation organized and existing under the laws of the State of Oregon, and duly authorized to transact a surety business in the State of Oregon, as Surety, are held and firmly bound unto the City of Woodburn, a municipal corporation of the State of Oregon, in the penal sum of $_____ Dollars $_____, lawful money of the United States of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators successors and assign, firmly by these presents.

WHEREAS, the Principal has entered into a contract with the City of Woodburn, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Maintenance/Warranty Bond by reference, whether or not attached to the contract (all hereafter called the "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety,

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH:

That the Principal agrees to warrant to the City of Woodburn that the construction is, and will remain for a period of one (1) year from the date of acceptance, free from defects in materials and workmanship.

That if the Principal herein shall faithfully and truly observe the terms, provisions, conditions, stipulations, directions, and requirements of the Contract and shall in all respects, whether the same be enumerated herein or not, faithfully comply with the same and shall assume the defense of indemnify and save harmless the City of Woodburn, its officers, agents, and employees from all claims, liabilities, loss, damage or injury which may have been suffered or claimed to have been suffered to persons or property directly or indirectly resulting from or arising out of the operations or conduct of the Principal or any subcontractor in the performance of the work under the

Contract and shall indemnify and make whole the City for any injury or damage to any street, highway, avenue, private driveway, paved pathway, or road or any part thereof, resulting from the operations or conduct of the Principal or any subcontractor in connection with performance or conduct of the work under the Contract, and shall in all respects faithfully keep and observe all of said terms, provision, conditions, stipulations, directions, and requirements, then this obligation is void, otherwise, it shall remain in full force and effect.

WITNESS our hand and seals this __ day of_____, 2022.

Contractor

BY:_____

TITLE: _____

Surety

BY: _____
Attorney-In-Fact

SECTION 14 ***NOTICE TO PROCEED*** **PUBLIC WORKS DEPT.** **ENGINEERING DIV.**	WOODBURN OREGON Incorporated 1889

PROJECT NAME:	Water Tower Repainting and Improvements Project		
BID #:	2022-03	PROJECT No #:	2018-008-28.1
AMOUNT:		BEGIN DATE:	
CONTRACTOR:		CCB #:	
ADDRESS:			

You are hereby notified to commence work on the referenced contract, and shall substantially complete all of the work of said contract within **two hundred and six (206) calendar days from issuance of Notice to Proceed**. Final completion shall follow 14 days thereafter.

The anticipated notice to proceed date is: **May 3rd, 2022.**

The substantial completion date is therefore: **November 25th, 2022.**

The final completion date is therefore: **December 9th, 2022.**

The contract provides for the assessment of liquidated damages for each consecutive calendar day after the above-established contract completion date that the work remains incomplete in the amount established by the Special Provisions, which is equivalent to $1,000 per day.

PM for THE CITY OF WOODBURN: Dago Garcia

DATE: _____

Contractor: *Complete items below this line and return Document to Owner within seven (7) days*:

CONTRACTOR'S ACCEPTANCE OF THIS NOTICE

Receipt of the foregoing Notice to Proceed is hereby acknowledged:

SIGNED: _____

TITLE: _____

DATE: _____

SECTION 15
SPECIAL PROVISIONS

WORK TO BE DONE

The Work to be done under this Contract consists of the following in the City of Woodburn, OR in Marion County:

The work contemplated includes retrofitting various appurtenances, performing interior spot coating repairs, and performing exterior maintenance coating on an existing 750,000 gallon elevated, welded steel potable water storage tank. The work also includes conducting field measurements for creation of fabrication shop drawings, deferred structural design for new exterior ladders and access landings, miscellaneous telemetry conduit and wiring work, applying lettering on two locations of the elevated reservoir, and surface restoration.

CONTRACT TIME AND PROJECT SCHEDULE

A. The work to be completed under this contract and described by these specifications shall adhere to the following project schedule:

Project Phase / Event	**Date**
Bids Due	March 9th, 2022
Notice of Intent to Award	March 29th, 2022
Issuance of Notice to Proceed	Within 90 calendar days of Contract Award, but anticipated for May 3rd, 2022
Substantial Completion	206 days after Notice to Proceed
Final Completion	220 days after Notice to Proceed

NOTICE TO PROCEED

A. The City intends to provide written Notice to Proceed within 90 calendar days after the City has issued a Notice of Intent to Award, provided the Selected Bidder submits all required bonds and insurance information within 60 days after the City has issued a Notice of Award.

B. The City retains the right to delay the Notice to Proceed. The City shall provide the Contractor with notification that the Notice to Proceed will be delayed and an estimate of when Notice to Proceed will be issued as soon as a delay is anticipated. The Contractor shall not commence work under the contract until such written notice has been given.

EXPERIENCE AND QUALIFICATIONS

1. The Contractor shall demonstrate the following minimum qualification criteria:

    a. Has performed construction work on at least three (3) potable water reservoir projects (metalwork or coatings application) in the last seven (7) years, with each contract value totaling $500,000 or more – and of

those, one of the projects listed shall involve the installation of welded reservoir appurtenance upgrades on an elevated water tank.

b. Bidder is a licensed Commercial General Contractor Level 1 (CGC1) in the State of Oregon.

c. The person submitting this offer has the authority to submit the offer and to represent Bidder in all phases of this procurement process;

d. Bidder is a "resident bidder", as described in ORS 279A.120 in the State of Oregon, or is a "non-resident bidder" of another State and has not discriminated against any minority, women, or emerging small business enterprises in obtaining any required subcontracts in accordance with ORS 279A.110. Non-resident bidder also agrees to report their participation in this contract, if awarded, to the Oregon Department of Revenue as required by ORS 279A.120 (3).

e. Any false statement may disqualify this offer from further consideration or be the cause of contract termination;

f. Bidder has the appropriate financial, material, equipment, facility, personnel resources, and expertise or the ability to obtain the resources and expertise necessary to meet all contractual responsibilities;

g. Bidder has an employee drug testing program in place as required by ORS 279C.505 (2);

2. Documentation of experience and qualifications shall be provided as part of the Contractor's Bid for the project.

PRE-BID CONFERENCE

Prospective bidders interested parties must attend a MANDATORY Pre-Bid Conference, and register 72 hours in advance by contacting Dago Garcia by e-mail at dago.garcia@ci.woodburn.or.us. The Pre-Bid Conference will take place at the Project Site located at 106 Broadway Street, Woodburn, OR 97071 at 10:00 a.m. on Tuesday, February 22nd, 2022.

PRE-CONSTRUCTION CONFERENCE

1. A mandatory pre-construction conference shall be scheduled no less than two weeks prior to the start of work. At this conference, the Contractor shall provide the following pre-construction submittals in addition to those outlined elsewhere in these Contract Documents:

   a. Construction Schedule: A detailed construction schedule, which shall be followed by the Contractor throughout the duration of the contract, and updated as needed.

b. Weekend/Emergency Contacts: The names, addresses, and telephone numbers of two or more persons employed by the Contractor who can be reached during evening and weekend hours to handle emergency matters.

STANDBY/DELAY TIME, INCIDENTAL, AUTHORIZED HOURLY WORK

A. Time lost to the project schedule can be expected during the course of project execution due to unavoidable and unforeseen events. Time lost to the project due to such circumstances may be originated by the City or the Contractor. Time lost from stoppage of work at the request of the City shall be defined as "standby time." Time lost due to the inability of the Contractor to proceed shall be defined as "delay time." These terms are further defined as follows:

1. **Standby Time**: Standby time is the duration of idle time greater than one (1) hour accrued at the request of the City. The Contractor's workers and equipment shall remain onsite while standby time is in effect. In the event of standby time, the City shall pay the Contractor for equipment and crew per hour, not to exceed eight (8) hours per working day.

2. **Delay Time**: Delay time is defined as avoidable delays greater than one (1) hour caused by neglect in planning, improper scheduling or sequencing of work by the Contractor. These items shall include, but are not limited to, the Contractor's tardiness and inability to provide the trained staff and adequate equipment in a reasonable manner. Delay time shall not include time lost to the project as a result of conditions beyond the Contractor's control. These unavoidable delays shall include, but are not limited to, inclement weather and unexpected or unusual conditions. The Contractor may give a 12-hour notice to City that there will be a delay without being assessed delay time in the event of equipment breakdown and parts not easily attainable and must be ordered. Shorter notice may suffice at the City's discretion. Except in the case of emergency or unless otherwise approved by the City, a working day shall be defined for this purpose as any consecutive 12-hour period between 7:00 a.m. and 7:00 p.m. of a working day with a maximum 1-hour lunch break and a 5-day work week Monday through Friday, excluding holidays. Any additional hours (weekends) will be negotiated between the City and the Contractor.

3. **Authorized Hourly Work:** Authorized hourly work shall include furnishing all equipment, labor, tools, and miscellaneous materials necessary to conduct activities not covered under other bid items, and as approved by the City in writing. The City and the Contractor shall maintain records for this work. The City's record will be binding. No hourly payment will be made to the Contractor for work being performed to condition or ream the borehole, or to repair, clean, or replace equipment that is not in working condition.

NOISE LIMITS

A. The Contractor shall use all reasonable and available means to reduce noise to minimum levels during working hours. The Contractor shall review the site and understand the relationship of the site to surrounding facilities.

WORK LIMITS AND HOURS

A. The Contractor shall limit work to the following daily schedule; Monday through Friday, 7:00 AM to 7:00 PM.

B. The Contractor shall obtain approval from the City prior to conducting work on weekends.

WORK COVERED / NOT COVERED BY THE CONTRACT

A. The general work to be completed under this contract consists of modifications to an existing potable water elevated water tank including coatings application, metalwork and appurtenance upgrades, minor electrical signals work, surface restoration, and other miscellaneous works.

B. The City reserves the right to limit (reduce) any aspect of the project for any reason.

PREVAILING WAGE:

Comply with prevailing wage requirements listed in BOLI's published 2021 prevailing wage rates for all Covered Occupations regulated by BOLI that are necessary to perform the Work. The specific 2021 rates for Marion County are available on the BOLI website.

APPLICABLE SPECIFICATIONS

The Specifications that are applicable to the Work on this Project are the 2021 edition of the "Oregon Standard Specifications for Construction" and the "Technical Specifications" which are part of the Contract Bid Documents.

All number references in these Special Provisions shall be understood to refer to the Sections and subsections of the Standard Specifications bearing like numbers and to Sections and subsections contained in these Special Provisions in their entirety.

PART 00100 – GENERAL CONDITIONS

SECTION 00110 - ORGANIZATION, CONVENTIONS, ABBREVIATIONS AND DEFINITIONS

Comply with Section 00110 of the Standard Specifications modified as follows:

00110.05(e) Reference to Websites - Add the following bullet list to the end of this subsection:

- City of Woodburn Public Works Department:
  https://www.woodburn-or.gov/?q=public_works
- City of Woodburn Public Works Department Bids and RFPs:
  http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps
- American Traffic Safety Services Association (ATSSA)
  www.atssa.com
- ODOT Construction Section
  www.oregon.gov/odot/construction/pages/index.aspx
- ODOT Construction Section - Qualified Products List (QPL)
  www.oregon.gov/ODOT/Construction/Pages/Qualified-Products.aspx
- ODOT Estimating
  www.oregon.gov/ODOT/Business/Pages/Steel.aspx
- Oregon Legislative Counsel
  www.oregonlegislature.gov/lc
- ODOT Procurement Office - Conflict of Interest Guidelines and Disclosure Forms
  www.oregon.gov/ODOT/Business/Procurement/Pages/PSK.aspx
- ODOT Procurement Office - Construction Contracts Unit Notice of Intent
  www.oregon.gov/ODOT/Business/Procurement/Pages/NOI.aspx
- ODOT Procurement Office - Construction Contracts Unit prequalification forms
  www.oregon.gov/odot/business/procurement/pages/bid_award.aspx
- Oregon Secretary of State: State Archives
  sos.oregon.gov/archives/Pages/default.aspx
- ODOT Traffic Control Plans Unit
  www.oregon.gov/ODOT/Engineering/Pages/Work-Zone.aspx
- ODOT Traffic Standards
  www.oregon.gov/ODOT/Engineering/Pages/Signals.aspx

Replace the "Agency" definition with the following definition:

Agency – The City of Woodburn Public Works Department – Engineering Division.

Add the following definition:

Agency Website – This is the website of the Public Works Department, Engineering Division as owned, controlled and administrated by the City of Woodburn, OR. The URL being referenced when this term is used shall be the following:

http://www.ci.woodburn.or.us/?q=blog-categories/bids-and-rfps

Replace the "Bid Booklet" definition with the following definition:

Bid Booklet - The version that can be accessed and printed from the Agency website.

SECTION 00120 - BIDDING REQUIREMENTS AND PROCEDURES

Comply with Section 00120 of the Standard Specifications modified as follows:

00120.00 Prequalification of Bidders - Replace this subsection, except for the subsection number and title, with the following:

The Agency will prequalify Bidders according to ODOT's Oregon Administrative Rules and prequalification procedures. A Bidder must file for prequalification and **NO** fee. Prequalification must be renewed annually. Bidders shall make application for prequalification and for required renewals on standard forms available from the ODOT Procurement Office - Construction Contracts Unit website. Bidders shall return the completed application to the Dago Garcia at 190 Garfield St. Woodburn, OR 97071 or e-mail to dago.garcia@ci.woodburn.or.us. No facsimile of Prequalification will be accepted.

Contracts will only be awarded to Bidders who, at the time of Bid Opening, are prequalified in the Class or Classes of Work specified in the Special Provisions, except that a Bidder whose prequalification has been revoked or revised as provided in ORS 279C.430(4) may also be eligible for Award under that statute if the Project was advertised prior to the revocation or revision. The Agency will consider a Bid from a Bidder whose complete application for prequalification has been received by the Public Works Department – Engineering Division Office at least 3 Calendar Days before the opening of Bids. Bidders shall submit Bids in the same company name used on the prequalification application; provided however, if Bidder's legal name has changed since the submittal of its application for prequalification, it shall submit its Bid under its current legal name with the former name referenced by "formerly known as".

The Agency will regularly evaluate the performance of Contractors on its projects for purposes of responding to reference checks, future prequalification and determinations of responsibility.

00120.01 General Bidding Requirements - In the paragraph that begins "Bidders may submit …", replace the paragraph with the following sentence:

Bidders may submit Bids by paper only. No electronic (e-mail or facsimile) Bids will be accepted.

00120.05 Request for Plans, Special Provisions, and Bid Booklets - Replace this subsection, with the following subsection:

00120.05 Request for Plans, Special Provisions, and Bid Booklets:

(a) Informational Plans and Special Provisions - Informational Project Plans and Special Provisions are available, free of charge, on the Agency's website.

(b) Bidding Plans, Special Provisions, and Bid Booklets - Bidders must submit paper Bids.

(1) Paper Bids - Bidders submitting bids shall access and print Plans, Special Provisions, and Bid Booklets from the Agency's website. Bidders obtaining Plans, Special Provisions, and Bid Booklets must register on Agency's list of "Holders of Bidding Plans". Bids will be considered responsive only if Bidders are registered as "Holders of Bidding Plans".

Delete the paragraph that begins with the following;

"(2) Electronic Bids - Bidders …"

The Plans, which are applicable to the Work to be performed under the Contract, are included in these Special Provisions.

00120.10 Bid Booklet - In the paragraph that begins "The Bid Section includes all pages after…", add the following bullet to the bullet list:

- Certificate of nondiscrimination regarding ORS 279A.110 and certificate regarding policy and practice against sexual harassment, sexual assault and discrimination against employees who are members of a protected class as required by Chapter 212, Oregon Laws 2017 (House Bill 3060)

00120.30 Changes to Plans, Specifications, or Quantities before Opening of Bids - Replace all "ODOT eBids website" wording in this section with "Agency's website".

Delete "(see 00110.05(e))" wording in this section.

00120.40(a-1) Paper Bids - Replace this subsection, except for the subsection number and title, with the following:

Bidders shall not alter, in any manner, the (paper) documents within the Bid Section that are accessed and printed from the Agency's website. Bidders shall complete the certifications and statements included in the Bid Section of the Bid Booklet according to the instructions. Signature of the Bidder's authorized representative thereon constitutes the Bidder's confirmation of an agreement to all certifications and statements contained in the Bid Booklet. Entries on paper documents in the Bid Section shall be in ink or typed.

The Bidder shall properly complete and bind all the paper documents in the Bid Section, as specified in 00120.10, together with all other required documents that are part of the Bid Booklet, between the front and back covers of the Bid Booklet, except that the Bid Bond is not required if another permissible type of Bid guaranty is provided. (see 00120.40(e))

00120.40(a-2) Electronic Bids – Delete this subsection in its entirety.

00120.40(c-2) Electronic Bid Schedule Entries – Delete this subsection in its entirety.

00120.40(e-2) Bid Guaranty with Electronic Bids - Delete this subsection in its entirety.

00120.40(f) Disclosure of First-Tier Subcontractors - Replace this subsection, except for the subsection number and title, with the following:

Without regard to the amount of a Bidder's Bid, the Bidder shall, within 2 working hours of the time Bids are due to be submitted, submit to the Agency, on a form provided by the Agency, a disclosure identifying any first-tier Subcontractors that will furnish labor or labor and Materials, and whose contract value is equal to or greater than:

- $250,000, regardless of the percentage of the total Project Bid.

For each Subcontractor listed, Bidders shall state:

- The name of the Subcontractor;
- The dollar amount of the subcontract; and
- The category of Work that the Subcontractor would be performing.

If no subcontracts subject to the above disclosure requirements are anticipated, a Bidder shall so indicate by entering "NONE" or by filling in the appropriate check box. For each Subcontractor listed, Bidders shall provide all requested information. An incomplete form will be cause for rejection of the Bid.

The Subcontractor Disclosure Form may be submitted for a paper Bid (See 00120.05(b-1) either:

By filling out the Subcontractor Disclosure Form printed from the Bid Booklet on the Agency's Engineering Division's website.

Subcontractor Disclosure Forms will be considered late if not received by the Agency within 2 working hours of the time designated for receiving Bids.

The Agency is not responsible for partial, failed, illegible or partially legible facsimile (FAX) transmissions or submittals, and such forms may be rejected as incomplete.

In the event that multiple Subcontractor Disclosure Forms are submitted, the last version received prior to the deadline will be considered to be the intended version.

Bids not in compliance with the requirements of this Subsection will be considered non-responsive.

00120.45 Submittal of Bids – Replace subsections (a) with the following:

00120.45 Submittal of Bids – Bids may be submitted by mail, parcel delivery service, or hand delivery to the office and address and at the time given in the Bid Booklet. Submit Bids in a sealed envelope and marked on the outside of the envelope as required by the Invitation to Bid. Closing time for acceptance of Bids is 2:00:00 p.m. local time on the day of Bid Opening. Bids submitted after the time set for receiving Bids will not be opened or considered. The Agency assumes no responsibility for the receipt and return of late Bids.

00120.45(b) Electronic Bids - Delete this subsection in its entirety.

00120.60(a) Paper Bids - In the paragraph that begins "Information entered into…", replace the words " ODOT Procurement Office" with the words "Agency".

In the paragraph that begins "A Bidder may withdraw…", replace the words "ODOT Procurement Office " with the words "Agency".

00120.60(b) Electronic Bids – Delete this subsection in its entirety.

00120.70 Rejection of Nonresponsive Bids - Add the following bullet***(***s***)*** to the end of the bullet list:

- The Bidder has liquidated any delinquent debt owed to the State or any department or agency of the State.

SECTION 00130 - AWARD AND EXECUTION OF CONTRACT

Comply with Section 00130 of the Standard Specifications modified as follows:

00130.10 Award of Contract - Replace the paragraph that begins "The Agency will provide Notice of Intent to Award…" with the following bullet:

The Agency will provide Notice of Intent to Award on the Agency's website.

00130.15 Right to Protest Award - Replace this subsection number and title and replace the sentence that begins "Before the Agency will..." with the following number and title and sentence:

00130.15 Right to Protest Award - Adversely affected or aggrieved Bidders, limited to the here apparent lowest Bidders and any other Bidder directly in for Contract Award, may submit to the Agency a written protest of the Agency's intent to Award within 3 working days following posting of the Notice of Intent to Award on the Agency's website. The protest shall specify the grounds upon which it is based.

The Agency is not obligated to consider late protests.

00130.50(a) By the Bidder - In the paragraph that begins "The successful Bidder…", replace the words "ODOT Procurement Office – Construction Contract Unit" with the words "Agency's Project Manager".

SECTION 00140 - SCOPE OF WORK

Comply with Section 00140 of the Standard Specifications.

SECTION 00150 - CONTROL OF WORK

00150.10(a) Order of Precedence – Replace the listed items with the following:

1. Permits from governmental agencies;
2. Engineer's written interpretations and clarifications issued on or after the Date of Contract;
3. Contract Change Orders;
4. This Contract, Addenda;
5. Bid Proposal;
6. Drawings (including written amendments) in the following order:
    - Project Specific Stamped Drawings
    - Reviewed and accepted stamped Working (Shop) Drawings
    - 3D Engineered Models and supplemental Agency-prepared line, grade and Cross Section data applicable to the Project
    - Agency-prepared Standard Drawings
    - Other agency-incorporated generic drawings
7. Technical Specifications;
8. Special Provisions;
9. General Conditions;
10. ODOT APWA Standard Specifications;
11. Geotechnical Data Reports;
12. Bonds (if required);
13. Notice to Proceed;
14. Solicitation Documents;
15. All other Contract Documents not listed above.

00150.30 Delivery of Notices - Add the following to the end of this subsection:

For purposes of this subsection, the time zone is Pacific Standard Time (PST) to determine time of receipt of notices and other documents. For purposes of this subsection, non-business days are Saturdays, Sundays and legal holidays as defined by ORS 187.010 and 187.020.

Following Notice to Proceed, all notices and other documents submitted to the Contractor by the Engineer, or to the Engineer by the Contractor, electronically under 00170.08:

- If recorded in Doc Express® as received before 5:00 p.m. PST on a business day it shall be considered as received on the business day on which it was actually received in Doc Express®.

- If recorded in Doc Express® as received on a non-business day, or after 5:00 p.m. PST on a business day, it shall be considered as received at 8:00 a.m. PST on the next business day.

Claims must be submitted on paper documents according to Section 00199.

00150.50 Cooperation with Utilities - Add the following subsection:

00150.50(f) Utility Information:

Contact those Utilities having buried facilities and request that they locate and mark them for their protection prior to construction.

UTILITY	CONTACT PERSON	PHONE NUMBER
Century Link	Josh Fallin	503.399.4931
AT&T	Tom Normoyle	503.588.1899
NWN Gas	Daniel Kizer	503.226.4211ext8166
PGE	Darrin Perkins	503.463.4325
DataVision	Dennis Weddle	503.949.9701
Wave Cable/Internet	Derek Anderson	503.798.6651
City Water	Curtis Stultz	503.982.5268
City Sewer Collections and Streets	Curtis Stultz	503.982.5268
Comcast	Phillip Curtis	971.777.0933

This Project is located within the Oregon Utility Notification Center area which is a Utilities notification system for notifying owners of Utilities about Work being performed in the vicinity of their facilities. The Utilities notification system telephone number is 811 (or use the old number which is 1-800-332-2344).

SECTION 00160 - SOURCE OF MATERIALS

Comply with Section 00160 of the Standard Specifications.

SECTION 00165 - QUALITY OF MATERIALS

Comply with Section 00165 of the Standard Specifications.

SECTION 00170 - LEGAL RELATIONS AND RESPONSIBILITIES

Comply with Section 00170 of the Standard Specifications modified as follows:

00170.05 Assignment of Antitrust Rights - Replace the bullet that reads "ORS 646.725; and" with the following bullet:

- ORS 646.725

00170.07 Record Requirements - In the paragraph that begins "For purposes of this Subsection, the term…", replace the words "OAR 731-005-0780" with the words "OAR 734-010-0400".

00170.07(a) Records Required - In the paragraph that begins "These records shall include…", replace the bullet that begins "Contracts or documents of other…", with the following bullet:

- Contracts or documents of other arrangements with any Related Entity as defined in OAR 734-010-0400.

In the paragraph that begins "The Contractor shall include…", replace the words "OAR 731-005-0780" with the words "OAR 734-010-0400".

00170.07(b) Access to Records - In the paragraph that begins "The Contractor shall provide…", replace the words "OAR 731-005-0780(9)" with the words "OAR 734-010-0400(9)".

00170.60 Safety, Health and Sanitation Provisions – Add the following paragraph to the end of this subsection:

The Contractor is responsible to require each subcontractor at every tier to comply with the requirements of OAR 437-002-0146, Oregon OSHA's Confined Space Rule including a copy of all closed permit entry forms to the Agency Project Manager within 24 hours of closing the permit.

00170.62 Labor Nondiscrimination - Add the following sentence to the end of this subsection:

It is a material term of this Contract that the Contractor certifies by entering into this Contract that the Contractor has a written policy and practice that meets the requirements described in Chapter 212, Oregon Laws 2017 (House Bill 3060) for preventing sexual harassment, sexual assault and discrimination against employees who are members of a protected class and that the Contractor shall maintain the policy and practice in force during the entire term of this Contract.

00170.70(a) Insurance Coverages - The following insurance coverages and dollar amounts are required pursuant to this subsection:

Coverages	**per Occurrence**	**Limit**
Commercial General Liability	$1,000,000.00	$2,000,000.00
Commercial Automobile Liability	$1,000,000.00	(aggregate limit not required)

00170.70(d) Additional Insured - Add the following paragraph and bullet***(***s***)*** to the end of this subsection:

Add the following as Additional Insureds under the Contract:

- The City of Woodburn, OR and its officers, agents, representatives, volunteers and employees

- Murraysmith, Inc., Portland, OR

00170.72 Indemnity/Hold Harmless - Add the following paragraph and bullet*(*s*)* to the end of this subsection:

Extend indemnity, defense and hold harmless to the Agency and the following:

- The City of Woodburn, OR and its officers, agents, representatives, volunteers and employees

- Murraysmith, Inc., Portland, OR

SECTION 00180 - PROSECUTION AND PROGRESS

Comply with Section 00180 of the Standard Specifications modified as follows:

00180.40(a) In General – Add the following bullets to this subsection:

- Provide and maintain access to all homes, School and Business at all times.
- All work shall be accomplished between 7:00 AM and 7:00 PM every day from Monday through Friday, excluding Legal Holidays.

Add the following subsection:

00180.40(c) Specific Limitations - Limitations of operations specified in these Special Provisions include, but are not limited to, the following:

Limitations	**Subsection**
Cooperation with Utilities	00150.50
Cooperation with Other Contractors	00150.55
On-Site Work	00180.40(b)
Contract Time	00180.50(h)
Right-of-Way and Access Delays	00180.65
Special Events	00220.40(e)(2)(b)
Regulated Work Areas	00290.34(a)
Noise Control	00290.32

00180.41 Project Work Schedules - After the paragraph that begins "One of the following Type…" add the following paragraph:

In addition to the "look ahead" Project Work schedule, a Type A schedule as detailed in the Standard Specifications is required on this Contract.

00180.42 Preconstruction Conference - Add the following paragraph to the end of this subsection:

A mandatory pre-construction conference shall be scheduled no less than two weeks prior to the start of work. At this conference, the Contractor shall provide the following pre-construction submittals in addition to submittals mentioned elsewhere in the Contract Documents:

Construction Schedule: A detailed construction schedule, which shall be followed by the Contractor throughout the duration of the contract, and updated as needed.

Weekend/Emergency Contacts: The names, addresses, and telephone numbers of two or more persons employed by the Contractor who can be reached during evening and weekend hours to handle emergency matters.

00180.50(c) Beginning of Contract Time - Replace this subsection, except for the subsection number and title, with the following:

When the Contract Time is stated in Calendar Days, counting of Contract Calendar Days will begin on the day the Contractor begins On-Site Work as defined in 00110.20.

Add the following subsection:

00180.50(h) Contract Time - There are two Contract Times on this Project as follows:

Complete all Work to be done under the Contract within 206 days of the Notice to Proceed, to a level of Substantial Completion, which is defined as all metalwork and tank upgrades being installed and operational, the exterior coating upgrades being complete and approved, and the interior coating repairs being complete and approved, and the tank is in service.

Complete all Work to be done under the Contract within 220 days of the Notice to Proceed, to a level of Final Completion, which is defined as all work being complete and approved including surface restoration and demobilization.

00180.85(b)(1) Single Contract Time - Replace this subsection, except for the subsection number and title, with the following:

The Liquidated Damages per Calendar Day* are 15.0 percent of C divided by T as defined in this Section.

C = The Contractor's Bid amount for the Contract.

T = The total Calendar Days between the latest completion date or time listed under 00180.50(h) in the Solicitation Documents and the Bid Opening that will result in the greatest value for T.

* Calendar Day amounts are applicable when the Contract time is expressed on the Calendar Day or fixed date basis.

Liquidated damage amount per day shall be determined by the above formula, but shall be no less than $1,000 per day.

00180.90(a) Termination for Default - In the paragraph that begins "Termination of the Contract for default…", add the following bullet to the end of the bullet list:

- Has liquidated and delinquent debt owed to the State or any department or agency of the State.

SECTION 00190 - MEASUREMENT OF PAY QUANTITIES

Comply with Section 00190 of the Standard Specifications, and Section 01 22 20, Measurement and Payment, of the Technical Specifications.

SECTION 00195 - PAYMENT

Comply with Section 00195 of the Standard Specifications modified as follows:

00195.10 Payment for Changes in Materials Costs - Replace this subsection with the following subsection:

00195.10 Payment for Changes in Materials Costs – There are no changes in payments for escalation/De-Escalation of materials in this Contract.

Additional work required by the Agency will be negotiated on a case by case basis for all changes in materials costs and shall be agreed upon, in writing, before the work is accomplished.

All materials are subject to change in costs and conditions, as specified in subsection 00195.20 Changes in Plans or Character of Work, including but not limited to:

- Steel Materials Price Adjustment
- Asphalt Cement Price Adjustment
- Fuel Price Adjustment

The Agency reserves all of its rights under the Contract, including, but not limited to, its rights for suspension of the Work under 00180.70 and its rights for termination of the Contract under 00180.90, and this escalation/de-escalation provision shall not limit those rights.

00195.12 Steel Material Price Escalation/De-Escalation – Remove this subsection in its entirety.

00195.50 (a) Progress Payments - Replace the paragraph that begins with "At the same time each month…" of this subsection with the following:

At the same time each month, the Contractor will make an estimate of the amount and value of the Pay Item Work completed. The Contractor will submit this estimation of quantities to the Engineer for agreement on the number of estimated units completed for unit price Pay Items plus the estimated percentage completed of lump sum Pay Items.

00195.50 (a-2) Value of Materials on Hand – Replace the paragraph that begins with "The Engineer will…" of this subsection with the following:

The Contractor will also make an estimate of the amount and value of acceptable Materials on hand, i.e., already delivered and stored according to 00195.60(a), to be incorporated into the Work and submit this estimation to the Engineer for agreement for Pay Items for this progress payment.

00195.50(b) Retainage - Replace the paragraph that begins "The amount to be retained…" with the following paragraph:

The amount to be retained from progress payments will be 5% of the value of Work accomplished, and will be retained by the Agency until completion of the Work as specified in (c) below.

00195.50(c) Forms of Retainage - Replace this entire subsection through and including 00195.50(3) Bonds, Securities, and Other Instruments with the following:

The Agency will withhold payment of 5% of all progress payments until completion of the project as is described in (c) below.

Insert the following:

00195.50 (c) Release of Retainage – The Agency will make payment to the Contractor after the Contractor has made application for payment to the Engineer upon issuance of the Third Notification.

00195.50 (e) Withholding Payments – Change (e) to (d) in the title of this subsection.

00195.50 (f) Prompt Payment Policy – Change the (f) to (e) in the title of this subsection.

00195.90(c) No Waiver of Right to Make Adjustment - Replace this subsection, except for the subsection number and title, with the following:

The fact that the Agency has made any measurement, estimate, determination or certification either before or after completion of the Project, Final Acceptance, Agency assumption of possession of the Project Site, determination of satisfactory completion of Pay Items or Work or release of retainage under 00195.50(c) or payment for any part of the Work, shall not prevent either party from:

- Showing the true amount and character of the Work;
- Showing that any measurement, estimate, determination or certification is incorrect;
- Recovering from the other party damages that may have been suffered because the other party failed to comply with the Contract.

SECTION 00196 - PAYMENT FOR EXTRA WORK

Comply with Section 00196 of the Standard Specifications.

SECTION 00197 - PAYMENT FOR FORCE ACCOUNT WORK

Comply with Section 00197 of the Standard Specifications.

PART 00200 – TEMPORARY FEATURES and APPURTENANCES

SECTION 00210 – MOBILIZATION

Comply with Section 00210 of the Standard Specifications.

SECTION 00220 – ACCOMODATIONS FOR PUBLIC TRAFFIC

Comply with Section 00220 of the Standard Specifications. Comply with City traffic and access requirements for Special Events that may occur on City property near the Project Site.

SECTION 00225 – WORK ZONE TRAFFIC CONTROL

Comply with Section 00225 of the Standard Specifications.

SECTION 00280 – EROSION and SEDIMENT CONTROL

Comply with Section 00280 of the Standard Specifications.

SECTION 00290 – ENVIRONMENTAL PROTECTION

Comply with Section 00290 of the Standard Specifications.

SECTION 00310 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Comply with Section 00310 of the Standard Specifications.

SECTION 00320 – CLEARING and GRUBBING

Select clearing and grubbing is included in the Contractor's Work under this Contract. Comply with Section 00320 of the Standard Specifications modified as follows:

00320.40(b)(3) Vegetation and Materials to be Saved - Replace this subsection with the following subsection:

00320.40(b)(3) Vegetation and Materials to be Saved - The Engineer will designate no work zones and identify and mark trees, existing landscaping, vegetation, or other natural materials to be saved. Do not begin construction activity or move equipment into existing landscaped or

vegetated areas until the work zone fencing is in place to designate and protect no work and critical root zones.

Do not work within the no work zones or critical root zone of marked trees unless written approval is obtained from the Engineer. Be responsible for all damage to and removal of trees, landscaping, vegetation or other natural materials designated to be saved. Damage will be determined by a specialist selected by the Engineer.

SECTION 00330 – EARTHWORK

Comply with Section 00330 of the Standard Specifications.

SECTION 00331 – SUBGRADE STABILIZATION

Comply with Section 00331 of the Standard Specifications.

SECTION 00340 – WATERING

Comply with Section 00340 of the Standard Specifications.

PART 02000 – MATERIALS

Concrete Materials and Additives

SECTION 02001 – CONCRETE

Comply with Section 002001 of the Standard Specifications.

SECTION 02010 – PORTLAND CEMENT

Comply with Section 002001 of the Standard Specifications.

SECTION 02015 – PORTLAND CEMENT CONCRETE REPAIR MATERIAL

Comply with Section 002001 of the Standard Specifications.

SECTION 02020 – WATER

Comply with Section 002020 of the Standard Specifications.

SECTION 02030 – MODIFIERS

Comply with Section 002030 of the Standard Specifications.

SECTION 02040 – CHEMICAL ADMIXTURES

Comply with Section 002040 of the Standard Specifications.

SECTION 02050 – CURING MATERIALS

Comply with Section 002050 of the Standard Specifications.

SECTION 02070 – BONDING AGENT

Comply with Section 002070 of the Standard Specifications.

SECTION 02080 – GROUT

Comply with Section 002080 of the Standard Specifications.

SECTION 02090 – LIME

Comply with Section 002090 of the Standard Specifications.

Geosynthetics and Slope Protection

SECTION 02320 – GEOSYNTHETICS

Comply with Section 002320 of the Standard Specifications.

PART 03000 – MATERIALS

SECTION 03020 – EROSION MATERIALS

Comply with Section 003020 of the Standard Specifications.

SECTION 16
OREGON PREVAILING WAGE RATE FLYSHEET
FOR
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT
FOR
CITY OF WOODBURN, OREGON

The applicable Oregon prevailing wage rates are contained in the publication *Prevailing Wage Rates for Public Works Contracts in Oregon, Effective January 1, 2022,* including any amendments thereto, and are incorporated herein as though fully set forth as of the date the Bidding Documents are first advertised.

See Oregon Bureau of Labor and Industries website links at:

https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx

NOTE: THIS FORM TO BE COMPLETED BY OWNER. IT IS INCLUDED IN THE CONTRACT DOCUMENTS FOR BIDDERS' INFORMATION ONLY.

SECTION 17
RESPONSIBILITY DETERMINATION FORM
FOR
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT
FOR
CITY OF WOODBURN, OREGON

Project Name: Water Tower Repainting and Improvements Project

Bid Number: 2022-03

Bidder's Business Entity Name: _____

Bidder's CCB License Number: _____

Form Submitted By (Contracting Agency): City of Woodburn

Form Submitted By (Representative Name): Dago Garcia

Title: City Engineer

Date: ---

OWNER has:

[ ] Checked the list created by the Construction Contractors Board under ORS 701.227 for bidders who are not qualified to hold a public improvement contract.

[ ] Determined whether the Bidder has met the standards of responsibility. In doing so, OWNER has considered whether the Bidder:

- [ ] Has available the appropriate financial, material, equipment, facility and personnel resources and expertise, or the ability to obtain the resources and expertise, necessary to meet all contractual responsibilities.
- [ ] Holds current licenses that businesses or service professionals operating in this state must hold in order to undertake or perform the work specified in the contract.
- [ ] Is covered by liability insurance and other insurance in amounts required in the solicitation documents.
- [ ] Qualifies as a carrier-insured employer or a self-insured employer under ORS 656.407 or has elected coverage under ORS 656.128.
- [ ] Has disclosed the bidder's first-tier subcontractors in accordance with ORS 279C.370.
- [ ] Has a satisfactory record of performance.
- [ ] Has a satisfactory record of integrity.
- [ ] Is qualified legally to contract with OWNER.
- [ ] Has supplied all necessary information in connection with the inquiry concerning responsibility.

NOTE: THIS FORM TO BE COMPLETED BY OWNER. IT IS INCLUDED IN THE CONTRACT DOCUMENTS FOR BIDDERS' INFORMATION ONLY.

[ ] Determined the Bidder to be (check only one of the following):

[ ] Responsible under ORS 279C.375 (3)(a) and (b).

[ ] Not responsible under ORS 279C.375 (3)(a) and (b).
(Attach documentation if OWNER finds the bidder not to be responsible)

This form and any attachments must be submitted within 30 days after the date of Contract Award to the Oregon Construction Contractors Board, PO Box 14140, Salem, OR 97309-5052, Phone (503) 378-4621, Fax (503) 373-2007.

SECTION 18
METAL FABRICATOR AND INSTALLER
STATEMENT OF QUALIFICATIONS FORM
FOR
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT
FOR
CITY OF WOODBURN, OREGON

The City of Woodburn requires a statement to be completed and submitted by bidding contractors and/or specialty subcontractors performing work on the Water Tower Repainting and Improvements Project regarding their financial ability, equipment, and experience in relation to the proposed elevated welded steel potable water storage tank metal fabrication and installation work. The Metal Fabricator and Installer must be qualified by the ENGINEER prior to bidding. Only Metal Fabricator and Installers who have received qualification prior to bidding may be named in the Proposal.

Refer to Section 3, Instructions to Bidders, Item 8 for qualification requirements and a list of pre-qualified Metal Fabricator and Installers.

This Statement of Qualifications Form shall be completed and submitted by 5:00 PM on **Wednesday, March 2nd, 2022** to:

Submitted to: MURRAYSMITH

Address: 888 SW 5th, Suite 1170, Portland, Oregon 97204

Attention: Justin Ford

Email: Justin.Ford@Murraysmith.us

To qualify for this project the prospective Metal Fabricator and Installer must complete the following information:

MINIMUM QUALIFICATIONS

1. Have successfully completed no less than **five (5)** welded steel potable water storage tank metal fabrication and installation projects during the last **ten (10)** years, **one (1)** of which shall have been an elevated water storage tank.

2. The ability to commit a project manager with recent, relevant experience for the duration of the project and be responsible for all metal fabrication and installation activities. The project manager shall have supervised and coordinated at least **two (2)** similar municipal water or wastewater treatment storage tank painting projects during the last **ten (10)** years, **one (1)** of which shall be an elevated welded steel potable water storage reservoir.

METAL FABRICATOR AND INSTALLER INFORMATION

Submitted By: _____ A Corporation / A Partnership / An Individual
(Metal Fabricator and Installer)

Type of Work: _____

Principal Office: _____

Contractor's Bank and Local Contact: _____

EXPERIENCE QUESTIONNAIRE

1. How many years has your organization been in business as a contractor under your present business name? _____

2. Have you ever failed to complete any work awarded to you? _____

   If so, where and why? _____

3. List below the contracts which you, or your company, or corporation were party, during the previous 10 years which contracts where involved in litigation of any type:

4. Name the Surety Company, and the name and address of the local agent you expect to use in the event this Contract is awarded to you.

5. Name the field superintendent(s) who will be in direct charge of the metal fabrication and installation work if awarded this Contract and state the relevant, successful experience. A qualified field superintendent will be required to be on the project site in responsible charge, full-time, during all metal fabrication and installation work activities. The proposed superintendent(s) shall be currently employed by the Metal Fabricator and Installer and shall have been the Metal Fabricator and Installer superintendent on no less than **two (2)** reservoir projects, **one (1)** of which must have included work associated with an elevated welded steel potable water storage reservoir during the last **ten (10)** years. The Metal Fabricator and Installer superintendent(s) shall have been in the direct employment of the Metal Fabricator and Installer on both of the projects listed. Indicate the owner of projects referenced. Provide the name(s) of at least **two (2)** projects successfully completed by all of the superintendents listed by the Metal Fabricator and Installer, which shall include **one (1)** elevated welded steel potable water reservoir description, the name and address of the owner, and the approximate completion date of each project.

Superintendent Name(s)		
Project Completed: Owner Project Name Year Completed Description		
Project Completed: Owner Project Name Year Completed Description		

6. List the names, addresses and telephone numbers of the owners and project engineers, and completion dates and location of at least **five (5)** projects located within the West Coast region (Oregon, Washington, and California) which have been successfully constructed by the Metal Fabricator and Installer during the last **ten (10)** years. In order to meet the experience requirements, **one (1)** of the **five (5)** projects shall include work associated with an elevated welded steel potable water storage reservoir which has been successfully constructed by the Metal Fabricator and Installer during the last **ten (10)** years.

Project Name, Owner, & Type of Structure	Year Completed	Name & Address of Owner Contact Person and Phone Number	Name & Address of Engineer Contact Person and Phone Number

The information submitted in this form will be regarded as confidential to the extent of the law.

The undersigned hereby declares that the foregoing statements are true and accurate statements of the condition of said firm.

Dated at _____ this_____ day of _____, 2022.

By_____

Title_____

Date_____

SECTION 19
TANK PAINTING CONTRACTOR
STATEMENT OF QUALIFICATIONS FORM
FOR
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT
FOR
CITY OF WOODBURN, OREGON

The City of Woodburn requires a statement to be completed and submitted by bidding contractors and/or specialty subcontractors performing work on the Water Tower Repainting and Improvements Project regarding their financial ability, equipment, and experience in relation to the proposed elevated welded steel potable water storage tank painting work. The Tank Painting Contractor must be qualified by the ENGINEER prior to bidding. Only Tank Painting Contractors who have received qualification prior to bidding may be named in the Proposal.

Refer to Section 3, Instructions to Bidders, Item 8 for qualification requirements and a list of pre-qualified Tank Painting Contractor.

This Statement of Qualifications Form shall be completed and submitted by 5:00 PM on **Wednesday, March 2nd, 2022** to:

Submitted to: MURRAYSMITH

Address: 888 SW 5th, Suite 1170, Portland, Oregon 97204

Attention: Justin Ford

Email: Justin.Ford@Murraysmith.us

To qualify for this project the prospective Tank Painting Contractor must comply with and complete the following information:

MINIMUM QUALIFICATIONS

1. Have successfully completed no less than **five (5)** welded steel potable water storage tank painting projects during the last **ten (10)** years, **one (1)** of which shall have been an elevated water storage tank.

2. The ability to commit a project manager with recent, relevant experience for the duration of the project and be responsible for all Tank Painting Contractor activities. The project manager shall have supervised and coordinated at least **two (2)** similar municipal water or wastewater treatment storage tank painting projects during the last **ten (10)** years.

TANK PAINTING CONTRACTOR INFORMATION

Submitted By: _____ A Corporation / A Partnership / An Individual
(TANK PAINTING CONTRACTOR)

Type of Work: _____

Principal Office: _____

Contractor's Bank and Local Contact: _____

EXPERIENCE QUESTIONNAIRE

1. How many years has your organization been in business as a contractor under your present business name? _____

2. Have you ever failed to complete any work awarded to you? _____

   If so, where and why? _____

   _____

   _____

3. List below the contracts which you, or your company, or corporation were party, during the previous 10 years which contracts where involved in litigation of any type:

   _____

   _____

   _____

   _____

4. Name the Surety Company, and the name and address of the local agent you expect to use in the event this Contract is awarded to you.

   _____

   _____

   _____

5. Name the field superintendent(s) who will be in direct charge of the welded steel reservoir painting work if awarded this Contract and state the relevant, successful experience. A qualified field superintendent will be required to be on the project site in responsible charge, full-time, during all standpipe painting work activities. The proposed superintendent(s) shall be currently employed by the Tank Painting Contractor and shall have been the Painting Contractor superintendent on no less than **two (2)** steel water or wastewater storage tank painting projects during the last **ten (10)** years. The Tank Painting Contractor superintendent(s) shall have been in the direct employment of the Tank Painting Contractor for both of the steel reservoir painting projects listed. Indicate the owner of projects referenced. Provide the name(s) of at least **two (2)** steel reservoir painting projects successfully completed by all of the superintendents listed by the Tank Painting Contractor, which shall include a reservoir description, the name and address of the owner, and the approximate completion date of each reservoir.

Superintendent Name(s)		
Project Completed: Owner Project Name Year Completed Description		
Project Completed: Owner Project Name Year Completed Description		

6. List the names, addresses and telephone numbers of the owners and project engineers, and completion dates and location of at least **five (5)** projects located within the West Coast region (Oregon, Washington, and California) which have been successfully constructed by the Tank Painting Contractor during the last **ten (10)** years. In order to meet the experience requirements, **one (1)** of the **five (5)** projects shall include coatings work associated with an elevated welded steel potable water storage reservoir which has been successfully constructed by the Tank Painting Contractor during the last **ten (10)** years.

Project Name, Owner & Reservoir Size	Year Completed	Name & Address of Owner Contact Person and Phone Number	Name & Address of Engineer Contact Person and Phone Number

The information submitted in this form will be regarded as confidential to the extent of the law.

The undersigned hereby declares that the foregoing statements are true and accurate statements of the condition of said firm.

Dated at _____ this_____ day of _____, 2022.

By_____

Title_____

Date_____

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS AND SUPPLEMENTARY INFORMATION
TABLE OF CONTENTS
FOR
WATER TOWER REPAINTING AND IMPROVEMENTS
CITY PROJECT NO. 2018-008-28.1
BID NO. 2022-03
FOR
CITY OF WOODBURN, OR

TABLE OF CONTENTS

DIVISION 33 - UTILITIES

SUPPLEMENTARY INFORMATION

DRAWINGS

See Sheet G-1 for the Index of Drawings

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01 10 00 - SUMMARY OF WORK

PART 1 GENERAL

This Summary of Work supplements and amplifies certain sections of the City of Woodburn's General Conditions and Special Provisions. The General Conditions and Special Provisions shall apply except as modified herein. These Special Provisions and additional technical specifications may contain occasional requirements not pertinent to the project. However, these specifications shall apply in all particulars insofar as they are applicable to this project.

1.1 APPLICABLE STANDARD SPECIFICATIONS AND PLANS

City of Woodburn, Oregon, "Standard Specifications and Drawings", latest revision (including all revisions at date of bid opening), apply except as may be modified herein. In the case of discrepancy, unless noted otherwise herein, the more restrictive provisions shall apply.

1.2 SCOPE OF WORK

The work contemplated includes retrofitting various appurtenances, performing interior spot coating repairs, and performing exterior maintenance coating on an existing 750,000 gallon elevated, welded steel potable water storage tank. The work also includes conducting field measurements for creation of fabrication shop drawings, deferred structural design for new exterior ladders and access landings, miscellaneous telemetry conduit and wiring work, installing lettering on two locations of the elevated reservoir, and surface restoration.

The above general outline of principal features of the work does not in any way limit the responsibility of the CONTRACTOR(s) to perform all work and furnish all equipment, labor and materials required by the specifications and drawings. The drawings and specifications shall be considered and used together. Anything appearing as a requirement of either shall be accepted as applicable to both even though not so stated therein or shown.

No attempt has been made in these specifications or drawings to segregate work covered by any trade or subcontract under one specification. Such segregation and establishment of subcontract limits will be solely a matter of specific agreement between the CONTRACTOR and its subcontractors and shall not be based upon any inclusion, segregation or arrangement in or of these specifications.

1.3 COORDINATION OF DRAWINGS AND SPECIFICATIONS

The drawings and specifications are intended to describe and provide for a complete work. Any requirement in one is as binding as if stated in all. The CONTRACTOR shall provide any work or materials clearly implied in the Contract Documents even if the Contract Documents do not mention it specifically. If there is a conflict within the Contract Documents, it will be resolved by the following order of precedence:

A. Permits for outside agencies required by law

B. OWNER-CONTRACTOR Agreement
C. Addenda to Contract Documents
D. CONTRACTOR's Proposal
E. Special Provisions
F. Contract Drawings
G. Technical Specifications
H. General Conditions of the Contract
I. Standard Specifications
J. Standard Plans

Dimensions shown on the drawings or that can be computed shall take precedence over scaled dimensions. Notes on drawings are part of the drawings and govern in the order described above. Notes on drawings shall take precedence over drawing details.

The intent of the drawings and specifications is to prescribe the details for the construction and completion of the work which the CONTRACTOR undertakes to perform according to the terms of the Contract. Where the drawings or specifications describe portions of the work in general terms, but details are incomplete or silent, it is understood that only the best general practice is to prevail and that only materials and workmanship of the best quality are to be used. Unless otherwise specified, the CONTRACTOR shall furnish all labor, materials, tools, equipment, and incidentals, and do all the work involved in executing the Contract in a manner satisfactory to the ENGINEER.

The contract drawings are designated by general title, sheet number and sheet title. When reference is made to the drawings, the "Sheet Number" of the drawing will be used. Each drawing bears the ENGINEER's File No. 19-2574 and the general title:

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

The specific titles of each sheet are contained in the sheet G-1 "Cover Sheet, Index of Drawings, Location Map and Vicinity Map" of the Drawings.

1.4 CODE REQUIREMENTS

All work shall be done in strict compliance with the requirements of:

A. International Building Code
B. Uniform Mechanical and Plumbing Code
C. National Electric Code
D. National Electric Safety Code
E. Oregon State Bureau of Labor & Industries
F. City of Woodburn Standards

In case of disagreement between codes or these specifications, the more restrictive shall prevail.

1.5 TIME OF COMPLETION/LIQUIDATED DAMAGES

The CONTRACTOR shall complete all work shown and specified within the time limits stated in the "Contract Time and Project Schedule" presented in the Front End Specification Section 15, Special Provisions. Also see Section 01 33 00, Submittal Procedures, for project schedule submittal requirements. The written Notice to Proceed will be sent to the CONTRACTOR after the CONTRACTOR submits the signed Contract, Bonds and insurance certificates to the OWNER and those documents have been approved as to form and executed by the OWNER. The CONTRACTOR's attention is directed to Article 3 of the Agreement and the General Conditions as respects liquidated damages.

1.6 WORK SCHEDULING, RESTRICTIONS, AND ACCESS TO TANK INTERIOR

A. The CONTRACTOR shall submit to the ENGINEER for approval prior to construction a detailed work schedule that outlines the anticipated timeframes for each element of construction. These elements shall include, generally at a minimum, beginning at NTP: Submittals and Material Procurement Timeline; Metalwork Tank Upgrades Timeline; Interior and Exterior Coatings Application Timeline; Proposed Tank Downtime and Tank Back in service Timeline; Substantial and Final Completion Milestones.

B. The work for this Contract includes welding various elements to the outside of an existing welded steel water storage tank. Where welding will occur on the elevated reservoir shell, the interior protective coating in those locations will need to be spot repaired under this Contract. In order to perform the repairs to the reservoir interior, the tank will need to be taken out of service. IT IS THE OWNER'S INTENT THAT THE PERIOD DURING WHICH THE TANK IS OUT OF SERVICE IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE.

C. The maximum allowable period that the tank will be permitted to be taken out of service for this Contract is 30 calendar days. This will be measured from the time the tank is drained by the OWNER (who provides written indication that the CONTRACTOR is allowed to open the manways / hatches and enter), to the time the Contractor has successfully completed the coating repairs, the coating has cured and the ENGINEER has provided approval, and the tank has been disinfected, re-filled, and a passing bacteriological sample has been received in order for the tank to be placed back into service. As such, exterior metalwork upgrades and exterior surface preparation and coatings application will primarily need to take place with the tank in service.

D. The date that the CONTRACTOR can request the tank be taken out of service for the maximum 30-day period shall be no earlier than September 15, 2022. This date is subject to delay within reason by the City depending on weather being experienced at that time and water consumption projections. Under no circumstances shall the tank be taken out of service between May 15th and September 15th, unless otherwise approved in writing by the OWNER.

E. Below is a suggested work schedule, to be finalized by the CONTRACTOR and submitted for approval following the NTP:

1. Anticipated NTP – May 3, 2022

2. Submittals and Material Procurement Phase – May to July 2022

3. Metalwork Tank Upgrades, Tank Online – July to August 2022

4. Exterior Coatings, Tank Online – August to September 2022

5. Interior Coatings and apply Tank Lettering, Tank Offline – September 15th through October 15th, 2022

6. All Remaining Items and Cleanup, Demobilization – October to early December 2022

7. Substantial and Final Completion – November 25, 2022, and December 9, 2022, respectively

1.7 COORDINATION WITH OTHER CONTRACTORS AND WITH OWNER

Certain work within this contract may require connection to and coordination with the work of other contractors and OWNER. The CONTRACTOR under these specifications shall cooperate fully with all other contractors and OWNER and carefully fit its own work to such other work as may be directed by the ENGINEER. The CONTRACTOR shall not commit or permit any act to be committed which will interfere with the performance of work by any other contractor or the OWNER.

1.8 ACCESS TO WORK

Access to the work shall be provided as may be required by the OWNER or its representatives, and all authorized representatives of the state and federal governments and any other agencies having jurisdiction over any phase of the work, for inspection of the progress of the work, the methods of construction or any other required purposes.

1.9 PERMITS AND LICENSES

Unless provided for otherwise in these contract documents, all permits, licenses and fees shall be obtained by the CONTRACTOR and all costs shall be borne by the CONTRACTOR. CONTRACTOR shall pay all plan check fees and other fees necessary to obtain permits and shall accommodate special inspections required thereof. CONTRACTOR shall be responsible for compliance with all permit provisions and shall accommodate all special inspections required thereof, all at no additional expense to the OWNER beyond prices as bid.

1.10 SITE INVESTIGATION AND PHYSICAL DATA

The CONTRACTOR acknowledges that it is satisfied as to the nature and location of the work and the general and local conditions, including but not limited to those bearing upon transportation, disposal, handling and storage of materials, availability of water, roads, groundwater, access to the sites, coordination with other contractors, and conflicts with pipelines, structures and other contractors. Information and data furnished or referred to herein is furnished for information only. Any failure by the CONTRACTOR to become acquainted with the available information and existing conditions will not be a basis for relief from successfully performing the work and will not constitute justification for additional compensation.

The CONTRACTOR shall verify the locations and elevations of existing pipelines, structures, grades and utilities, prior to construction. The OWNER assumes no responsibility for any conclusions or interpretations made by the CONTRACTOR on the basis of the information made available.

1.11 TEMPORARY UTILITIES FOR CONSTRUCTION PURPOSES

The CONTRACTOR shall make all arrangements necessary to provide all temporary utilities for construction purposes and shall pay all costs associated those temporary utilities. Water for construction purposes will be furnished by the OWNER at no cost. The CONTRACTOR shall furnish all valves, hoses, connections and other devices as necessary to obtain sufficient water for construction and for filling and testing of water lines as required. Fire hydrant use is allowed only by permission of the utility owner. Backflow protection is required on all connections to potable water systems.

1.12 FIELD SERVICE BY MANUFACTURER'S REPRESENTATIVE

The CONTRACTOR shall furnish the services of a manufacturer's or material supplier’s representative for all major equipment and materials furnished by the CONTRACTOR or OWNER under this contract, to check, place in operation and test the installation, and train operating personnel. The manufacturer's representative shall be qualified and authorized to perform repairs and maintenance on the equipment. The above gives a general scope of the services desired from the manufacturer's representative. It will be the responsibility of the CONTRACTOR and the equipment manufacturer to determine detailed requirements. Costs for services of the manufacturer's representative shall be included in the proposal of the CONTRACTOR. The operator training mentioned above shall include sufficient time during the CONTRACTOR’s operation and testing period to fully explain to the operating personnel the features of the equipment and maintenance thereof.

1.13 CONSTRUCTION WITHIN PUBLIC RIGHTS-OF-WAY

When the work contemplated is wholly or partly within the right-of-way of a public agency such as a city, county or state, the OWNER will obtain from these agencies any right-of-way

and street opening permits and all other necessary permit(s) required for the work. The CONTRACTOR shall abide by all regulations and conditions stipulated in the permit(s). Such conditions and requirements are hereby made a part of these specifications, as fully and completely as though the same were fully set forth herein. The CONTRACTOR shall examine the permit(s) granted to the OWNER by any city, county, state and federal agencies. Failure to do so will not relieve the CONTRACTOR from compliance with the requirements stated therein.

The CONTRACTOR shall obtain all construction permits and pay all fees or charges and furnish any bonds and insurance coverages as necessary to ensure that all requirements of the city, county, state or federal agencies will be observed and the roadway and ditches are restored to their original condition or one equally satisfactory. A copy of all permits shall be kept on the work site for use of the ENGINEER.

1.14 PRIVATE ROADS AND DRIVEWAYS

Bridges at entrances to business properties where vehicular traffic is necessary shall be provided and maintained. Bridges shall be adequate in width and strength for the service required. No private road or driveway may be closed without approval of the ENGINEER unless written authority has been given by the owner whose property has been affected. Driveways shall be left open and ready for use at the end of the work shift. All expenses involved in providing for construction, maintenance, and use of private roads or driveways, shall be borne by the CONTRACTOR and the amount thereof absorbed in the unit prices of the CONTRACTOR’s bid.

1.15 TRAFFIC CONTROL AND PROTECTION

The CONTRACTOR shall maintain traffic control and protection in the work areas twenty-four (24) hours per day. Traffic control shall conform to the standards set forth in the "Oregon Manual on Uniform Traffic Control Devices" issued by the Oregon Department of Transportation.

The CONTRACTOR shall conduct its operations so as to keep one lane of traffic open for public and private access at all times on City, County and Public streets, roads and highways. If required by the State, the CONTRACTOR shall conduct its operations so as to keep both directions of traffic open on State Highways. Permits obtained for the project may have more stringent requirements than noted in this section.

Prior to beginning construction, the CONTRACTOR shall submit a detailed street closure and traffic control plan to the ENGINEER for approval. As construction proceeds, the CONTRACTOR shall notify the ENGINEER as to the status of street closures and detours.

On streets where traffic is heavy, the ENGINEER may require the construction of two-way bridges of adequate design. These bridges shall be provided with guard rails and shall be well lighted at all times. Detours as required by the ENGINEER shall be surfaced with gravel or

crushed rock and maintained in good condition. Detours for pedestrians shall not exceed one block in length, and foot bridges over the trenches shall be provided with adequate handrails.

All work shall be carried on with due regard for safety to the public. Open trenches shall be provided with barricades of a type that can be seen at a reasonable distance, and at night they shall be distinctly indicated by adequately placed lights.

1.16 LIMITS OF THE WORK AND STORAGE OF SPOILS

The limits of the site which may be used for construction, storage, materials handling, parking of vehicles and other operations related to the project include the project site as shown on the drawings and adjacent public rights-of-way subject to permission of the public owner of that right-of-way. The limits of work also include rights of access obtained by the CONTRACTOR, subject to all public laws and regulations and rights of access by utility companies and other holders of easement rights.

1.17 EXISTING WATER SYSTEM SHUTDOWN

The project involves the need to shut down the existing Water Tower (system). As a result, the CONTRACTOR shall coordinate the work to insure a minimum of shutdown time. The CONTRACTOR shall submit a written shutdown schedule to the ENGINEER for approval. The CONTRACTOR shall provide a minimum two-week notice preceding the shutdown.

1.18 TESTING AND OPERATION OF FACILITIES

It is the intent of the OWNER to have a complete and operable facility. All of the work under this contract will be fully tested and inspected in accordance with the specifications. Upon completion of the work, the CONTRACTOR shall operate the completed facilities as required to test the equipment under the direction of the ENGINEER. During this period of operation by the CONTRACTOR, the new facilities will be tested thoroughly to determine their acceptance.

1.19 SALVAGE AND DEBRIS

Unless otherwise indicated on the drawings or in the specifications, all castings, pipe, equipment, demolition debris, spoil or any other discarded material or equipment shall become the property of the CONTRACTOR and shall be disposed of in a manner compliant with applicable Federal State and local laws and regulations governing disposal of such waste products. No burning of debris or any other discarded material will be permitted.

1.20 SAFETY STANDARDS AND ACCIDENT PREVENTION

The CONTRACTOR shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The

required and/or implied duty of the ENGINEER to conduct construction review of the CONTRACTOR's performance does not, and is not intended to, include review of the adequacy of the CONTRACTOR's safety measures in, on, or near the construction site.

The CONTRACTOR shall comply with the safety standards provisions of applicable laws and building and construction codes. The CONTRACTOR shall exercise every precaution at all times for the prevention of accidents and protection of persons, including employees, and property. During the execution of the work the CONTRACTOR shall provide and maintain all guards, railing, lights, warnings, and other protective devices which are required by law or which are reasonably necessary for the protection of persons and property from injury or damage.

1.21 WARRANTY PERIOD

The CONTRACTOR shall warrant all furnished materials and equipment for a period of one year from date of final acceptance of the Work by the OWNER. This warranty shall mean prompt attention to the correction and/or complete replacement of the faulty material or equipment. The expiration of the one-year warranty period shall not affect any other claims or remedy available to the OWNER. There may be other warranty provisions in these contract documents in addition to those noted above.

1.22 UTILITY PROPERTIES AND SERVICE

In areas where the CONTRACTOR’s operations are adjacent to or near a utility and such operations may cause damage which might result in significant expense, loss and inconvenience, the operations shall be suspended until all arrangements necessary for the protection thereof have been made by the CONTRACTOR.

The CONTRACTOR shall notify all utility offices which may be affected by the construction operation at least 48 hours in advance. Before exposing any utility, the utility having jurisdiction shall grant permission and may oversee the operation. Should service of any utility be interrupted due to the CONTRACTOR’s operation, the proper authority shall be notified immediately. It is of the utmost importance that the CONTRACTOR cooperates with the said authority in restoring the service as promptly as possible. Any costs shall be borne by the CONTRACTOR.

A list of Utility companies which may be impacted are shown in Section 00150 – Control of Work in the Front End Specification Section 15, Special Provisions.

1.23 SANITARY FACILITIES

The CONTRACTOR shall provide and maintain sanitary facilities for its employees and its subcontractors’ employees that will comply with the regulations of the local and State Departments of Health and as directed by the ENGINEER.

1.24 STREET CLEANUP

The CONTRACTOR shall clean daily all dirt, gravel, construction debris and other foreign material resulting from its operations from all streets and roads.

1.25 VEHICLE PARKING

The vehicles of the CONTRACTOR's and subcontractors' employees shall be parked in accordance with local parking ordinances.

1.26 PROTECTION OF QUALITY OF WATER

The work to be performed may involve connections to an existing potable water system. If such work is included in the project, the CONTRACTOR shall take such precautions as are necessary or as may be required to prevent the contamination of the water. Such contamination may include but shall not be limited to deleterious chemicals such as fuel, cleaning agents, paint, demolition and construction debris, sandblasting residue, etc. In the event contamination does occur, the CONTRACTOR shall, at its own expense, perform such work as may be necessary to repair any damage or to clean the affected areas of the water mains to a condition satisfactory to the ENGINEER.

1.27 RECORD DRAWINGS

CONTRACTOR shall maintain at the site one set of specifications, full size drawings, shop drawings, equipment drawings and supplemental drawings which shall be corrected as the work progresses to show all changes made. Drawings shall be available for inspection by the ENGINEER. Upon completion of the contract and prior to final payment, specifications and drawings shall be turned over to the ENGINEER.

1.28 "OR EQUAL" CLAUSE

In order to establish a basis of quality, certain processes, types of machinery and equipment or kinds of material may be specified on the drawings or herein by designating a manufacturer's name and referring to its brand or product designation. It is not the intent of these specifications to exclude other processes, equipment or materials of a type and quality equal to those designated. When a manufacturer's name, brand or item designation is given, it shall be understood that the words "or equal" follow such name or designation, whether in fact they do so or not. If the CONTRACTOR desires to furnish items of equipment by manufacturers other than those specified, he shall secure the approval of the ENGINEER prior to placing a purchase order.

No extras will be allowed the CONTRACTOR for any changes required to adopt the substitute equipment. Therefore, the CONTRACTOR's proposal for an alternate shall include all costs for any modifications to the drawings, such as structural and foundation changes, additional piping or changes in piping, electrical changes or any other modifications which may be necessary or required for approval and adoption of the proposed alternate equipment.

Approval of alternate equipment by the ENGINEER before or after bidding does not guarantee or imply that the alternate equipment will fit the design without modifications.

1.29 SURVEYS

Based upon the information provided by the Contract Documents, the CONTRACTOR shall develop and make all detail surveys necessary for layout and construction, including exact component location, working points, lines and elevations. Prior to construction, the field layout shall be approved by the OWNER's representative. The CONTRACTOR shall have the responsibility to carefully preserve bench marks, reference points and stakes, and in the case of destruction thereof by the CONTRACTOR or resulting from its negligence, the CONTRACTOR shall be charged with the expense and damage resulting therefore and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.

1.30 WORK HOUR LIMITATIONS

All work shall be conducted between the hours of 7:00 a.m. and 7:00 p.m. on non-holiday weekdays only. No weekend work will be allowed. Requests for variations in work hours shall be made in writing for consideration by the ENGINEER. No work shall be conducted outside of the above-described days and hours without prior approval of the ENGINEER.

1.31 DUST PREVENTION

All unpaved streets, roads, detours, haul roads or other areas where dust may be generated shall receive an approved dust-preventive treatment or be routinely watered to prevent dust. Applicable environmental regulations for dust prevention shall be strictly enforced.

Dust emissions from reservoir construction activities including sandblasting and painting shall be controlled to be within applicable environmental regulations. The CONTRACTOR shall be responsible for cleaning and repair of properties near the reservoir site which may become damaged by sandblasting or painting emissions.

1.32 INTERFERENCES, OBSTRUCTIONS AND SEWER CROSSINGS

At certain places, power, light and telephone poles may interfere with excavation and the operation of the CONTRACTOR's equipment. Necessary arrangements shall be made with utility companies for moving or maintaining such poles. The utility company affected by any such interferences shall be notified thereof so that the necessary moving or proper care of poles and appurtenances may have appropriate attention.

All costs resulting from any other interferences and obstructions, or the replacement of such, whether or not herein specifically mentioned, shall be included and absorbed in the unit prices of the CONTRACTOR's bid.

1.33 NOISE LIMITATIONS

The project areas are located within a residential area. All applicable City, County ordinances and State and Federal regulations shall be complied with.

1.34 STORAGE AND PROTECTION OF EQUIPMENT AND MATERIALS

A. Materials and equipment stored overnight shall be placed neatly on the job site. Unusable materials (i.e. rejected or damaged liner material, old concrete chunks, metal scraps, etc.) shall be expeditiously removed from the job site.

Provide appropriate barricades, signs, and traffic control devices in like-new condition where necessary to protect the public from any hazards associated with the storage of materials and equipment used for this project.

B. No equipment and/or materials shall be stored outside the immediate work area on public right-of-ways, in the following locations, or in the following manner:

1. In any maintained landscaped or lawn area.
2. In a manner that would totally eliminate an individual residents' street parking.
3. In front of any business.

The “immediate work area” is the area where work is taking place or will be taking place within one calendar day. The CONTRACTOR shall immediately move stored material or equipment which causes a nuisance or creates complaints.

1.35 COMPETENT PERSON DESIGNATION

CONTRACTOR shall designate a qualified and experienced “competent person” at the site whose duties and responsibilities shall include enforcement of Oregon - OSHA regulations regarding excavations, the prevention of accidents, and the maintenance and supervision of construction site safety precautions and programs.

1.36 EMERGENCY MAINTENANCE SUPERVISOR

The CONTRACTOR shall submit to the ENGINEER the names, addresses and telephone numbers of at least two employees responsible for performing emergency maintenance and repairs when the CONTRACTOR is not working. These employees shall be designated, in writing by the CONTRACTOR, to act as its representatives and shall have full authority to act on its behalf. At least one of the designated employees shall be available for a telephone call any time an emergency arises.

1.37 PREVAILING WAGE RATES FOR PUBLIC WORKS CONTRACTS IN OREGON

The CONTRACTOR shall abide by ORS 279C.800 through 279C.870 which relate to the prevailing wage rates for the building and construction trades in the State of Oregon. These

prevailing wage rates are shown in the Bureau of Labor and Industries document which is included elsewhere in these contract documents.

1.38 OREGON PRODUCTS

CONTRACTOR's attention is directed to the provisions of Oregon Law, ORS 279A.120 regarding the preference for products that have been manufactured or produced in Oregon. CONTRACTOR shall use Oregon-produced or manufactured materials with respect to common building materials such as cement, sand, crushed rock, gravel, plaster, etc., and Oregon-manufactured products in all cases where price, fitness, availability and quality are otherwise equal.

1.39 USE OF EXPLOSIVES

The use of explosives shall not be allowed on this project. Alternative methods of excavation shall be utilized.

1.40 CONTAMINATED MATERIAL

A. General

It is possible that the CONTRACTOR may encounter contaminated material (soil and/or water) during excavation activities. This specification identifies requirements for handling and disposing contaminated media.

B. Definitions

1. “Contaminated material” is defined as soil, water, free product, Underground Storage Tanks (UST), buried abandoned utility lines containing residual or free product, solid waste, treated wood waste, chemical containers, or other solid, liquid, or gas substances with contamination levels above background levels.

2. “Hazardous substances” shall mean those substances or materials defined in the Oregon Revised Statutes (ORS) 465.200, as amended.

3. “Release” shall have the meaning as defined in ORS 465.200, as amended.

4. “Environmental laws” shall mean any applicable statute, law, ordinance, order, consent decree, judgment, permit, license, code, covenant, deed, common law, treaty, convention or other requirement pertaining to protection of the environment, health or safety, natural resources, conservation, wildlife, waste management or disposal, hazardous substances or pollution, including but not limited to regulation of releases to air, land, water, and groundwater.

C. Execution

1. Discovery of Contaminated Material

   In the event that the CONTRACTOR, during the course of construction or during any other activities authorized under this contract, should encounter suspected contaminated material or any other materials suspected of posing a threat to human health and the environment, the CONTRACTOR shall notify the ENGINEER immediately and manage according to requirements identified below.

2. Discovery of Contaminated Soil

   CONTRACTOR shall note evidence of contamination (odor, visual staining of soil, free liquid product seeping from soil, sheen on groundwater etc.) and note location of evidence on a sketch of the excavation and provide to the ENGINEER.

   CONTRACTOR shall report the discovery to the ENGINEER immediately. CONTRACTOR shall stop all excavation activities, and secure the site to prevent entry by the public. The excavation shall not be backfilled. Protect all open excavations with berms, plates and fencing. CONTRACTOR may continue with work in other non-contaminated areas.

   CONTRACTOR shall assist ENGINEER in collecting sample(s) of suspected contaminated media for testing and characterization. CONTRACTOR shall allow 21 days, at no cost to OWNER, for testing, results and instructions as to how to proceed with contaminated materials.

   The CONTRACTOR shall obtain a copy of an approved soil disposal/acceptance permit (Disposal/Treatment Facility requires transporter to have a copy of the permit.)

   CONTRACTOR will transport and dispose of contaminated material at an approved disposal/treatment facility.

   CONTRACTOR shall provide the ENGINEER with a copy of the contaminated soil disposal receipt.

3. Handling of Contaminated Soil

   After approval from the ENGINEER, excavate the soil in a manner that prevents commingling of contaminated and non-contaminated soil. ENGINEER will make determination (based on soil saturation) if contaminated soil can be directly transported to a treatment or disposal facility, or if soil needs to be stockpiled to reduce water content. ENGINEER will determine when stockpiled soil can be transported off-site.

CONTRACTOR will be responsible for stockpiling contaminated soil in containers or on impervious surface to prevent the spread of contamination. Any water runoff from the contaminated soil stockpile area(s) must be contained by CONTRACTOR and handled as contaminated water.

Minimize movement of excavation equipment over or through contaminated soil to prevent movement of contaminated soil into areas where no contaminated soil exists.

Stockpiles will be created on an approved site and shall be surrounded by a fence to limit access. The stockpiles must be covered and bermed during periods of rainfall to prevent run-on and run-off. The stockpiles shall be covered with a minimum 10 mil high density polyethylene (HDPE) plastic during periods of strong winds, nightfall, over the weekends, or during extended work stoppages. If dust is observed coming from the stockpiles, the stockpiles shall be either covered or the dust controlled with water.

Maintain excavation equipment in good working order. Prevent spillage of oil, fuel, or hazardous substances from equipment. In particular, promptly repair oil leaks from equipment and clean up any contaminated soil.

4. Transport of Contaminated Materials

CONTRACTOR shall comply with all applicable Federal, State, or local laws, codes, and ordinances that govern or regulate contaminated substance transportation. Contaminated soils placed in stockpiles shall be loaded into trucks in a manner that prevents the spilling or tracking of contaminated soil into areas of the site with uncontaminated soil. Loose material falling onto the exterior of the truck during loading shall be removed before the truck leaves the loading area. Any material collected in the loading area shall either be placed back into the truck or back into the stockpile. If loading areas are unpaved, the surface soil shall be sampled at the conclusion of the loading activities to confirm that contaminated soil is not present. If loading areas are paved, any loose soil shall be cleaned from the pavement at the conclusion of the loading activities.

Specific truck haul routes shall be established before beginning off-site contaminated media transport. On-site truck routes shall be established to minimize or prevent movement of trucks over contaminated soils. Off-site truck routes shall be established to reduce the risk of releases of contaminated soils and impact on local traffic. The CONTRACTOR shall be responsible for ensuring that loaded truck weights are within acceptable limits. All trucks shall be covered before they leave the loading area.

The CONTRACTOR shall ensure that all drivers of vehicles transporting contaminated substances have in their possession during transport all applicable

Oregon State and local vehicle insurance requirements, valid driver's license, and vehicle registration and license. The CONTRACTOR shall be responsible for informing all drivers of transport vehicle about:

a. The nature of the material transported.

b. Required routes to and from the off-site thermal treatment or disposal facility.

c. Applicable County street regulations and requirements, and State of Oregon Department of Transportation codes, regulations and requirements.

d. The County's requirement for proper handling and transportation of the substances.

The CONTRACTOR shall not allow contaminated substances to be spilled or tracked off-site at any time during the project. Trucks used for the transportation of contaminated substances off-site shall be water tight, substance compatible, licensed, insured, and permitted pursuant to federal, state, and local statutes, rules, regulations and ordinances. If contaminated media is discarded prior to removal of contaminated material, the price per cubic yard of soil materials and price per 100 gallons of contaminated water will be negotiated with OWNER.

1.41 FACILITY OPERATIONS REQUIREMENTS

The work included in these plans and specifications is to be performed on an existing municipal water system that must continue in operation during construction. The CONTRACTOR shall cooperate fully at all times with the OWNER and the ENGINEER to ensure that operations will continue and that any interruption to operations are minimized.

1.42 SPECIALTY CONTRACTOR QUALIFICATION PRIOR TO BIDDING

The Metal Fabricator and Installer must be qualified by the ENGINEER prior to bidding. A Statement of Qualifications Form shall be submitted to the ENGINEER for review and approval by those prospective Metal Fabricator and Installers not already listed as prequalified contractors in the Instructions to Bidders. Refer to Instructions to Bidders and Metal Fabricator and Installer Statement of Qualifications Form for prequalification information.

The Tank Painting Contractor must be qualified by the ENGINEER prior to bidding. A Statement of Qualifications Form shall be submitted to the ENGINEER for review and approval by those prospective Tank Painting Contractors not already listed as prequalified contractors in the Instructions to Bidders. Refer to Instructions to Bidders and Tank Painting Contractor Statement of Qualifications Form for prequalification information.

END OF SECTION

SECTION 01 22 20 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

Measurement and payment will be on a unit price basis in accordance with the prices set forth in the proposal for individual work items. Where work is required but does not appear as a separate item in the proposal, the cost for that work shall be included and absorbed in the unit prices named in the proposal. CONTRACTOR shall make a careful assessment when preparing the bid.

1. Mobilization, demobilization, bonds, insurance, and work area and facility protection: Payment for mobilization, bonds, insurance and demobilization will be on a lump sum basis. The amounts paid for mobilization in the contract progress payment will be based on the percent of the original contract amount that is earned from other contract items, as follows:

   A. When 5% is earned, either 100% of the amount for mobilization or 5% of the original contract amount, whichever is the least;

   B. When all work is completed, amount of mobilization exceeding 5% of the original contract amount

   This schedule of mobilization progress payments will not limit or preclude progress payments otherwise provided by the contract.

2. Exterior surface preparation, and application of spot repair and overcoat system: Payment for surface preparation and furnishing and installing exterior overcoating system for a 58-foot diameter, 135-foot high, elevated multi-column welded steel reservoir with 750,000-gallon storage capacity, will be made on a lump sum basis. Surface preparation includes, but is not limited to, the following: Establishing, implementing, and maintaining a lead abatement protocol program for surface preparation as required after review of paint sample test results presented in the Supplementary Information; Water jet cleaning to clean all surfaces of the reservoir exterior and remove loose coating; Power tool surface preparation at all compromised coating locations on reservoir exterior to remove loose coating and rust to SSPC SP-11, including the pre-existing coating areas that are compromised and those that result from welding work to the tank as part of this project; and collection and disposal of all waste. Furnishing and installing the coating system includes, but is not limited to, the following: Application of spot primer to each spot repair as specified; Application of intermediate tie coat to all steel surfaces of the reservoir exterior as specified; and application of finish topcoat to all steel surfaces of the reservoir exterior as specified. Payment shall also include protection of nearby surfaces including, but not limited to, the following: Cellular and radio equipment attached to the tank; Existing telemetry equipment, building, and pump house; Historic SP1785 Locomotive; and other surfaces on and around the reservoir.

3. Application of “Woodburn” lettering on elevated reservoir, two locations: Payment for furnish and installation of lettering the word “Woodburn” in two locations on the flat panel portion of the elevated reservoir shall be made on a lump sum basis and includes, but is not limited to, surface preparation, positioning, contracting with a Specialty Applicator, creation of a Pounce Paper for the lettering, and coating application as specified.

4. Interior surface preparation, and application of spot repair coating system for locations damaged from exterior welding: Payment for surface preparation and spot repair of the interior coating system at weld locations shall be made on a lump sum basis. Surface preparation includes, but is not limited to, hand and/or power tooling reservoir interior to SSPC SP-11 to remove coating and rust at areas where welding of the exterior the reservoir bowl occurred, and collection and disposal of all waste. Furnishing and installing a spot repair coating system includes, but is not limited to, application of prime, intermediate, and top coat as specified.

5. Disinfection of reservoir interior prior to placing into service and sealing of all openings: Payment for this bid item shall be on a lump sum basis and shall include but is not limited to reservoir disinfection as specified, following acceptance of interior coating system application, as well as all requirements necessary to successfully pass a sample bacteriological testing. The OWNER shall provide off-site laboratory analysis. Payment for any retesting shall be paid by the CONTRACTOR.

6. Contractor field measurement, fabrication shop drawings, stamped structural design and calculations, and approvals: Payment for all Contractor field measurements, fabrication shop drawings, stamped structural design and calculations, and approvals shall be made on a lump sum basis. CONTRACTOR shall perform all measurements as required to create drawings for arrival and fabricate all pieces necessary for construction of the improvements. All shop drawings and calculations shall be stamped by a licensed and registered professional engineer. Anticipated deferred design items include, but are not limited to, the following: New lower ladder landing platform, supports, and stairway over catwalk railing at catwalk level; New upper ladder, landing platform, and supports; and new stairway, handrail to and around center vent, and angle treads.

7. Lower ladder replacement, including new climb prevention shield, fall prevention system, and landing platform: Payment for removal and discarding of existing lower ladder, climb prevention shield, and fall prevention system, and furnishing and installation of new lower ladder, climb prevention shield, fall prevention system, and landing platform shall be made on a lump sum basis.

8. Upper ladder replacement, including new fall prevention system, stairway, angle treads, handrail to and around center vent, and reconnection of catwalk conduit crossing: Payment for the removal and discarding of the upper curved ladder, fall prevention system, and antenna scaffolding, and the furnishing and installation of new upper ladder with flared opening, fall prevention system, platform landing, stairway, angle treads, handrail to and around center vent, and non-skid surfacing, shall be made on a lump sum basis. This item

shall include the preservation and reinstallation of the existing Unistrut catwalk conduit crossing to the bottom of the new upper ladder and the preservation and reinstallation of the extension rod for the interior ladder fall prevention system, which shall be fitted with a convenience holder near the hatch for easy storage and access.

9. Roof center vent upsizing and replacement: Payment for the upsizing of the roof vent penetration from 12-inch diameter to 30-inch diameter while preserving the roof rafters, and replacement of the roof center vent with a flange-mounted pressure/vacuum relief vent with dielectric isolation and locking mechanism, including a welded flange collar and all other items as shown on the Drawings, shall be made on a lump sum basis.

10. Roof hatch and lower ladder intrusion switch replacement, including new conduit mounting brackets from ground up to hatch, connect wiring in Telemetry Building: Payment for furnishing and installing roof hatch and lower ladder intrusion switch replacements shall be made on a lump sum basis. The work includes, but is not limited to, the following: Remove and discard of existing cabling and instruments; Install new welded standoffs and Unistrut conduit mounting brackets, conduit, and cabling as required on Column 2 to the catwalk, along the catwalk handrail, and up the elevated tank to the existing roof hatch for the roof hatch intrusion switch; and install new welded standoffs and Unistrut conduit mounting brackets, conduit, and cabling as required on Column 2 to the lower ladder climb prevention shield for the lower ladder intrusion switch. This item shall also include routing of the new cabling through existing conduits to the Telemetry Building adjacent to the tank and terminating in the locations identified by the OWNER in the field, installation of the new intrusion switches at the ladder / roof hatch, and coordinating with the OWNER as needed for successful startup of the new instruments in the City's SCADA programming at the PLC.

11. Reroute of existing police antenna to new roof handrail, including new conduit mounting from ground up to catwalk: Payment for rerouting the existing police antenna from the existing antenna scaffolding and mounting to the new roof handrail, including furnishing and installation of new welded standoffs and Unistrut conduit mounting from the ground up Column 3 to the catwalk and to the roof handrail and transferring all cabling and conduit, shall be made on a lump sum basis.

12. New welded standoffs and Unistrut conduit mounting for railroad radio antenna from ground up to catwalk: Payment for the new welded standoffs and Unistrut conduit mounting for railroad radio antenna from ground up Column 7 to the catwalk, and transferring all cabling and conduit, shall be made on a lump sum basis.

13. Surface stabilization and restoration: Payment for general site surface restoration including stripping and stockpiling topsoil, regrading to original contours, bark mulching planting areas, and cleanup following construction as required including resurfacing gravel surfaces as required, will be on a lump sum basis.

14. Extra work as authorized: Measurement and payment for extra work as authorized is interpreted by additional work tasks, not specifically required or implied by the contract, and

which an authorized owner representative specifically requests in writing. Execution of this contract in and of itself shall not be construed as a specific request for the Contractor to perform additional work.

END OF SECTION

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. This Section contains administrative and procedural requirements for submittals for review, information, and for Project closeout.

B. Section includes:

1. Schedule of Submittals.
2. Submittal requirements.
3. Submittal procedures.
4. Engineer review.
5. Resubmittal procedures.
6. Product data.
7. Shop Drawings.
8. Samples.
9. Design data.
10. Test reports.
11. Certificates.
12. Manufacturer's instructions.
13. Manufacturer's field reports.
14. Erection Drawings.
15. Construction progress schedules.
16. Breakdown of contract price.
17. Operation and maintenance (O&M) instructions.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SCHEDULE OF SUBMITTALS

A. Within 10 days after the Effective Date of the Contract, Contractor shall submit to Engineer a preliminary Schedule of Submittals, including proposed list of major products proposed for use, with specification section reference, name of manufacturer, supplier, trade name, subcontractor and model number of each

product. Provide a schedule of specific target dates for the submission and return of submittals and shop drawings required by the Contract Documents.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

C. The list and schedule shall be updated and resubmitted when requested by the Engineer.

D. Contractor's Schedule of Submittals will be acceptable to the Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

1.4 SHOP DRAWING AND SAMPLE SUBMITTAL REQUIREMENTS

A. Before submitting a Shop Drawing or Sample, Contractor shall have:

1. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

2. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

3. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

4. 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.

B. 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 of that submittal, and that Contractor approves the submittal.

C. 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 set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review of each such variation.

1.5 SUBMITTAL PROCEDURES

A. Contractor shall submit Shop Drawings and Samples to Engineer for review in accordance with the accepted Schedule of Submittals.

B. Transmit each submittal with Engineer-accepted transmittal form certifying compliance with requirements of Contract Documents.

C. Sequentially number transmittal forms. Mark transmittal forms for resubmittals with original number and sequential alphabetic suffix.

D. Show each Submittal with the following numbering and tracking system:

1. Submittals shall be numbered according to specification section. For example, the first product submittal for Section 055000 would be “055000-1”. Resubmittals of that submittal would be “055000-1.1”, followed by “055000-1.2”, and so on. The second product submittal for that Section would be “055000-2”.

2. Submittals containing product information from multiple sections of the specifications will not be reviewed. Contractor and/or their supplier shall divide submittals in a manner that meets the numbering and tracking system requirements stated herein.

3. Alternative method of numbering may be used if acceptable to Engineer.

E. Identify: Project, Contractor, subcontractor and supplier, pertinent drawing and detail number, and specification Section number appropriate to submittal.

F. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

G. Coordinate submission of related items.

1. All shop drawings for interrelated items shall be scheduled for submission at the same time.

2. The Engineer may hold shop drawings in cases where partial submission cannot be reviewed until the complete submission has been received or where shop drawings cannot be reviewed until correlated items affected by them have been received. When such shop drawings are held, the Engineer will advise the Contractor in writing that the shop drawing submitted will not be reviewed until shop drawings for all related items have been received.

H. When hard copies of submittals are provided by the Contractor, six (6) copies of all materials shall be provided to the Engineer. Two (2) copies of reviewed submittals will be kept by the Engineer, two (2) copies of reviewed submittals will be transmitted to the Owner, and two (2) copies of reviewed submittals will be returned to the Contractor. If the Contractor requests that more than two (2) copies of the reviewed submittal be returned, then the Contractor shall submit the appropriate quantity of submittals.

I. When electronic transmittals of submittals are provided by the Contractor under established protocols described elsewhere in the Contract Documents or as jointly developed by the Owner, Engineer and Contractor, provide electronic submittals in portable document format (PDF) in addition to the source document format (Word, Excel, AutoCAD, etc.). Reviewed submittals will be returned to the Contractor as PDF electronic files.

J. For each submittal for review, allow not less than fourteen (14) days for Engineer review, excluding delivery time to and from Contractor.

K. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

L. Allow space on submittals for Contractor and Engineer review stamps or comments.

M. When revised for resubmission, the Contractor shall identify changes made since previous submission. A narrative of changes shall be provided, and shop drawings or calculations shall indicate that a revision was made.

N. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with review comments.

O. Submittals not requested will not be recognized nor processed.

P. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.6 ENGINEER REVIEW

A. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.

B. The Engineer’s review of submittals and shop drawings is not a check of any dimension or quantity and will not relieve the Contractor from responsibility for errors of any sort in the submittals and shop drawings.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. The Engineer will review the submitted data and shop drawings and return to the Contractor with notations thereon indicating "No Exception Taken", "Make Corrections Noted", "Rejected", "Revise and Resubmit", or "Submit Specified Item".

E. If more than two (2) submissions of an item are required to meet the Project specifications, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

F. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review 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.

G. Engineer's review will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

H. Engineer's review of a separate item as such will not indicate approval of the assembly in which the item functions.

I. Engineer's review of a Shop Drawing or Sample 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 1.4.C and Engineer has given written acceptance of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such accepted variation from the requirements of the Contract Documents in a Field Order.

J. Engineer's review of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 1.4 A. and B.

K. Engineer's review of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

L. Neither Engineer's receipt, review, return of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

M. Contractor shall perform the Work in compliance with the requirements and commitments set forth in returned Shop Drawings and Samples, subject to the provisions of Paragraph 1.6.I.

1.7 RESUBMITTAL PROCEDURES

A. 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. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

B. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required review of an item with no more than two submittals. Engineer will record Engineer's time for reviewing a third or subsequent submittal of a Shop Drawings, sample, or other item requiring review, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

C. If Contractor requests a change of a previously reviewed submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

PART 2 PRODUCTS

2.1 CONSTRUCTION PROGRESS SCHEDULES

A. Within ten (10) days after the Effective Date of the Contract, prepare and submit to the Engineer a practicable schedule showing the order in which the Contractor proposes to carry out the Work, the dates on which the important features of the work will start, and the contemplated dates for completing same. A time-scaled bar chart schedule shall include the following:

- Construction activities
- Submittal and review of critical material samples and shop drawings
- Procurement and delivery of critical materials
- Duration of work, including completion times of all stages and their sub-phases

B. Attention is drawn to typical local climatic weather patterns and Work shall be coordinated accordingly.

C. Complete project schedule shall be revised and resubmitted to the Engineer at a minimum occurrence of every two (2) weeks for review.

D. Three Week Lookahead Schedules: Provide each week at the weekly construction meeting. The previous week's completed work shall be shown on the schedule for a total of 4 weeks shown.

2.2 BREAKDOWN OF CONTRACT PRICE

A. Within ten (10) days after the Effective Date of the Contract, submit a complete breakdown of all lump sum bid items showing the value assigned to each part of the work, including an allowance for profit and overhead adding up to the total lump sum contract price.

B. Breakdown of lump sum bids shall be coordinated with the items in the schedule and shall be in sufficient detail to serve as the basis for progress payments during construction.

C. Engineer will review the contract price breakdown and may request items to be further broken down or for more items be added in order to facilitate tracking of work progress for payment.

D. Preparatory work, bonds, and insurance required in setting up the job will be allowed as a separate entry on the cost breakdown but shall not exceed 5 percent of the total base bid.

E. Upon acceptance of the breakdown of the contract price by the Engineer, it shall be used as the basis for all requests for payment.

2.3 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents. Submitted data shall be sufficient in detail for determination of compliance with the Contract Documents.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1. Note submittal will be returned to Contractor without review of submittal if products, models, options and other data are not clearly marked or identified.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. After review, produce copies and distribute according to Paragraph 1.5.M and for record documents.

2.4 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer licensed in the state of Project responsible for designing components shown on Shop Drawings.

1. Include signed and sealed calculations to support design.

2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.

3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. All dimensioned shop drawings shall be scalable and provided as full-sized (22” x 34”) sheets. PDF electronic files shall print as scalable full-sized sheets.

E. After review, produce copies and distribute according to Paragraph 1.5.M and for record documents.

2.5 SAMPLES

A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:

1. Submit to Engineer for aesthetic, color, and finish selection.
2. Submit Samples of finishes, textures, and patterns for Owner selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.

F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.

2.6 DESIGN DATA

A. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.

B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

2.7 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge and records as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

2.8 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

2.9 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.

B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Engineer in quantities specified for Product Data.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

2.10 MANUFACTURER'S FIELD REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge and records as Contract administrator or for Owner.

B. Submit report within 48 hours of observation to Engineer for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

2.11 ERECTION DRAWINGS

A. Informational Submittal: Submit Drawings for Engineer's knowledge and records as Contract administrator or for Owner.

B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.

C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

2.12 PROJECT HEALTH AND SAFETY PROGRAM

A. Develop, publish, and implement an overall Project Health and Safety Program for the Project. This Program shall conform to all applicable codes. The written Safety Program shall be provided within thirty (30) days after the receipt of the written Notice to Proceed. The Plan shall be assembled to address project specific health and safety issues to both the public and on-site personnel. The plan shall include at a minimum the following items when they apply:

1. Employee orientation
2. Safety inspections
3. Instruction and training
4. Accident reporting
5. Signs and barricades
6. Fire prevention and protection
7. Welding, cutting and burning
8. Painting and surface treatment
9. Electricity
10. Machinery and mechanized equipment
11. Excavations
12. Sanitation
13. Chlorine safety and hazardous materials
14. Hazardous communications program
15. Job hazard analysis
16. First aid/medical facilities
17. Personal protective equipment
18. Confined space entry plan
19. Shoring plan
20. Fall protection plan
21. Emergency Action Plan
22. Housekeeping

23. Safety training requirements and certification
24. Pedestrian access around work site during construction and after hours
25. Neighboring residences/community access and safety

B. If the project requires other health and safety issues to be addressed, they too shall be included in the Project Health and Safety Program. The Program shall subsequently be distributed to and implemented by the Contractor's personnel, as well as its Subcontractors and Suppliers, the Owner and Engineer. Contractor shall fully implement and comply with the Safety Program and shall submit to the Owner a letter signed by Contractor's owner/president affirming such implementation and compliance within fifteen (15) days after on-site work has started. Contractor shall notify the Owner and Engineer when safety meetings will be held so that Owner's and Engineer's personnel may attend. A copy of the Health and Safety Program must be maintained on-site at all times during the life of the Project.

2.13 OPERATION AND MAINTENANCE (O&M) INSTRUCTIONS

A. Submit preliminary O&M materials for review by Engineer. The equipment manufacturer may furnish instruction manuals prepared specifically for the equipment furnished or standard manuals may be used if statements like "if your equipment has this accessory..." or listings of equipment not furnished are eliminated. O&M materials will be returned to the Contractor for resubmittal if the O&M materials do not clearly indicate what specific equipment was furnished and all items not provided being clearly crossed out. Poorly reproduced copies are not acceptable. Operation and maintenance instructions shall contain the following as a minimum:

1. Reviewed shop drawings and submittal data;

2. Model, type, size and serial numbers of equipment furnished;

3. Equipment and driver nameplate data;

4. List of parts showing replacement numbers;

5. Recommended list of spare parts;

6. Complete operating instructions including start-up, shutdown, adjustments, cleaning, etc.;

7. Maintenance and repair requirements including frequency and detailed instructions; and

8. Name, address and phone numbers of local representative and authorized repair service.

B. Following review of the preliminary O&M materials by the Engineer and before acceptance of the Work, submit four (4) copies of complete final operation and maintenance instructions for all equipment supplied. Submit items in 8-1/2 x 11- inch heavy-duty three-ring binders when appropriate, or in 8-1/2 x 11-inch file folders. All binders and folders shall have clear plastic pockets on the front of the cover and the spine to allow for insertion of identifying information.

2.14 OTHER REQUIRED SUBMITTALS INCLUDE THE ITEMS LISTED BELOW.

This list is provided for Contractor's convenience only and may not be complete in all respects. Provide all submittals specified or required, whether or not listed here.

A. Contractor Emergency Contact List.
B. Erosion and Sediment Control Plan.

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 45 00 - QUALITY CONTROL

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section covers quality control requirements supplementary to those of the General Conditions and Special Provisions.

1.2 PROVISIONS

A. Contractor's Responsibility for Testing

The CONTRACTOR shall be responsible for the cost of all testing as specified in this section. Additional information has been provided regarding the payment responsibility for the OWNER with regards to the Project.

B. OWNER's Right to Perform Additional Tests

The OWNER or ENGINEER reserves the right to complete additional testing. In such cases, the CONTRACTOR shall provide safe access for the OWNER or ENGINEER and their inspectors to adequately inspect the quality of work and the conformance with project specifications.

1.3 QUALITY ASSURANCE

A. Testing Requirements

An independently owned and operated laboratory approved by the ENGINEER shall perform all testing as specified herein.

B. Testing

1. General

a. All required testing of work and/or materials shall be conducted in the presence of the ENGINEER. The CONTRACTOR shall provide forty-eight (48) hour notification to the OWNER and OWNER's REPRESENTATIVE prior to conducting any and all quality assurance testing. Where applicable, work and materials shall only be buried with the consent of the ENGINEER.

b. Where such inspection and testing are to be conducted by an independent laboratory or agency, the sample or samples of material to be tested shall be selected by such laboratory or agency or by the ENGINEER. The CONTRACTOR shall furnish such samples of all materials without charge to OWNER.

c. The results from any and all tests are made for the information of the OWNER. Regardless of any test results, the CONTRACTOR is solely responsible for the quality of workmanship and materials and for compliance with the requirements of the Drawings and Specifications.

2. Costs of Testing

a. The CONTRACTOR shall be responsible for and shall pay for all tests as specified in Part 3 of this Section. Additional information has been provided regarding the payment responsibility for the OWNER with regards to the Project.

b. With regards to all materials to be tested, where test results demonstrate that the material or workmanship does not meet the minimum requirements of the Contract Documents, additional testing shall be completed and shall be paid for by the CONTRACTOR with no reimbursement by the OWNER.

1.4 SPECIAL INSPECTIONS

Special inspections and testing as required by Chapter 17 of the IBC shall be conducted by OWNER-retained Special Inspectors and Testing Agencies as required and as indicated in the Contract Documents.

A. Special Inspectors and Testing Agencies Responsibilities

1. Verify that manufacturers maintain detailed fabrication and quality control procedures and review the completeness and adequacy of those procedures to perform the Work.

2. Promptly notify OWNER and CONTRACTOR of irregularities and deficiencies observed in the Work during performance of their services.

3. Submit certified written report of each test, inspection and similar quality control service to OWNER, CONTRACTOR and jurisdictional authorities. Interpret test results and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

4. Submit final report of special inspections at Substantial Completion, including a list of unresolved deficiencies.

5. Re-test and re-inspect corrected work.

B. CONTRACTOR'S Responsibilities

1. Provide quality requirements to all subcontractors and enforce all requirements.

2. Notify OWNER, ENGINEER, Special Inspectors and Testing Agencies at least 48 hours in advance of time when Work that requires testing or special inspecting will be performed, unless otherwise indicated in the Contract Documents.

3. Pay for any CONTRACTOR requested testing and inspecting not required by the Contract Documents.

4. Pay for any re-testing or re-inspections by Special Inspectors and Testing Agencies for replacement work resulting from work that failed to comply with the Contract Documents. OWNER will deduct such costs from the Contract Price.

5. Submit copies of licenses, certifications, correspondence, records and similar documents used to establish compliance with standards and regulations that pertain to performance of the Work to the OWNER, ENGINEER and Special Inspectors.

6. Where Special Inspection requires pre-construction testing for compliance with specified requirements for performance and test methods, comply with the following:

    a. Provide test specimens representative of proposed products and construction in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

    b. Provide information on configurations of test assemblies, testing procedures and laboratory test records to adequately demonstrate capability of products to comply with performance requirements.

7. Cooperate with Agencies performing required tests, special inspections and similar quality control services. Notify Agencies in advance of operations to permit assignment of personnel. Provide the following:

    a. Access to the Work.

    b. Incidental labor, equipment and materials necessary to facilitate tests and special inspections.

    c. Adequate quantities of representative samples of materials that require testing and inspecting. Assist Agencies in obtaining samples.

    d. Provide facilities for storage and field curing of test samples.

    e. Deliver samples to Testing Agencies.

8. Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and special inspecting.

9. Schedule times for tests, special inspections, obtaining samples and similar activities. Distribute schedule to OWNER, ENGINEER, Special Inspectors, Testing Agencies and each party involved in portions of the work where tests and special inspections are required.

1.5 SUBMITTALS

A. Laboratory Test or Inspection Reports

Each report shall be signed and certified by the independently owned and operated testing laboratory. Unless otherwise specified, submit three (3) copies of each report to the OWNER or OWNER's REPRESENTATIVE.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 FIELD TESTING SCHEDULE

A. The CONTRACTOR shall complete field testing in accordance with the following schedule. Additional source material testing shall be completed as necessary to establish the basis of field tests. The frequency of testing listed in this schedule lists the minimum number of tests per quantity of work completed by the CONTRACTOR. Testing locations to be determined by the ENGINEER.

Material to be Tested	Payment Responsibility for Initial Testing	Minimum Testing Frequency
Reservoir – Disinfection	CONTRACTOR	As required. See Section 33 13 13, Disinfection of Water Utility Storage Tanks

END OF SECTION

SECTION 01 75 16 - TESTING, TRAINING AND SYSTEM START-UP

PART 1 GENERAL

1.1 SCOPE

This section specifies equipment and system testing and start-up, services of manufacturer's representatives, training of OWNER's personnel and final testing requirements for the complete facility.

1.2 CONTRACT REQUIREMENTS

A. Testing, training and start-up are requisite to the satisfactory completion of the Contract.

B. Complete all testing, training, and start-up within the Contract Time(s).

C. Furnish all necessary labor, power, chemicals, tools, equipment, instruments, and services required for and incidental to completing functional testing, performance testing, and operational testing.

D. Provide competent, experienced technical representatives of equipment manufacturers for assembly, installation, testing, and operator training.

1.3 START-UP PLAN

A. Submit start-up plan for each piece of equipment and each system not less than two (2) weeks prior to planned initial equipment or system start-up.

B. Provide detailed Start-up Progress Schedule with the following activities identified:

1. Manufacturer’s services
2. Installation certifications
3. Operator training
4. Submission of operation and maintenance manual
5. Functional testing
6. Performance testing
7. Operational testing

C. Provide testing plan with test logs for each item of equipment and/or system. Include testing of alarms, control circuits, capacities, speeds, flows, pressures, vibrations, sound levels, and other parameters.

D. Provide summary of shutdown requirements for existing systems if required, which are necessary to complete start-up of new equipment and systems.

E. Revise and update start-up plan based upon review comments, actual progress, or to accommodate changes in the sequence of activities.

1.4 GENERAL START-UP AND TESTING PROCEDURES

A. Mechanical Systems:

1. Remove rust preventatives and oils applied to protect equipment during construction.

2. Flush lubrication systems and dispose of flushing oils. Recharge lubrication system with lubricant recommended by manufacturer.

3. Install and adjust packing, mechanical seals, O-rings, and other seals. Replace defective seals.

4. Remove temporary supports, bracing, or other foreign objects installed to prevent damage during shipment, storage, and erection.

5. Check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting driver.

6. Perform cold alignment and hot alignment to manufacturer's tolerances.

7. Inspect hand and motorized valves for proper adjustment. Tighten packing glands to ensure no leakage but permit valve stems to rotate without galling. Verify valve seats are positioned for proper flow direction.

8. Tighten leaking flanges or replace flange gasket. Inspect screwed joints for leakage.

9. Install gratings, safety chains, and shaft guards prior to operational testing.

B. Electrical Systems

1. Perform insulation resistance tests on wiring except 120-volt lighting, wiring, and control wiring inside electrical panels.

2. Perform continuity tests on grounding systems.

3. Test and set switchgear and circuit breaker relays for proper operation.

4. Check motors for actual full load amperage draw. Compare to nameplate value.

C. Instrumentation Systems

1. Bench or field calibrate instruments and make required adjustments and control point settings.

2. Energize transmitting and control signal systems, verify proper operation, ranges and settings.

1.5 FUNCTIONAL TESTING

A. Functionally test mechanical and electrical equipment for proper operation after general start-up and testing tasks have been completed.

B. Demonstrate proper rotation, alignment, speed, flow, pressure, vibration, sound level, adjustments, and calibration. Perform initial checks in the presence of and with the assistance of the manufacturer's representative.

C. Demonstrate proper operation of each instrument loop function including alarms, local and remote controls, instrumentation and other equipment functions. Generate signals with test equipment to simulate operating conditions in each control mode.

D. Conduct continuous 8-hour test under full load conditions. Replace parts which operate improperly.

1.6 CERTIFICATE OF PROPER INSTALLATION

A. At completion of functional testing, furnish written report prepared and signed by manufacturer's authorized representative, certifying equipment:

1. Has been properly installed, aligned, adjusted and lubricated.

2. Is free of any stresses imposed by connecting piping or anchor bolts.

3. Is suitable for satisfactory full-time operation under full load conditions.

4. Operates within the allowable limits for vibration.

5. Controls, protective devices, instrumentation, and control panels furnished as part of the equipment package are properly installed, calibrated, and functioning.

6. Control logic for start-up, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly functioning.

B. Furnish written report prepared and signed by the electrical and/or instrumentation subcontractor certifying:

1. Motor control logic that resides in motor control centers, control panels, and circuit boards furnished by the electrical and/or instrumentation subcontractor has been calibrated and tested and is properly operating.

2. Control logic for equipment start-up, shutdown, sequencing, interlocks and emergency shutdown has been tested and is properly operating.

C. Co-sign the reports along with the manufacturer's representative and subcontractors.

1.7 TRAINING OF OWNER'S PERSONNEL

A. Provide operations and maintenance training for items of mechanical, electrical and instrumentation equipment. Utilize manufacturer's representatives to conduct training sessions.

B. Coordinate training schedule with City staff. Coordinate training sessions to prevent overlapping sessions. Arrange sessions so that individual operators and maintenance technicians do not attend more than two (2) sessions per week.

C. Provide Operation and Maintenance Manual for specific pieces of equipment or systems two (2) weeks prior to training session for that piece of equipment or system.

D. Satisfactorily complete functional testing before beginning operator training.

E. The OWNER may videotape the training for later use with the OWNER's personnel.

1.8 MINIMUM SERVICE SCHEDULE

Minimum services as specified shall be provided in accordance with the following schedule:

Specification Section	Equipment	Minimum On-Site Time Requirements		
		1) Equipment Installation	2) Equipment Testing	3) Operator Training
11 81 29	Facility Fall Protection	1 CWD	1 CWD	1 CWD

NOTE: CWD is defined as a consecutive working day consisting of 8 hours each from 8:00 a.m. to 5:00 p.m.

1.9 OPERATIONAL TESTING

A. Conduct operational test of the entire facility after completion of operator training. Demonstrate satisfactory operation of equipment and systems in actual operation.

B. Conduct operational test for continuous seven (7) day period.

C. Owner will provide operations personnel, power, fuel, and other consumables for duration of test.

D. Immediately correct defects in material, workmanship, or equipment which became evident during operational test.

E. Repeat operational test when malfunctions or deficiencies cause shutdown or partial operation of the facility or results in performance that is less than specified.

1.10 RECORD KEEPING

A. Maintain and submit to ENGINEER the following records generated during start-up and testing phase of project:

1. Daily logs of equipment testing identifying all tests conducted and outcome.

2. Logs of time spent by manufacturer's representatives performing services on the job site.

3. Equipment lubrication records.

4. Electrical phase, voltage, and amperage measurements.

5. Insulation resistance measurements.

6. Pump torsional and lateral vibration analysis report.

7. Data sheets of control loop testing including testing and calibration of instrumentation devices and set-points.

END OF SECTION

DIVISION 05 - METALS

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. The extent of metal fabrications work is shown on the Drawings and may include items fabricated from iron, steel, stainless steel and aluminum shapes, plates, bars, sheets, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems in other sections of these specifications. This section also describes required stamped and signed deferred design submittals that the CONTRACTOR is responsible to supply for review and approval.

B. Section Includes:

1. Shop-fabricated metal items.
2. Ladders, Cages, Shroud, and Climb Prevention Shield.
3. Stairs.
4. Handrails.
5. Gratings, Platforms, and Supports.
6. Fasteners.
7. Miscellaneous.

1.2 QUALIFICATION OF METAL FABRICATOR AND INSTALLER

The CONTRACTOR's attention is directed to the Bid Documents in order to demonstrate qualifications to perform metal fabrication and installation work for this Project.

1.3 REFERENCE STANDARDS

A. Aluminum Association (AA):

1. AA DAF-45 - Designation System for Aluminum Finishes.

B. American Architectural Manufacturers Association (AMMA):

1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

2. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

3. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

4. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

C. American National Standards Institute (ANSI):

1. ANSI A14.3 - American National Standard (ASC) for Ladders - Fixed - Safety Requirements.

D. American Welding Society (AWS):

1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

2. AWS D1.1 - Structural Welding Code - Steel.

3. AWS D1.6 - Structural Welding Code - Stainless Steel.

E. ASTM International:

1. ASTM A6 - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.

2. ASTM A36 - Standard Specification for Carbon Structural Steel.

3. ASTM A47, grade as selected - Malleable Iron Castings.

4. ASTM A48, Class 30 - Gray Iron Castings.

5. ASTM A53- Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

6. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished

7. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

8. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

9. ASTM A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.

10. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

11. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

12. ASTM A283, Grade C - Steel Plates to be Bent or Cold Formed.

13. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.

14. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

15. ASTM A312 - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.

16. ASTM A3125 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

17. ASTM A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.

18. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

19. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

20. ASTM A513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.

21. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.

22. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

23. ASTM A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

24. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

25. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

26. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

27. ASTM A992 - Standard Specification for Structural Steel Shapes.

28. ASTM B26 - Standard Specification for Aluminum-Alloy Sand Castings.

29. ASTM B85 - Standard Specification for Aluminum-Alloy Die Castings.

30. ASTM B177 - Standard Guide for Engineering Chromium Electroplating.

31. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

32. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

33. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire.

34. ASTM B 308, Alloy 6061-T6, Anodic Coating Class I, AA-C22-A41, anodized after fabrication - Structural Aluminum Shapes and Plates.

35. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

36. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.

37. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

38. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.

39. ASTM F436 - Standard Specification for Hardened Steel Washers.

40. ASTM F844 - Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

41. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.

F. Builders Hardware Manufacturers Association (BHMA):

1. ANSI/BHMA A156.20 - American National Standard for Strap and Tee Hinges and Hasps.

G. National Ornamental & Miscellaneous Metals Association:

1. NOMMA Guideline 1 - Joint Finishes.

H. SSPC: The Society for Protective Coatings:

1. SSPC - Steel Structures Painting Manual.
2. SSPC Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
3. SSPC Paint 20 - Zinc-Rich Coating (Type I - Inorganic and Type II - Organic).
4. SSPC SP 1 - Solvent Cleaning.
5. SSPC SP7 - Brush-off Blast Cleaning.
6. SSPC SP 10 - Near-White Blast Cleaning.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Manufacturer's Data: For information only, submit copies of manufacturer's specifications, load tables, dimension diagrams, anchor details and installation instructions for products to be used in miscellaneous metal work, including paint products.

C. Shop Drawings:

1. General: Submit copies of shop drawings for the fabrication and erection of all assemblies of miscellaneous metal work which are not completely shown by the manufacturer's data sheets.

   a. Include plans, elevations and details of sections and connections and fabricators proposed shop coat paint or galvanizing specifications.

   b. Show anchorage and accessory items.

   c. Furnish setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts, and miscellaneous items having integral anchors, which are to be embedded in concrete construction.

   d. Indicate welded connections using standard AWS A2.4 welding symbols.

   e. Indicate net weld lengths.

2. Stairs, Handrails and Railings:

   a. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

3. Gratings:

    a. Indicate details of gratings, plates, component supports, anchorages, openings, perimeter construction details, and tolerances.

D. Samples:

1. Submit two sets of representative samples of materials, illustrating factory finishes as may be requested by the ENGINEER.

2. ENGINEER's review will be for color, texture, style and finish only.

E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

F. Delegated Design Submittals:

1. Submit signed and sealed Shop Drawings from a registered, licensed professional engineer within the State of Oregon.

2. Include design calculations and assumptions for the following:

    a. Lower ladder Platform and Supports.
    b. Upper Ladder Platform and Supports.
    c. Stairs above Upper Ladder Platform.

G. Qualifications Statement:

Submit qualifications for licensed professional to perform Delegated Design Submittals as noted above.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Transporting, handling, storing, and protecting products shall be in accordance with manufacturer's requirements.

B. Inspection: Accept metal fabrications on-site in labeled shipments. Inspect for damage.

C. Protect metal fabrications from damage by exposure to weather or by ground contact.

1.6 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to preparation of Shop Drawings and fabrication. Indicate field measurements on Shop Drawings.

1. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication.

PART 2 PRODUCTS

2.1 GENERAL

A. For the fabrication of miscellaneous metal work items which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names, roughness and defects which impair strength, durability and appearance. Remove such blemishes by grinding or by welding and grinding prior to cleaning, treating and application of surface finishes including zinc coatings.

2.2 LADDERS AND CLIMB PREVENTION SHIELD

A. Reservoir, Exterior Ladders (Lower and Upper):

1. ANSI A14.3.

2. A36 Carbon steel, welded construction.

3. Side Rails and Support Tabs:

a. Size: ½-inch thick by 2-½ inches wide.
b. Spacing: 16 inches clear.
c. Construction: Fully welded.

4. Rungs:

a. Type: Solid rod with slip-resistant finish or gnarled rebar.
b. Size: 1-inch diameter.
c. Spacing: 12 inches on center.

5. Mounting:

a. Space rungs as shown on Drawings, minimum of 7 inches from wall surface.
b. Provide steel mounting brackets and attachments per Drawings.

6. Shop Surface Preparation and Finish: SSPC-SP10 Near-white Metal Blast, shop primed and finish coated per coatings specification.

B. Climb Prevention Shield

1. Description: 8 foot tall at ladder bottom, welded sheet steel, formed to enclose ladder siderails and rungs against tank support column when closed and to swing free of ladder rungs and siderails with minimum 1-1/2-inch clear to siderails when in open position.

2. Provide continuous steel hinge full height of enclosure shield.

3. Provide steel hasp for padlocking in closed and open position.

4. Design per Manufacturer's standard with ENGINEER approval.

5. Finish: Match ladder finish.

2.3 STAIRS

A. Meet all applicable codes and Occupational Safety and Health Administration (OSHA) requirements.

B. Minimum Design Live (Pedestrian) Load: Fabricate stair assembly to support uniform live load of 100 lb./sq. ft. and moving concentrated load of 1,000 lb./sq. ft. with deflection of stringer or landing framing not to exceed 1/180 of span.

C. Fabricate stair assembly to NAAMM AMP 510, industrial class.

D. Materials: Welded steel angle support structure and expanded metal (steel) treads and risers.

2.4 HANDRAILS

A. Maximum spacing between members shall be as directed by local code and OSHA requirements unless otherwise noted on the Drawings.

B. Railing assembly, wall rails, and attachments to resist lateral force of 500 lb. at any point without damage or permanent set. Test according to ASTM E935.

C. Construction:

1. Height: 3-foot 6-inch high minimum.

2. Outside diameter: 2 inch nominal for top rail, intermediate rail, and vertical segments.

3. Kick Plate: 1/4-inch thick by 4-inches tall.

4. Top corners of handrail are to be bent to the smallest radius possible without causing grain separation or otherwise impairing the work.

5. Radius Sections -- Roll to radii shown on Drawings.

6. Vertical segments of handrail are to be set plumb and mount as shown on Drawings or as otherwise specified.

7. Spacing between vertical segments shall be according to Manufacturer, or 8-foot on center minimum.

8. Use doubler plates (repads) at all connections to the tank shell.

D. Welded Connections:

1. Cope intersections of rails and posts, weld joints of tailings or use welding connectors, at fabricator's option.

a. Other methods of welding may be used when acceptable to the ENGINEER.

2. Weld corners and seams continuously and in accordance with the recommendations of AWS.

3. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.

4. Discoloration of finished surfaces and sharp edges will not be acceptable.

E. Materials: Surface prepared and painted in accordance with exterior tank coatings specifications.

2.5 GRATINGS, PLATFORMS, AND SUPPORTS

A. Meet all applicable codes and Occupational Safety and Health Administration (OSHA) requirements.

B. Minimum Design Live (Pedestrian) Load: Design and fabricate upper platform and stair assembly to support uniform live load of 100 lb./sq. ft. and moving concentrated load of 1,000 lb./sq. ft. with deflection of stringer or landing framing not to exceed 1/120 of span.

C. Layout:

1. Provide welded steel angle supports. Use doubler plates (repads) at all connections to the tank shell.

2. Provide removable grating sections with end-banding bars for each panel. Provide sections to facilitate removal by OWNER (two personnel) in future as required, 75 pounds each section maximum.

3. Provide grating clips to secure grating to platform support structure. Avoid dissimilar metals contact.

4. Exposed connections shall fit accurately together to form tight hairline joints.

5. Install all gratings with bearing bars spanning the shortest dimension unless shown otherwise on the plans.

6. Provide welded positioning tabs in support angles at each grating section to prevent lateral movement of grating sections.

7. Layout units to allow grating removal without disturbing items penetrating grating.

D. Penetrations:

1. Provide for notched gratings and banding for penetrations as indicated.

2. Provide banding for openings in grating of same material and size as bearing bars unless otherwise indicated.

3. Wherever bar gratings are pierced by pipes, ducts, and structural members, cut openings neatly and accurately to size and weld a strap collar of same material and size as bearing bars to the cut ends of the bars.

4. Divide panels into sections required for installation wherever bar grating platforms, runways, etc., are to be placed around previously installed pipes, ducts, and structural members.

E. Materials: Painted expanded metal (steel), design per Manufacturer.

2.6 ROUGH HARDWARE

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting systems. Acceptable manufacturers are Simpson, or approved equal.

B. Manufacture or fabricate items of sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere furnish galvanized steel washers.

2.7 MISCELLANEOUS FABRICATIONS, FRAMING, AND SUPPORTS

A. Provide miscellaneous steel framing and supports required to complete the Work.

B. Fabricate miscellaneous units to the sizes, shapes and profiles shown in the Drawings or, if not shown, of the required dimensions to receive adjacent grating, plates doors, or other work to be retained by the framing.

C. Except as otherwise shown, fabricate from structural steel shapes and plate and steel bars, all welded construction using mitered corners, welded brackets and splice plates and a minimum number of joints for field connection.

D. Cut, drill and tap units to receive hardware and similar items to be anchored to the work.

E. Equip units with integrally welded anchors for casting into concrete, bolting to structural steel or building into masonry. Furnish inserts if units must be installed after concrete is placed.

F. Galvanize all miscellaneous fabrications unless otherwise noted.

2.8 MATERIALS

A. Materials listed below shall be provided unless otherwise noted in the Drawings or other sections of these specification.

B. Steel:

1. Structural W Shapes: ASTM A992.

2. Structural Shapes: ASTM A36.

3. Channels and Angles: ASTM A36.

4. Steel Plate: ASTM A36.

    a. Steel Plate to be Bent or Cold Formed: ASTM A283, Grade C.

5. Hollow Structural Sections: ASTM A500, Grade B.

6. Structural Pipe: ASTM A53, Grade B, Schedule 40 unless shown otherwise in Drawings.

7. Bar: ASTM A36.

    a. Cold-Finished Steel Bar: ASTM A108, grade as selected by fabricator.

8. Sheet Steel: ASTM A653, Grade 33 Structural Quality.

9. Tubing: ASTM A513, Type 5, minimum 50 ksi yield strength.

10. Standard Bolts: ASTM A307; Grade A.

    a. Washers: ASTM F844.

11. High Strength Bolts: ASTM F3125, Grade A325.

    a. Washers: ASTM F436; Type 1.

12. Nuts: ASTM A563; heavy-hex type.

13. Welding Materials: AWS D1.1; type required for materials being welded.

C. Stainless Steel:

1. Bars and Shapes: ASTM A276; Type 316.
2. Tubing: ASTM A269; Type 316.
3. Pipe: ASTM A312, seamless; Type 316.
4. Plate, Sheet, and Strip: ASTM A666; Type 316.
5. Bolts, Nuts, and Washers: ASTM A354; Type 316.
6. Welding Materials: AWS D1.6; type required for materials being welded.

D. Aluminum:

1. Structural Aluminum Shapes and Plates: ASTM B308, Alloy 6061, Temper T66, Anodic Coating Class I, anodized after fabrication.

2. Aluminum-Alloy-Drawn Seamless Tubes: ASTM B210 Alloy 6063, Temper T6.

3. Aluminum-Alloy Bars: ASTM B211 Alloy 6063, Temper T6.

4. Bolts, Nuts, and Washers: Stainless steel or Steel, galvanized.

5. Welding Materials: AWS D1.1; type required for materials being welded.

E. Bolts, Nuts, and Washers for Equipment and Piping:

1. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.

2. All bolts, nuts, and washers in the tank or otherwise submerged shall be Type 316 stainless steel, including di-electric isolation as required to prevent contact between dissimilar metals using isolation sleeves and washers.

3. Carbon Steel:

    a. General: Zinc-coated, ASTM A153.
    b. Structural Connections: ASTM A307, Grade A, hot-dip galvanized.
    c. Anchor Bolts: ASTM A307, Grade A, hot-dip galvanized.
    d. Pipe and Equipment Flange Bolts: ASTM A193, Grade B-7.
    e. High Strength Bolts: ASTM A325, regular hexagon head.

4. Stainless Steel: Type 316 stainless steel, Class 2; ASTM A193 for bolts; ASTM A194 for nuts.

    a. Where stainless steel bolts are in contact with dissimilar metals, glass epoxy insulating sleeves and washers shall be used to electrically isolate the bolts.

2.9 FABRICATION

A. Workmanship:

1. Use materials of the size and thicknesses shown in the Drawings or, if not shown, of the required size and thickness to produce adequate strength and durability in the finished product for the intended use as approved by the ENGINEER.

2. Work to the dimensions shown in the Drawings or accepted on Shop Drawings, using proven details of fabrication and support.

3. Use the type of materials shown in the Drawings or specified for the various components of work.

4. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

5. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise shown in the Drawings.

6. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.

B. Fit and shop-assemble items in largest practical sections for delivery to Site.

C. Fabricate items with joints tightly fitted and secured.

D. Continuously seal join members by means of continuous welds in accordance with the recommendations of AWS, unless otherwise noted or approved.

E. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small, uniform radius.

F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

G. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

H. Loose Bearing and Leveling Plates:

1. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area.

2. Drill plates to receive anchor bolts and for grouting as required.

3. Galvanize after fabrication.

I. Miscellaneous Steel Trim:

1. Provide shapes and sizes for profiles shown in the Drawings.

2. Except as otherwise indicated, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges.

3. Use concealed field splices wherever possible.

4. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.

J. Fabrication Tolerances:

1. Squareness: 1/8-inch maximum difference in diagonal measurements.
2. Maximum Offset between Faces: 1/16 inch.
3. Maximum Misalignment of Adjacent Members: 1/16 inch.
4. Maximum Bow: 1/8 inch in 48 inches.
5. Maximum Deviation from Plane: 1/16 inch in 48 inches.

2.10 FINISHES

A. Steel:

1. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

2. Do not prime surfaces in direct contact with concrete or where field welding is required.

3. Prime-paint items with one coat, except where galvanizing is specified.

4. Coatings as specified per coating specifications.

    a. Primer paint selected must be compatible with the required finish coats of paint.

    b. At locations in contact with potable water, use only primer approved for potable water use.

5. Galvanizing for Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123; hot-dip galvanize after fabrication.

6. Galvanizing for Fasteners, Connectors, and Anchors:

    a. Hot-Dip Galvanizing: ASTM A153.
    b. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

7. Chrome Plating: ASTM B177, nickel-chromium alloy, satin finish.

8. Sheet Steel: Galvanized.

9. Bolts: Hot-dip galvanized.

10. Nuts: Hot-dip galvanized.

11. Washers: Hot-dip galvanized.

12. Touchup Primer for Galvanized Surfaces: ASTM A780 (A780M), A1. Repair Using Zinc-Based Alloys (Heat and Stick Method).

B. Stainless Steel:

1. Satin-Polished Finish: Number 4, satin directional polish parallel with long dimension of finished face.

2. Mirror-Polished Finish: Number 8, mirror polish with preliminary directional polish lines removed.

C. Aluminum:

1. Protection of All Aluminum:

    a. Aluminum surfaces in contact with cementitious, masonry or dissimilar materials, apply the following coating system:

        1) One (1) coat of epoxy primer, 1 to 2 mils dry film (D.F.).

2) Followed by two (2) coats of Bitumastic, 6 to 8 mils D.F.
3) Followed by two (2) coats of tarset material, 6 to 8 mils D.F.

D. Shop Painting

1. Shop painting of metal fabrications shall be allowed only at the sole discretion of the ENGINEER.

2. Shop paint miscellaneous metal work in accordance with coatings specifications, with the following exceptions:

   a. Those members or portions of members to be embedded in concrete or masonry.

   b. Surfaces and edges to be field welded.

   c. Galvanized surfaces.

3. Remove scale, rust and other deleterious materials before the shop coat of paint is applied.

   a. Clean off heavy rust and loose mill scale in accordance with SSPC SP-7, Brush-off Blast Cleaning.

   b. Remove oil, grease and similar contaminates in accordance with SSPC SP-1, Solvent Cleaning.

4. Immediately following surface preparation, brush or spray on metal primer paint, applied in accordance with the manufacturer's instructions or as specified below.

5. Apply one (1) shop coat of metal primer paint to fabricated metal items, except apply two (2) coats of paint to surfaces which will be inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

E. Touch-up Painting, Pre-painted Items:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas of the shop paint, and paint all exposed areas with the same material as used for shop painting.

2. Apply touch-up coatings by brush or spray to provide a minimum dry film thickness of the original coating thickness.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive Work.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal and aluminum where Site welding is required.

B. Furnish setting drawings, diagrams, templates, instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors. Supply steel items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections. Coordinate delivery of such items to the project Site.

3.3 INSTALLATION

A. Install items plumb and level, accurately fitted, and free from distortion or defects.

B. Make provisions for erection stresses. Install temporary bracing to maintain alignment until permanent bracing and attachments are installed.

C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction, including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

D. Fit exposed connections accurately together to form tight hairline joints. Grind joints smooth and touch-up shop paint coat.

E. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

F. Field-weld components indicated on Drawings and Shop Drawings. Perform field welding according to AWS D1.1 with regards to procedures of manual shielded metal-arc welding, the appearance and quality of welds made and the methods used in correcting welding work. Obtain approval of ENGINEER prior to site cutting or making adjustments not scheduled.

3.4 TOLERANCES

A. Maximum Variation from Plumb: 1/4-inch per story or for every 12 feet in height, whichever is greater, non-cumulative.

B. Maximum Variation from Level: 1/16-inch in 3 feet and 1/4-inch in 10 feet.

C. Maximum Offset from Alignment: 1/4-inch.

D. Maximum Out-of-Position: 1/4-inch.

3.5 FIELD QUALITY CONTROL

A. Welding: Inspect welds according to AWS D1.1.

B. Adjust operating hardware and lubricate as necessary for smooth operation. Replace damaged or improperly functioning hardware.

C. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.

D. Touch up factory-applied finishes according to manufacturer-recommended procedures.

3.6 FIELD TESTING SCHEDULE

A. The CONTRACTOR shall complete field testing in accordance with the following schedule. Additional source material testing shall be completed as necessary to establish the basis of field tests. The frequency of testing listed in this schedule lists the minimum number of tests per quantity of work completed by the CONTRACTOR. Testing locations to be determined by the ENGINEER.

Material to be Tested	Payment Responsibility for Testing	Minimum Testing Frequency
Weld Testing	CONTRACTOR / OWNER	As required by AWWA D100, AWS D1.1, ASME IX, or other applicable codes per CONTRACTOR's approved weld procedures, weld testing (visual inspection and non-destructive testing, as applicable) by qualified personnel shall be the responsibility of the OWNER. CONTRACTOR shall be responsible to comply with all code requirements, provide the first level of quality control over their work, and address any and all findings of OWNER-provided weld testing and inspection.

END OF SECTION

DIVISION 09 - FINISHES

SECTION 09 97 14 - STEEL WATER STORAGE TANK PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and installing protective paint systems for the interior and exterior of an existing, elevated, multi-column, welded steel potable water storage tank.

1. Interior work scope includes spot repair of coatings at locations damaged from welding to tank exterior, and tank disinfection and start-up.

2. Exterior work scope includes full tank waterjet cleaning, spot repair of coatings at locations damaged from welding and existing compromised coating areas, application of a full tank two-coat overcoat system, and application of lettering ("WOODBURN", in two locations on the elevated flat panel portion of the tank just above the catwalk level).

3. The City has lease agreements with multiple telecommunications providers to operate antennas and other equipment that is mounted on the existing tank.

   a. It is the Owner's expectation that the Contractor coordinate with the telecommunications providers as needed to facilitate the work.

   b. The Owner has taken steps to ensure the various companies' equipment is stood off from the tank support columns and elevated reservoir component to support surface preparation and coatings activities.

   c. The catwalk handrailing mounted cabling and other equipment is directly mounted. The Contractor shall provide sufficient effort and care to thoroughly execute the surface preparation and coating requirements of this Specification while leaving the equipment in place unless otherwise described on the Drawings.

B. Section Includes:

1. Surface preparation
2. Painting tank interior and exterior

C. The water tower (reservoir) is described as follows:

1. Reservoir Name: Woodburn Water Tower

2. Owner: City of Woodburn, OR

3. Location: 106 Broadway Street, Woodburn, OR 97071

4. Function: Potable water storage tank for finished water

5. Nominal Volume: 750,000 gallons

6. Dimensions (approximate): 58-foot diameter by 47-foot tall, elevated reservoir, 135-foot tall overall structure height from grade

7. Year of construction: 1964

8. Interior coating system: No record of coating system (applied in 1997 during a full blast and recoat)

9. Exterior coating system: Urethane/Epoxy/Urethane (applied 1998 during a spot repair and overcoat)

10. Telecommunications equipment: City contracts with Verizon, Sprint, and T-Mobile telecommunication agencies, and also houses equipment for various City agencies

11. Painter's appurtenances: Existing painter's plugs are installed

12. Cathodic protection system: Not applicable

D. Extent of Work:

1. Surface spot preparation and application of a protective paint system to the existing steel reservoir interior surfaces damaged by exterior welding.

2. Humidity and temperature control for the interior coating work.

3. Surface preparation including waterjet cleaning of all exterior surfaces and application of a protective paint system to the existing steel reservoir exterior surfaces, including lead abatement.

4. Installation of a non-skid surface on portions of the reservoir roof.

5. Replacement of the reservoir vent and demolition of the existing vent.

6. Replacement of the reservoir ladders and fall prevention systems, including demolition of the existing ladders, and addition of landing platforms, stairs, and angle treads.

7. Miscellaneous electrical and controls equipment modification and installation of new intrusion switches.

8. Application of lettering (“WOODBURN”, in two locations on the elevated flat panel portion of the tank just above the catwalk level).

9. Reservoir disinfection upon completion of construction.

E. Related Work Specified in Other Sections:

1. Surface preparation and application of specified coatings systems in this Section are in addition to shop-priming and surface treatment that may be specified under other sections of the Work or furnished with manufactured equipment.

2. Some items with factory-finishes or corrosion-resistant finishes may be scheduled or directed to be painted by the ENGINEER to unify a finish or color scheme at the ENGINEER'S discretion.

3. Paint all exposed surfaces whether or not colors are designated in "schedules", except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the ENGINEER will select these from standard colors available for the materials systems specified.

F. Exclusions:

1. Do not paint the following surfaces unless specified or directed elsewhere: Stainless steel, aluminum, copper, brass, bronze, and other corrosion-resistant materials (except for valve bodies and piping); multiple-coated factory-finished baked enamel or porcelain products; concealed areas such as ducts, piping, conduits, and items specified elsewhere for special linings and coatings.

2. Do not paint any surfaces scheduled for special coating or waterproofing systems in other sections of the specifications.

1.2 REFERENCE STANDARDS

A. General:

1. Without limiting the general aspects or other requirements of this Section, Work and equipment shall conform to any applicable requirements of municipal, state and federal codes, laws and ordinances governing the Work, standard specifications, and the paint manufacturer’s printed instructions and guidance documentation.

2. The decision of the ENGINEER shall be final as to the interpretation of any codes, laws, ordinances, instructions, guidance documentation, specifications and

standards referenced or contained herein, and the resolution of any conflicts between any documents.

B. American Water Works Association:

1. AWWA D102 - Coating Steel Water Storage Tanks.

C. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.

D. SSPC: The Society for Protective Coatings:

1. Good Painting Practice, SSPC Painting Manual, Volume 1.
2. Specifications and Systems, SSPC Painting Manual, Volume 2.

E. Published standards of National Association of Corrosion Engineers (NACE) pertaining to coating and coating inspections.

F. Code of Federal Regulations (CFR)

1. 29 CFR 1910 Occupational Safety and Health Standards (General Industry Standards)

2. 29 CFR 1926.62, Lead in Construction

1.3 DEFINITIONS

A. Coating Systems: Protective paint systems consisting of primer, intermediate coat(s) and finish-top coats.

B. Exterior Surfaces: All outside surfaces of the reservoir. Exterior surfaces include the reservoir roof; the reservoir exterior shell; all exterior ladders; vents; piping; roof hatches; sidewall manway access hatches; columns; and any other exterior appurtenances and surfaces not specifically excluded by this Section or elsewhere in these Specifications to receive the specified paint system.

C. Interior Surfaces: All surfaces contained within the inside of the reservoir which have contact with the stored fluid or the humid atmosphere above the stored fluid. Interior surfaces include the reservoir ceiling and associated structural supports, including joists and columns; reservoir interior shell; reservoir floor; interior ladders; overflow and associated piping; and any other interior surfaces not specifically excluded by this Section or elsewhere in these Specifications to receive the specified paint system.

D. Paints: All coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or topcoat.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum 1-week prior to commencing Work of this Section.

1. To be held with the OWNER, CONTRACTOR, ENGINEER, and paint manufacturers' representative present.

2. Review minimum acceptable atmospheric conditions under which the specified paint systems can be applied.

3. Low and high temperature limits for application work shall be determined at the sole discretion of the ENGINEER at this time.

1.5 PAINT AND COATING SYSTEMS MANUFACTURER

A. Provide the paints and coatings specified herein. Paint application shall be in strict accordance with the manufacturer's printed instructions.

B. Paint Products:

1. All paint products shall be from a single manufacturer.

2. No request for substitution shall be approved which decreases the film thickness designated or the number of coats to be applied, or which offers a change from the generic type of coating specified.

3. Painting shall be done at such times as the CONTRACTOR and ENGINEER may agree upon in order that dust-free and neat work is achieved.

4. All painting shall be in strict accordance with the manufacturer's instructions and shall be performed in a manner satisfactory to the ENGINEER.

C. Manufacturer's Representative:

1. Provide a paint manufacturer's representative and require paint manufacturer's representative to be at job site for a pre-job conference, when surface preparation is underway, when the first day's painting is in progress, and periodically during progress of the work.

D. Paint Labels:

1. Deliver paint to Site in the original sealed containers with manufacturer's name, product name, type of product, manufacturer's specification or catalog number or federal specification number, and instructions for reducing where applicable.

E. Paint Colors:

1. Colors will be selected from manufacturer's standard colors as reviewed by ENGINEER and approved by the OWNER.

2. Colors for special coatings that are limited in their availability and color selection will be chosen on the basis of manufacturer's standard colors, provided that the manufacturer's product line represents a color range comparable to similar products of other manufacturers.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Materials List: Submit a list of materials and manufacturer's standard color chart and manufacturer’s technical information including analysis and application information for each material proposed for use, federal specification number, and cross references to the specifications. Clearly identify and label each paint system with designated specification number and, within each system, identify and label the product designated for first coat and each additional coat. Submit product data/information sheets for all products proposed for use.

C. Manufacturer's Application Instructions and Surface Preparation Recommendations: Submit manufacturer's application instructions and surface preparation recommendations for use and reference at the project site.

D. Safety Data Sheets (SDS): Submit SDS’s for all products proposed for use, including paint systems, solvents, thinners, and mineral spirits to be used for degreasing, surface preparation, and thinning of paint systems for review by the ENGINEER and approval by the paint manufacturer's representative. Applicable SDS’s shall be kept on the Site for the entire time such products are present on the Site.

E. Certificate: Submit manufacturer's certificate of compliance with the specifications and standards signed by a representative in the manufacturer's employ who is authorized by the manufacturer to execute the certificate.

F. Samples:

1. Submit two paper chip samples, 2 inches square, illustrating range of colors available for each scheduled surface finishing product. The ENGINEER may

request additional samples on 12-inch square section of substrate using the required finish system.

2. Provide painted surface areas at the Site if requested for approval of main color selections.

G. Submittal Documents: Submit the above-specified materials in a single project submittal with all electronic materials.

H. Field Quality-Control Submittals:

1. Indicate results of Contractor-furnished tests and inspections including, but not limited to, ambient environmental conditions, surface profile measurements, DFT measurements, etc.

2. Provide letters of coating application acceptance from paint and coating systems manufacturer representative.

3. Provide certification letters from NACE Certified Level 2 Coating Inspector and surface preparation conformance with Specifications for any shop-coating procedures performed as may be applicable to the project.

I. Existing Lead-Based Paint Testing, Removal, Containment, Disposal, and Environmental and Personnel Protection Plans:

1. It is the Engineer's opinion that a lead-based primer was applied to the exterior surfaces of the reservoir when it was initially constructed, as evidenced by sampling results presented in the Supplementary Information portion of these Contract Documents.

2. Lead Safety (Collection/Removal/Containment/Storage/Disposal) Plan for Lead-Based Paint Coating: Provide a written plan for the collection, storage, and disposal of lead-based paint removed as part of this Project. Include in the Plan the methods to be employed for surface preparation, proposed containment, and collection of debris. At a minimum, vacuum shrouding shall be used around removal tools in combination with ground covers to contain and collect all debris. Submit the containment plan for review by the Engineer. Submittals shall be in general accordance with 29 CFR1910.62.

3. The name and address of the hazardous waste hauler and a copy of their hauling permit shall be submitted along with the name and address of the final disposal site. When the disposal is completed, a copy of the completed EPA manifest shall be submitted to the City.

4. Programs for the Protection of the Soil and Water: Submit testing and evaluation programs that will be used to confirm that the Work does not violate federal, state, or local regulations.

1.7 QUALITY ASSURANCE

A. Comply with AWWA D102.

B. Materials in Contact with Potable Water: Certified to NSF 61.

C. Obtain paint products from single source for Work specified in this Section.

D. Provide all testing equipment and conduct Field Quality Control procedures as specified in Part 3 of this Section.

1.8 PAINT DELIVERY, HANDLING, AND STORAGE

A. Container Labeling: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

B. Inspection:

1. Accept materials on Site in manufacturer's sealed and labeled containers.

2. Inspect for damage and to verify acceptability.

C. Store materials in ventilated area and otherwise according to manufacturer instructions.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Provide additional protection according to manufacturer instructions.

1.9 SAFETY AND HEALTH REQUIREMENTS

A. Comply with all applicable Oregon OSHA, Federal OSHA, EPA, and OHA regulations relating to painting/coating preparation, application, and all associated activities.

B. Conform to all applicable safety requirements set forth by manufacturer's printed instructions and applicable technical bulletins and manuals.

C. Provide and require the use of personal protective life-saving equipment for persons working within or about the Site.

D. Ladders, Scaffolding, and Rigging:

1. All ladders, scaffolding, and rigging shall be designed for their intended uses.

2. Ladders and scaffolding shall be erected where requested by ENGINEER to facilitate inspection and be moved by the CONTRACTOR to locations requested by the ENGINEER.

E. Ventilation:

1. Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof.

2. Ventilation accomplished by educting air, vapors, and other hazardous material from the confined space shall be conducted to reduce the concentration of air contaminants to the degree a hazard does not exist.

3. Forced air eduction during blast cleaning and coating application operations is mandatory.

4. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured.

F. Protective Equipment:

1. Provide for the duration of the coating/painting operations suitable personal breathing apparatus, protective clothing and safety gear for the use of the ENGINEER's on-site representative.

2. All such equipment shall be provided and maintained in excellent working order and shall be available at all times during painting and coating operations.

G. Grounding: Blasting, spray, and air hoses shall be grounded to prevent accumulation of charges of static electricity.

H. Illumination:

1. Spark-proof artificial lighting shall be provided for all work in confined spaces. Light bulbs shall be guarded to prevent breakage.

2. Lighting fixtures and flexible cords shall comply with the requirements of NFPA 70: National Electric Code for the atmosphere in which they will be used.

3. Whenever required by the ENGINEER, the CONTRACTOR shall provide additional illumination and necessary supports to cover all areas to be inspected. The level of illumination for inspection purposes shall be determined by the ENGINEER.

I. Solvents:

1. The solvents used with specified protective coatings may be explosive at low concentrations and may be highly toxic. Because of toxicity, the maximum allowable concentration of vapor shall be kept below the maximum safe concentration for 8-hour exposure and the lower explosive limit (LEL) must be strictly adhered to.

2. If existing coatings or paints to be removed contain lead or other hazardous materials, all regulations related to safety of personnel and handling of such materials shall be strictly adhered to.

J. Mixing and Application of Coatings and Paints:

1. During mixing and application of coatings and paints, all flames, welding, and smoking shall be prohibited in the vicinity.

2. When handling and mixing coatings and paints, workers shall wear gloves and eye shields.

3. Fire extinguishers of the appropriate type shall be provided by CONTRACTOR and kept at the project site during all operations.

K. Noise: Whenever the occupational noise exposure exceeds the maximum allowable sound levels, the CONTRACTOR shall provide and require the use of approved ear protective devices.

L. Notification to OWNER: Notify OWNER's Representative more than 48 hours prior to any and all on-site surface preparation and/or painting activities.

M. Dust Prevention and Control: Applicable environmental regulations for dust prevention shall be strictly enforced. Emissions from reservoir construction activities including abrasive blasting and painting shall be controlled to be within applicable environmental regulations.

1. The reservoir is located in close proximity to existing commercial development, thus the CONTRACTOR shall conduct all operations so as to confine abrasive blasting debris and paint overspray to within the bounds of the Site. Take all precautions necessary to prevent adverse off-site consequences of painting operations.

2. Any complaints received by the OWNER or ENGINEER shall be delivered to the CONTRACTOR for resolution. The CONTRACTOR shall immediately halt the work and shall take whatever corrective action is required to mitigate any such problems.

3. All costs associated with protection of off-site properties and/or correction of damage to property as a result of painting operations shall be borne directly by the CONTRACTOR at no additional expense to the OWNER.

1.10 AMBIENT CONDITIONS

A. Do not apply paint in rain, snow, fog or mist, or when steel surface temperature is below dew point as specified by coating manufacturer which will result in condensation.

B. Do not apply materials when surface and ambient temperatures are outside temperature ranges indicated by paint product manufacturer.

C. Prevent rapid changes in temperature during curing and thermal shock cracks in finish material.

1.11 WARRANTY

A. A warranty inspection will be conducted between the 10th and 12th months following completion and acceptance of all coating and painting work. The OWNER, the ENGINEER, and the CONTRACTOR shall be present at this inspection.

B. All defective work found in the warranty inspection shall be repaired at the sole cost of the CONTRACTOR in strict accordance with this Section and to the satisfaction of the ENGINEER.

C. The warranty inspection shall consist of the following:

1. The OWNER shall establish the date for the inspection and shall notify the CONTRACTOR at least 30 days in advance.

2. Interior Coating Systems:

a. The entire interior coating system, as installed under this Project, shall be visually inspected.

b. If additional inspection is deemed necessary by the ENGINEER, such inspection shall be accomplished as directed in accordance with the applicable provisions of this Section.

c. All defective coating, as well as damaged or rusting spots of the reservoir, shall be satisfactorily repaired by and at the sole expense of the CONTRACTOR.

d. All repaired areas shall then be electrically tested as specified in the Field Quality Control procedures within Part 3 of this Section.

3. Exterior Coating Systems:

    a. The entire exterior paint system, as installed under this Project, shall be visually inspected.

    b. If additional inspection if deemed necessary by the ENGINEER, such inspection shall be accomplished as directed in accordance with the application provisions of this Section.

    c. All defective, damaged or rusting areas shall be satisfactorily repaired by and at the sole expense of the CONTRACTOR.

4. The ENGINEER will prepare and deliver to the CONTRACTOR an inspection report covering the first anniversary inspection, setting forth the number and type of failures observed, the percentage of the surface area where failure has occurred, and the names of the persons making the inspection.

5. Upon completion of inspection and receipt of the inspection report as noted herein, the OWNER shall establish a date for the CONTRACTOR to proceed with remedial work. Any delay on part of the CONTRACTOR to meet schedule established by the OWNER shall constitute breach of this Contract and OWNER may proceed to have defects remedied as outlined under General Conditions.

6. Any location where the coating or paint has peeled, bubbled, or cracked and any location where rusting is evident shall be considered to be a failure of the system. The CONTRACTOR shall make repairs at all points where failures are observed by removing the deteriorated coating or paint, cleaning the surface, and recoating or repainting with the same system. If the area of failure exceeds 25 percent of the total coated or painted surface, the entire coating or paint system may be required to be removed and recoated or repainted in accordance with the original specification.

7. All costs for warranty inspection repairs shall be borne by the CONTRACTOR. The CONTRACTOR shall reserve an appropriate amount for possible repair and disinfection as no additional allowance will be paid by the OWNER for the warranty inspection and repair. The CONTRACTOR shall be responsible for disinfection of the reservoir following warranty repair work.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

A. Schedules:

1. Paint systems, surface treatments, and finishes are indicated in the "Schedules" of the contract documents or as described in this Section.

2. Prior to beginning work, the ENGINEER will furnish color schedule for surfaces to be painted.

3. Vary undercoats slightly from color of next coat.

4. The color schedule will consist of colors as selected by the OWNER and approved by the ENGINEER and from approved submittals, at the ENGINEER'S discretion.

B. Quality:

1. Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers.

2. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

C. Paint Coordination:

1. Provide topcoats which are compatible with prime coats used on the Project or which are compatible with existing topcoats on existing facilities.

2. Review other sections of these Specifications in which prime coats are to be provided to ensure compatibility of total coatings system for various substrates.

3. Upon requests from other trades, furnish information on the characteristics of finish materials proposed for use, to ensure compatible prime coats are used.

4. Provide barrier coats over incompatible primers or remove the primer and re-prime as required.

5. Notify the ENGINEER in writing of any anticipated problems using specified coating systems with substrates primed by others or on existing finishes.

D. Proprietary names used to designate colors, materials, or equipment are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products, materials, equipment, and equal color ranges of other manufacturers.

E. Federal Specifications, where used, establish the minimum acceptable quality for paint materials. Provide a written certification from the paint manufacturer that materials provided meet or exceed these minimums.

F. Color Pigments:

1. Color pigments shall be pure, non-fading, and applicable and suitable to the substrates and services indicated.

2. Pigments shall be lead free.

G. Use only thinners approved by the paint manufacturer and only within recommended limits.

2.2 SURFACE PREPARATION MATERIALS

A. Abrasives

1. Abrasives used in blast cleaning operations shall be clean, well graded, non-metallic, and free of contaminants which would interfere with adhesion of the coatings to the substrate material.

2. Selection of abrasive size and type shall be based upon the type, grade, and surface condition of the steel to be cleaned and on the finished surface to be produced for the subsequent paint system.

3. Blast cleaning abrasives shall meet or exceed the following minimum criteria:

Description	Criteria
Shape	Angular
Hardness (Mohr Scale)	8
Specific Gravity	3.3
Bulk Density (1lbs/cu. ft.)	110
Free Silica (% by wt.)	0

4. Blast cleaning abrasive particle size shall be that which will produce a 2.0-mil (.002-inch) anchor profile on the substrate metal or in accordance with recommendations of the manufacturers of the specified coating system to be applied, subject to approval by the ENGINEER.

5. Blast cleaning abrasive manufacturer:

a. Blast cleaning abrasives shall be Kleen Blast Abrasive as manufactured by Kleen Blast, Green Diamond Abrasive as manufactured by Green Diamond Sand Products or approved equal.

6. Lead Stabilizing Additives: For coatings containing lead removed by blast cleaning, a lead stabilizing abrasive additive shall be used in concentrations recommended by the additive manufacturer. Lead stabilizing additive shall be Blastox as manufactured by The TDJ Group, Fesi-Bond as manufactured by Green Diamond Sand Products or approved equal.

B. Waterjet Wash Solutions: Solutions shall consist of a 5 percent concentration of tri-sodium phosphate (TSP).

C. Tool Cleaning: Hand and power tools shall be used to adequately prepare surface areas per surface preparation specifications methods specified herein.

2.3 INTERIOR PAINT SYSTEMS

A. General:

1. Interior paint systems for wet surfaces of tanks must have been approved by the National Sanitation Foundation (NSF) under Standard 61 for indirect additives.

2. The paint systems shall conform to regulations and applicable requirements of local, State, and Federal air pollution regulatory agencies.

3. Products containing perchloroethylene will not be permitted.

B. Interior paint systems shall consist of a spot surface preparation as described in Part 3, Execution, and application of a three-coat epoxy system.

C. Coatings and sequence of their application shall be as described below:

1. Prime coat for all interior surfaces damaged by exterior welding work (i.e. repaired surfaces) including stripe coat at all affected welds, seams, joints, and angles:

a. Material: Polyamide or poly-amine epoxy

1) Tnemec Series 20 Pota-Pox
2) Approved equal with DFT per manufacturer's data sheets

b. Dry Film Thickness: 3.0 to 5.0 mils

c. Color: White

d. All coatings on weld seams, joints, angles, and/or pitted areas shall be back rolled or brushed with the prime coat.

2. Intermediate coat for all repaired surfaces, including stripe coat at all welds, seams, joints, and angles:

a. Material: Polyamide or poly-amine epoxy

1) Tnemec Series 20 Pota-Pox
2) Approved equal with DFT per manufacturer's data sheets

b. Dry Film Thickness: 4.0 to 6.0 mils

c. Color: Light blue or Beige.

d. All coatings on weld seams, joints, angles, and/or pitted areas shall be back rolled or brushed with the intermediate coat.

3. Finish coat for all repaired surfaces, including stripe coat at welds, seams, joints, and angles:

a. Material: Polyamide or poly-amine epoxy

1) Tnemec Series 20 Pota-Pox
2) Approved equal with DFT per manufacturer's data sheets

b. Dry Film Thickness: 4.0 to 6.0 mils

c. Color: White

d. All coatings on weld seams, joints, angles, and/or pitted areas shall be back rolled or brushed with the finish coat.

4. The completed finished coating system shall include aggregate DFT of 11 to 17 mils.

D. Fast-cure versions of the paint products specified above may be substituted upon approval from the ENGINEER.

2.4 EXTERIOR PAINT SYSTEMS

A. General:

1. Conform to the regulations and applicable requirements of local, State, and Federal air pollution regulatory agencies.

2. The exterior coating scheme includes the full reservoir exterior receiving a waterjet cleaning (all surface preparation shall be as described in Part 3, Execution below), followed by spot repair of all coating failures, a full prime coat, a full finish coat, and application of lettering.

B. Exterior paint system shall consist of a dry-fall elastomeric mastic waterborne acrylic / acrylic polymer system. Coatings and sequence of their application shall be as described below:

1. Spot Primer:

    a. Material: Elastomeric mastic waterborne acrylic

        1) Tnemec Series 118 Uni-Bond Mastic
        2) Approved equal with DFT per manufacturer's data sheets

    b. Dry Film Thickness: 6.0 to 8.0 mils

2. Full Prime Coat:

    a. Material: Elastomeric mastic waterborne acrylic

        1) Tnemec Series 118 Uni-Bond Mastic
        2) Approved equal with DFT per manufacturer's data sheets

    b. Dry Film Thickness: 6.0 to 8.0 mils

    c. Color: Generally the same colors as the finish topcoats, slightly different shade to see the distinction between coats. Confirm color with OWNER and ENGINEER prior to ordering.

        1) From grade up to the level just below the catwalk, including the handrail: Green, one shade different than the finish topcoat color presented below.

        2) From the catwalk up to the top of the water tower: Yellow, one shade different than the finish topcoat color presented below.

3. Finish Topcoat:

    a. Material: Waterborne acrylic polymer

        1) Tnemec Series 1029 Enduratone
        2) Approved equal with DFT per manufacturer's data sheets

    b. Dry Film Thickness: 2.0 to 3.0 mils

    c. Color: As selected by the OWNER below. Confirm color with OWNER and ENGINEER prior to ordering.

        1) From grade up to the level just below the catwalk, including the handrail: Tnemec 90GN Brahm Grass, or approved match

2) From the catwalk up to the top of the water tower: Tnemec 03YW Oat Straw, or approved match

4. The completed finished coating system over existing exterior surface and appurtenances shall include aggregate DFT per the above requirements.

5. Compatible accelerators may be used as recommended by manufacturer and as approved by ENGINEER. All such accelerators must be produced by the same manufacturers as the paint products.

6. Lettering

   a. General: Using a Pounce Pattern created by an approved supplier regularly engaged in their creation for reservoir lettering purposes (i.e. Specialty Applicator), apply lettering as described herein to two locations on the elevated reservoir, with the orientation generally as shown on the Drawings. Submit a design proof for approval prior to fabricating pattern and applying lettering to the tank.

   b. Font: Georgia Bold

   c. Material: Waterborne acrylic polymer

      1) Tnemec Series 1029 Enduratone
      2) Approved equal with DFT per manufacturer's data sheets

   d. Dry Film Thickness: 2.0 to 3.0 mils

   e. Color: Tnemec 35GR Black, or approved match

   f. Size and configuration:

      1) Total word length approximately 40 feet long

      2) "W" – 5-foot, 2-inches high, as recommended by specialty applicator

      3) "oodburn" – 3-foot, 6-inches high, as recommended by specialty applicator

      4) Kern the "W" tight to the first "o" to limit overall length

   g. Specialty Applicator:

      1) "Artist Brothers", Peter and Rolf Goetzinger
      2) Approved equal

C. Non-Skid Surfacing

1. Material: Natural, clean sand, free of soil, and other deleterious material, having hard, durable grains with 100 percent passing the No. 4 sieve.

2. Applied at all walking locations within the rooftop railing along the walkway, up to and around the center vent, as described in Part 3, Execution.

2.5 WATERJET CLEANING EQUIPMENT

A. Performance Criteria:

1. Deliver a flow rate of 3.5 gallons per minute (gpm) at a pressure of 3,000 pounds per square inch (psi).

2. Nozzle manufacture and geometry shall provide a rotating nozzle which directs the high-pressure spray at a 90-degree angle to the axis of the pressure wand.

2.6 MOISTURE CONTROL EQUIPMENT

A. Moisture control equipment shall be used on Project to complete the specified interior surface preparation and coating as specified herein.

B. Dehumidifier:

1. Design: Solid desiccant design having a single rotary desiccant bed capable of continuous operation with fully automatic operation. No liquid desiccant, granular or loose lithium chloride drying systems shall be accepted.

2. Performance Criteria:

a. Continuously deliver air with a maximum relative humidity of 11 percent.

b. Supply the space with two complete air changes per hour.

c. Supply sufficient dry air to assure that the air adjacent to the surfaces to be abrasive blasted or coated shall not exceed 35 percent relative humidity at any time during the blasting, coating, or curing cycle.

d. Capable of depressing the dew point in the space 10 degrees F below ambient air temperature within twenty minutes.

2.7 HEATING EQUIPMENT

A. Auxiliary heaters or chillers may be necessary to maintain the surface temperature at a level acceptable to the coating manufacturer's application parameters.

B. Coordination with Dehumidification Equipment:

1. Heating equipment must be coordinated with and approved for use by the manufacturer of the dehumidification equipment.

2. If is necessary to filter the air escaping the space, the filtration system must be designed to match the air volume of the dehumidification equipment in such a way that it will not interfere with the dehumidification equipment's capacity to control the space as described herein.

C. Heating Equipment:

1. Design: Only electric or indirect gas fired auxiliary heaters shall be used. No direct fired space heaters will be allowed during the blasting, coating, or curing phases.

2. Performance Criteria:

a. Equipped with controls that automatically turn the heater off if the airflow is interrupted or the internal temperature of the heater exceeds its design temperature or that of the supply duct.

b. Air heaters or refrigeration equipment are not acceptable as a substitute for dehumidification.

2.8 ELECTRICAL POWER AND GENERATOR REQUIREMENTS

A. If the operating equipment is to be electrically powered by connection to the local electrical utility, the CONTRACTOR shall be responsible for all utility arrangements. The CONTRACTOR’s attention is directed to Specification Section 01 10 00, Summary of Work, regarding temporary utilities for construction purposes.

B. If portable electric generators are used for operating equipment, including moisture control equipment, they shall include acoustic attenuation shrouds and be strategically located on site to minimize noise impact to nearby residents.

C. Noise Limitations:

1. Maximum decibel (dB) limit: Comply with all local jurisdictional requirements regarding noise levels.

2.9 ACCESS MANWAY GASKETS AND HARDWARE

A. Replace gaskets and hardware for lower access manway into reservoir riser if it is opened during construction.

B. Furnish and install galvanized steel bolts, nuts, and washers. Regular hexagon-head bolts per ASTM A307, Grade A.

C. Gaskets shall be compatible with the existing submarine style manway, NSF-61 approved, molded fluoroelastomer, 1/8-inch thickness.

D. Contractor shall field verify all dimensions prior to ordering materials.

PART 3 EXECUTION

3.1 INSPECTION

A. The CONTRACTOR, ENGINEER, and local painting manufacturer representative shall jointly inspect surfaces to receive finishes.

1. Examine surfaces scheduled to be finished prior to commencement of Work, and report conditions capable of affecting proper application.

2. At the ENGINEER's direction, correct defects prior to application of coatings systems specified herein.

3. Painting over the work of other trades does not constitute acceptance of previous work and surfaces by ENGINEER.

3.2 PROTECTION

A. Cover miscellaneous tank openings, except as required for ventilation, to avoid accumulation of cleaning residue and paint material in overflows, drains, inlet, and outlet piping.

B. Exterior Tank:

1. Cover tank vents without sealing tight to prevent contamination of tank interior.
2. Maintain ventilation of tank interior.

C. Protect equipment from abrasion and paint damage.

D. Cleaning and painting tank exterior after tank is filled is not permitted.

3.3 POST-FABRICATION AND ERECTION CUT-OUTS

A. One cut-out of the reservoir riser will be allowed for the temporary purpose of moving equipment into, out of, or off of the steel tank structure.

1. Cut-outs shall be accommodated by cutting out and re-welding an entire full-height fabricated steel shell panel section at the shell pattern layout seams.

2. Special cut-outs within a fabricated steel panel will not be allowed.

3. If a cut-out is used, the CONTRACTOR shall be responsible to provide design and implementation of sufficient stiffening methods for the steel surrounding the cut-out. Submit proposed stiffening design to ENGINEER for approval. All responsibility for replacement of panel sections to pre-construction conditions or better shall be borne by the CONTRACTOR.

B. The intent of this specification is to preserve the aesthetic appearance of existing symmetrical and uniform riser panel layouts and weld seams. It is not the intent of this specification to restrict the CONTRACTOR installing or removing equipment into or from the structure.

3.4 SURFACE PREPARATION

A. General:

1. Unless specified otherwise herein, all surface preparation, coating, and paint application shall conform to applicable standards:

a. The Society for Protective Coatings (SSPC).

1) All painting work shall be conducted in accordance with SSPC Painting Manual, Volume 1 - Good Painting Practices.

b. American Water Works Association (AWWA).

c. Manufacturer's printed instruction.

2. Skilled Craftsmen:

a. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice.

b. Continuity of personnel shall be maintained, and transfers of key personnel shall be coordinated with the ENGINEER.

3. Supervisor:

a. Provide a supervisor to be at the Site during surface preparation, paint coatings application, and disinfection operations.

b. Supervisor shall have the authority to sign change orders, coordinate work, and make other decisions pertaining to the fulfillment of the work requirements.

4. Rolling Scaffolds:

    a. Blast cleaning from rolling scaffolds shall only be performed within the confines of the interior perimeter of scaffolds.

    b. Reaching beyond the limits of the perimeter will be allowed only if the blast nozzle is maintained in a position which will produce a profile acceptable to ENGINEER.

5. Slag and weld metal accumulation and spatters not previously removed by others including the fabricator, erector, or installer shall be removed by chipping and grinding. All sharp edges shall be peened, ground, or otherwise blunted.

6. Evaluation:

    a. Surface evaluated before and after preparation will be based upon comparison with:

        1) SSPC-VIS 1, Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning.

        2) SSPC-VIS 2, Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces.

        3) SSPC-VIS 3, Guide and Reference Photographs for Steel Surfaces Prepared by Power- and Hand-Tool Cleaning.

        4) SSPC-VIS 4, Guide and Reference Photographs for Steel Surfaces Prepared by Waterjetting.

        5) SSPC-VIS 5, Guide and Reference Photographs for Steel Surfaces Prepared by Wet Abrasive Blast Cleaning.

        6) ASTM D610, Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces.

        7) ASTM D2200, Standard Practice for Use of Pictorial Surface Preparation Standards and Guides for Painting Steel Surfaces.

    b. Anchor Profile: Anchor profile for prepared surfaces shall be measured by using a non-destructive testing instrument such as a Keane-Tator Surface Profile Comparator or Testex Press-O-Film System to be provided by the CONTRACTOR.

7. The latest revision of the following surface preparation specifications of The Society for Protective Coatings (SSPC) shall form a part of this Specification:

    a. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, dirt, soil, salts, and contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.

    b. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mill scale, and loose paint to degree specified, by hand chipping, scraping, sanding, and wire brushing.

    c. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mill scale, and loose paint to degree specified, by power tool chipping, descaling, sanding, wire brushing or wire impact tools, and grinding.

    d. White Metal Blast Cleaning (SSPC-SP5): Removal of all visible rust, mill scale, paint and foreign matter by blast cleaning by wheel or nozzle (dry or wet) using sand, grit, or shot.

    e. Commercial Blast Cleaning (SSPC-SP6): Removal of all visible rust, mill scale, paint, and foreign matter by blast cleaning. Staining is permitted on no more than 33 percent of each 9-square inch (in^2) area of the cleaned surface.

    f. Brush-off Blast Cleaning (SSPC-SP7): Blast cleaning of all except tightly adhering residues of mill scale, rust, and coatings, while uniformly roughening the surface.

    g. Pickling (SSPC-SP8): Complete removal of rust and mill scale by acid pickling, duplex pickling, or electrolytic pickling.

    h. Near-White Blast Cleaning (SSPC-SP10): Removal of all visible rust, mill scale, paint, and foreign matter by blast cleaning. Staining is permitted on no more than 5 percent of each 9-in^2 area of the cleaned surface.

    i. Power Tool Cleaning to Bare Metal (SSPC-SP11): Complete removal of all rust, scale, and paint by power tools, with resultant minimum surface profile of 25 micrometers (µm) (1-mil).

    j. Industrial Blast Cleaning (SSPC-SP14): Between SP 7 (brush-off blast cleaning) and SP 6 (commercial blast cleaning). The intent is to remove as much coating as possible, but tightly adherent rust, mill scale, and coating can remain on 10 percent of each 9-in^2 area of the cleaned surface.

    k. Commercial Grade Power Tool Cleaning (SSPC-SP15): Between SP 3 (power tool cleaning) and SP 11 (power tool cleaning to bare metal). Removes all rust and paint but allows for random staining on up to 33 percent of each 9-in^2

area of the cleaned surface; requires a minimum surface profile of 25 µm (1-mil).

l. Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals (SSPC-SP16): Requirements for removing loose contaminants and coating from coated and uncoated galvanized steel, stainless steels, and non-ferrous metals. Requires a minimum 19 µm (0.75-mil) surface profile on bare metal substrate.

m. Waterjet Cleaning of Metals – Clean to Bare Substrate (SP WJ-1): Cleanest waterjetting level, requires the cleaned metal to be free of all visible oil, grease, dirt, rust and other corrosion products, previous coatings, mill scale, and foreign matter.

n. Waterjet Cleaning of Metals – Very Thorough Cleaning (SP WJ-2): Requires the cleaned metal surface to be free of all visible oil, grease, dirt, rust and other corrosion products, except for randomly dispersed stains of rust and other corrosion products, tightly adherent thin coatings, and other tightly adherent foreign matter previous coatings, mill scale, and foreign matter over no more than 5 percent of each 9-in^2 area of the cleaned surface.

o. Waterjet Cleaning of Metals – Thorough Cleaning (SP WJ-3): Requires removal of all visible contaminants as in WJ-2 above. Randomly dispersed staining as described in WJ-2 is limited to no more than 33 percent of each 9-in^2 area of the cleaned surface.

p. Waterjet Cleaning of Metals – Light Cleaning (SP WJ-4): Requires removal of all visible oil, grease, dirt, dust, loose mill scale, loose rust and other corrosion products, and loose coating. Any residual material shall be tightly adhered to the metal substrate.

8. All welds, when required, shall be neutralized with a suitable chemical compatible with the specified coating or paint materials.

9. Keep the area of Work in a clean condition.

a. Do not permit blasting materials to accumulate so as to constitute a nuisance or hazard to the prosecution of Work or the operation of the existing facilities.

b. Spent abrasives and other debris shall be removed at the CONTRACTOR's expense as directed by the ENGINEER.

c. If waste is determined to be hazardous, disposal by the CONTRACTOR shall meet requirements of all regulatory agencies for handling and disposing of such wastes as noted elsewhere in this Section.

10. Remove residue from surface preparation before paint application is begun.

    a. Blast-cleaned surfaces shall be cleaned prior to application of specified coatings or paints through a combination of blowing with clean dry air, brushing/brooming and/or vacuuming as directed by the ENGINEER.

    b. Air hoses for blowing shall be at least 1/2-inch in diameter and shall be equipped with a shut-off device.

11. Any surfaces not coated/painted the same day they are prepared to receive the specified paint systems shall be re-prepared prior to coating/painting, unless the ENGINEER-approved moisture control equipment is used by the CONTRACTOR to maintain conditions that allow extended blasting schedules prior to application of prime coats.

B. Surface Preparation, Interior Surfaces:

1. Prepare all surfaces of the reservoir interior that are to be repaired and associated interior structures according to SSPC-SP10 Near-White Blast Cleaning.

2. Anchor profile shall be measured as described elsewhere in this Section.

3. Following blast cleaning and prior to painting, the following additional operations shall be performed:

    a. Material Removal: Remove spent abrasives and existing coating waste material from all blasted surfaces. This shall be accomplished by blowing off all blasted surfaces with clean, dry air and vacuum cleaning or blooming/sweeping of all waste material.

    b. Remove or cause to be removed all traces of rust bloom or deposits of oil, grease, or other contaminants which become visible prior to application of the prime coat.

    c. Pitting Inspection and Repairs:

        1) The ENGINEER and CONTRACTOR will perform an inspection of the blasted substrate metal for identification of areas with significant pitting of the substrate metal and any surface deficiencies.

        2) Pitting of the substrate metal to a depth greater than 1/8-inch shall be ground out with a suitable grinding tool and filled with weld filler materials so that the deposited weld filler material forms a convex surface over the base metal. This convex surface shall then be ground flush to the base metal prior to any additional surface preparation and subsequent application of the prime coat.

3) Surface deficiencies identified shall be repaired to the satisfaction of the ENGINEER.

4. Humidity and Temperature Control

a. General: Humidity and temperature control, when specified and required elsewhere in this Section for interior spaces, shall be provided using appropriate specialized equipment.

b. Dehumidification: Dehumidification equipment shall be used to control the environment in the space on a continuous basis 24 hours a day during blast cleaning, coating, and coating curing unless otherwise approved by ENGINEER.

c. Heating Equipment: Auxiliary heaters or chillers may be necessary to maintain the surface temperature at a level acceptable to the coating manufacturer's application parameters.

1) Heaters and coolers shall be installed in the process air supply duct between the dehumidifier and the space as close to the space as possible.

2) The space to be controlled shall be sealed off as well as possible allowing air to escape at the bottom of the space away from the point where the dehumidified air is being introduced.

3) Maintain a slight positive pressure in the space unless the dust from the blasting operation is hazardous.

4) Do not recirculate the air from the space or from filtration equipment back through the dehumidifier when coating or solvent vapors are present.

C. Surface Preparation, Exterior Surfaces

1. All exterior surfaces of the reservoir and associated exterior structures shall be prepared with a solution to kill mildew or other biological growth prior to waterjet cleaning.

2. Waterjet Cleaning:

a. After applying bleach solution, all exterior surfaces of the reservoir and associated exterior structures shall be waterjet cleaned with a 5 percent TSP solution.

b. Waterjet cleaning equipment shall comply with requirements specified elsewhere in this Section.

c. Prepare all exterior metal surfaces according to SP WJ-4, Waterjet Cleaning of Metals, Light Cleaning. Remove all but the most tightly adherent paint per SSPC surface preparation specification. Acceptable surface preparation by waterjet cleaning shall be determined by hand-tool cleaning of adhered topcoat paint. Topcoat paint which cannot be removed by hand-tool cleaning shall be considered acceptable to receive the new paint systems specified herein.

3. Following waterjet cleaning and prior to painting, the following surface preparation of all locations of compromised coating shall be performed:

a. Spot Surface Preparation: Prepare all locations where the existing coating system has failed, is damaged, or there is visible rust or other surface contamination to SSPC SP-11, Power-tool Cleaning to Bare Metal.

b. Care shall be taken to feather the surface preparation into the existing coating to remain in order to create a surface that will easily accept the new coating system primer.

c. Follow all manufacturer requirements regarding minimum surface profile of the steel to receive the new spot primer.

3.5 APPLICATION

A. General:

1. According to SSPC Paint Application Specification PA 1 - Shop, Field and Maintenance Painting, latest revision.

2. Printed literature of the manufacturer of the coating and paint materials.

3. As further specified within this Section.

B. Ventilation: Provide for adequately ventilated enclosed rooms and spaces during painting and curing periods.

C. Thickness:

1. Apply coatings in strict conformance with the manufacturer's application instructions.

2. Apply each coat at the rate specified by the manufacturer to achieve the dry mil thickness specified.

3. If material must be diluted for application by spray gun, build up more coating to achieve the same thickness as undiluted material.

4. Correct any apparent deficiencies of film thickness by the application of an additional coat.

D. Thinning:

1. Do not thin paint unless approved by the ENGINEER.

2. Only use thinner recommended by paint manufacturer which has been determined to be compatible with specified coating system.

3. Thin paint in accordance with the manufacturer's directions.

E. Application:

1. Each application of coatings shall be applied evenly, free of brush marks, sags, runs, and no evidence of poor workmanship.

2. Care shall be exercised to avoid lapping on glass or hardware.

3. Coatings shall be sharply cut to lines.

4. Finished surfaces shall be free from defects or blemishes.

F. Interior Coatings Paint Application: By airless spray application or hand applied with rolling and brushing including back rolling or striping at welds or other irregular surfaces.

G. Exterior Coatings Paint Application: Water-based products specified herein carry manufacturer’s stated dry-fall characteristics, and are therefore considered acceptable for spray application at the CONTRACTOR’s risk.

1. Follow all manufacturer’s requirements for conditions under which spraying products is acceptable, including wind, temperature, humidity, etc. CONTRACTOR shall not spray-apply coatings at times when doing so may cause adverse effects to the surroundings.

2. Any damage to structures, vehicles, or other items impacted by the CONTRACTOR shall be remedied at the CONTRACTOR’s sole expense.

3. If application of exterior coatings by spray application is deemed to be causing negative impacts by the OWNER, they shall be within their rights to request the CONTRACTOR switch course and utilize roller application (with brushing used only as required in hard to reach areas or as otherwise necessary).

H. Brush Coats:

1. All welds, laps, edges, inside angles, and irregular surfaces shall receive a brush coat of the specified product prior to application of each complete coat.

2. Paint may be applied as a spray stripe coat and back brushed by hand.

3. Coatings shall be brushed in multiple directions to ensure penetration and coverage, as directed by the ENGINEER.

I. Non-Skid Surfaces: Applied after the full prime coat has cured.

1. A non-skid surface shall be applied to a portion of the reservoir roof surface.

2. Application:

a. Broadcast over a wet coat of the finish topcoat specified herein.

b. Following curing of coating/sand mixture, non-skid surface area shall be top coated with the same finish coating.

3. Locations:

a. Applied at all walking locations within the rooftop railing along the walkway, up to and around the center vent, 3-foot wide minimum.

J. At conclusion of each day's cleaning and coating operations, a 6-inch wide strip of cleaned substrate shall remain uncoated to facilitate locating the point of origin for each successive day's cleaning operations.

K. Curing Time:

1. Do not apply the next coat of paint until each coat is dry.

2. Test non-metallic surfaces with a moisture meter.

3. The manufacturer's recommended curing time shall mean an interval under normal conditions that is to be increased to allow for adverse weather or curing conditions.

4. Paint manufacturer's representative shall verify by cure testing the complete cure of coatings systems used for immersion service.

L. Attachments, Accessories, and Appurtenance: All attachments, accessories, and appurtenances shall be prepared and coated in the same manner as specified for adjacent structures, unless otherwise specified elsewhere in this Section or other sections of the Specifications.

M. Protection of Coated Surfaces:

1. Protective coverings or drop cloths shall be used to protect floors, fixtures, equipment, prepared surface, and applied coatings.

2. Personnel entering the reservoir or walking on the exterior roof of the reservoir shall take precautions to prevent damage or contamination of coated surfaces.

3. Care shall be exercised to prevent coatings from being spattered onto surfaces which are not to be coated.

4. Surfaces from which such material cannot be removed satisfactorily shall be repainted as required to produce a finish satisfactory to the ENGINEER.

N. Atmospheric Conditions: No coatings shall be applied under the following limitations:

1. Temperature: If temperatures are anticipated to be as noted below within eight hours after application of the coating.

   a. Epoxy Coatings: Surface to be coated is below 55 degrees Fahrenheit (F). Exceptions may be approved by ENGINEER with concurrence from manufacturer if material is “low temperature” type.

   b. Inorganic Zinc or Urethane Finishes: Surface to be coated is below 40 degrees F.

   c. When the temperature is less than 5 degrees F above the dew point.

      1) The dew point shall be measured by use of an instrument such as a sling psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychometric Tables or other instrument acceptable to the ENGINEER.

   d. When the temperature of the surface to be coated is above 125 degrees F for all coating types.

2. Surfaces: When the surfaces to be coated are wet or damp or there is the presence of rain, snow, fog, or mist.

3. If any of the above adverse conditions are present, the coating or paint application shall be postponed until conditions are favorable. The day's coating or paint application shall be completed in time to permit the film sufficient drying time prior to the onset of adverse atmospheric conditions.

3.6 SHOP QUALITY CONTROL

A. Quality assurance procedures and practices shall be used to monitor all phases of surface preparation, application, and inspection of all shop coating performed as part of this project. A NACE Certified Level 2 Coating Inspector shall oversee all shop coating performed and provide the ENGINEER with written reports on a form approved by the ENGINEER prior to work being performed.

B. Unless approved by the ENGINEER at the request of the CONTRACTOR, the application of permanent shop-applied primers will not be allowed for interior surfaces of the reservoir.

C. Procedures or practices not specifically defined herein may be used provided they meet recognized and acceptable professional standards and are approved by the ENGINEER.

D. All materials furnished and all work performed shall be subject to inspection by the ENGINEER. The CONTRACTOR shall be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship, and diligent execution of the work.

E. The following procedures shall be followed by the CONTRACTOR in the handling of shop-primed steel:

1. Curing: Upon completion of blasting and priming operations, primer on fabricated steel shall be cured sufficiently to minimize damage during handling.

2. Separation of Steel: When fabricated steel is transported, spacers and other protection shall be used to separate members to eliminate primer from being pulled off during unloading operations. If wood spacers are used, no splinters or wood particles shall remain in primed surfaces after separation.

3. Cover of Steel during Transit: Shop-primed fabricated steel shall be covered 100 percent to prevent deposition of road salts, fuel residue, and other contaminants which may be present along the route of shipment to jobsite.

4. Load Binders: Loaded steel must be bound with padded chains or ribbon binders to minimize damage to coatings during shipment.

5. Handling: Care shall be used during loading, unloading, storage, and erection operations to minimize damage to primed steel. Sliding of steel across another member shall not be permitted, except for fitting members into position during assembly.

6. Storage: Primed fabricated steel at jobsite shall not be placed on ground or on top of other steel work unless ground or steel work is covered with an approved

covering. Approved spacers shall be used to elevate steel above ground level or other steel members.

3.7 FIELD QUALITY CONTROL

A. Quality assurance procedures and practices shall be used to monitor all phases of surface preparation, application, and inspection throughout the duration of the Project. Procedures or practices not specifically defined herein may be used provided they meet recognized and acceptable professional standards and are approved by the ENGINEER.

B. All materials furnished and all work performed shall be subject to inspection by the ENGINEER. The CONTRACTOR shall be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship, and diligent execution of the work.

C. Field Inspection: CONTRACTOR shall notify ENGINEER when painting work is to be in progress in time for ENGINEER to check atmospheric conditions, surface preparation, mixing and thinning procedures, materials and thicknesses with wet film thickness gauge at frequent intervals and varied locations during the course of painting work.

D. The ENGINEER will make, or arrange to have made by others, such tests as may be deemed necessary to assure the Work is being accomplished in accordance with the requirements of the specifications.

1. Unless otherwise specified, the cost of such testing will be borne by the OWNER.

2. In the event such tests reveal non-compliance, the CONTRACTOR shall bear the cost of such corrective measures deemed necessary by the ENGINEER, as well as the cost of retesting.

3. It is understood and agreed that the performance of tests by the ENGINEER shall not constitute an acceptance of any portion of the Work, nor relieve the CONTRACTOR from compliance with the project requirements.

E. Testing Instruments:

1. Provide all inspection devices in good working condition.

2. Inspection devices shall be operated by, or in the presence of the ENGINEER with the location and the frequency basis of testing as determined by the ENGINEER.

3. Provide all instruments required for testing atmospheric conditions and shall, during painting/coating operations, perform all measurements in the presence of the ENGINEER.

    a. As a minimum, measure and record temperature, relative humidity, and dew point daily prior to beginning any painting/coating operations and again at mid-day.

    b. Measurement records shall be maintained by the CONTRACTOR on forms approved by the ENGINEER.

4. Provide all instruments required for detection of holidays and measurement of dry-film thickness of coatings and paints.

    a. Holiday detectors and dry film thickness gauges shall be available at all times until final acceptance of painting/coating application.

    b. Inspection devices shall be operated in accordance with the manufacturer's instructions.

    c. Holiday Detectors: Acceptable devices for ferrous metal surfaces include, but are not limited to, Tinker & Rasor Models AP and AP/W holiday detectors or other units approved by the ENGINEER.

    d. Dry Film Thickness Gauges: DeFelsko Positest (Type 1), DeFelsko Positector 6000 (Type 2), or other units approved by the ENGINEER.

5. Provide U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates to test the accuracy of thickness gauges.

6. The ENGINEER is not precluded from furnishing its own inspection devices and rendering decisions based solely upon its tests.

F. Thickness of Coatings:

1. Thickness of coatings and paint shall be checked with a non-destructive, magnetic-type thickness gauge.

2. Destructive Testing: An instrument such as a Tooke Gage shall be used if a destructive tester is deemed necessary.

3. The coating integrity of all coated surfaces shall be tested with an approved inspection device.

4. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations, and retested.

5. No pinholes or other irregularities will be permitted in the final coating.

G. Wet Film Thickness: Use wet film thickness gauges to ensure proper application rates to prevent over-thick coatings and curing difficulties.

H. Additional Coats: Provide additional coats of paint at no additional cost to the OWNER when mil thicknesses specified have not been obtained as determined by either dry or wet film thickness testing specified herein.

I. Painting Equipment:

1. Coating and painting equipment shall be designed for the proper application of the materials specified and shall be maintained in first class working condition.

2. Compressors shall have suitable traps and filters to remove water and oils from the air.

3. Blotter tests shall be performed at each start-up period and as deemed necessary by the ENGINEER.

4. Equipment shall be subject to approval of the ENGINEER.

J. Moisture Control Equipment: Employ to maintain conditions within the reservoir interior which allow extended blasting and painting schedules.

K. Painting/Coating Manufacturer's Representative:

1. Services of the paint/coating manufacturer's representative shall be provided at no additional expense to the OWNER.

2. Reporting from the paint manufacturer's representative shall not preclude the ENGINEER from making independent assessments of the quality of Work. The ENGINEER will make the final decision as to the acceptability of the paint/coating systems.

3. Responsibilities:

a. Make periodic site visits throughout the course of the surface preparation and the painting/coating application.

b. Schedule all site visits with the ENGINEER.

c. Minimum Site Visits:

1) Inspect typical shop and field steel preparation prior to primer applications.

2) Inspect finished primer applications prior to application of intermediate coats.

3) Inspect each intermediate coat prior to application of subsequent finish coats.

4) Inspect final coats and report to the ENGINEER the representative's assessment of the paint system's suitability and acceptability for the intended service.

d. Prepare and submit written reports directly to the ENGINEER immediately following each site visit.

1) Reports shall identify the representative's observations relative to the quality of the surface preparation and painting/coating work.

2) Reports shall address any conditions observed which have the potential to adversely impact the finished painting/coating system's integrity and performance.

e. Any such findings shall be immediately remedied by the CONTRACTOR.

L. Damaged Factory Finishes: If directed by the ENGINEER, refinish the entire exposed surfaces of factory-finished equipment that is chipped, scratched, or otherwise damaged in shipment or installation

3.8 CLEANUP

A. Remove all staging, scaffolding, lifts, equipment, and containers from the Site.

B. Remove temporary heating and ventilating facilities.

C. Coating or paint spots upon adjacent surfaces shall be removed and the entire Site cleaned.

D. All damage to surfaces resulting from the work of this Section shall be cleaned, repaired, or refinished to the complete satisfaction of the ENGINEER at no cost to the OWNER.

E. Allow a minimum of 7 days at 70 degrees F curing after application of the final coat to the tank interior before flushing, sterilizing or filling with water.

1. Utilize a recording or high/low-indicating thermometer and paint manufacturer's reference charts to determine actual cure time of products.

2. Prior to disinfection, demonstrate complete curing to ENGINEER and paint manufacturer's representative.

3. Use forced ventilation during approved workdays and hours identified elsewhere in this Section to assist curing.

F. Disinfect the tank interior according to Section 33 13 13 Disinfection of Water Utility Storage Tanks.

3.9 COLLECTION, MONITORING AND DISPOSAL OF REGULATED WASTES

A. Samples of the interior coating were not field tested for lead or other RCRA-8 hazardous materials, although they are not expected to be present. Although it is believed there is little to no lead present in the interior coating, as a precaution, all interior waste generated from surface preparation work shall be tested by the Contractor for lead content. The Contractor shall, prior to Project closeout and as a condition of final payment, furnish the Engineer with records which document that the collection, testing, containment, and disposal of any regulated wastes generated by the Contractor on this Project were executed in compliance with all applicable Federal, State, and local laws and regulations regarding worker protection, health, and safety. Any costs associated with these requirements shall be included in the Contractor’s bid and no separate payment will be made.

B. Laboratory tests performed by the Owner on paint samples removed from the reservoir exterior indicate that the existing paint system contains lead and other RCRA-8 hazardous materials, and the results are included in the Supplementary Information portion of these Contract Documents. The levels for lead (and possibly other regulated constituents) are believed to be above minimum thresholds for precautionary measures per 29 CFR 1926.62 OR OSHA, Lead in Construction.

1. Aside from material removed during waterjet cleaning and spot surface preparation, it is the intent of these Specifications to encapsulate the existing exterior coating within the new paint system specified.

2. The Contractor shall be solely responsible for implementing, monitoring, and maintaining such controls as may be necessary to ensure compliance with applicable Federal, State, and local laws and regulations regarding worker protection, health, and safety where the Contractor's operations may cause exposure to lead in concentrations above the levels identified in 29 CFR 1926.62 – Lead. The Contractor shall submit, receive approval for, and implement a Lead Safety Plan as approved by the Engineer during this Project.

3. Prior to any coatings work following approval of the Lead Safety Plan, the Contractor shall set up an approved ground cover under the affected work area, install hand wash facilities and all required postings and notifications, and

implement all other elements of the approved Lead Safety Plan. The ground cover shall capture all coatings washed off the tank during waterjet cleaning operations.

4. All exterior spot surface preparation shall be conducted with vacuum-shrouded power tools that route to hepa-filter screened storage vessels (or other equivalent measures) to protect airborne contaminants from leaving the jobsite and possibly causing harm to the surrounding public.

5. Waste generated from surface preparation work shall be tested by the Contractor for lead and other contaminant content as required. The Contractor shall, prior to Project closeout and as a condition of final payment, furnish the Engineer with Project records which document that the collection, testing, containment, and disposal of any regulated wastes generated by the Contractor on this Project were executed in compliance with all applicable Federal, State, and local laws and regulations regarding worker protection, health, and safety. Any costs associated with these requirements shall be included in the Contractor's bid and no separate payment will be made.

C. All abrasive blasting material and byproducts, paints, solvents and containers, and any other discarded materials or equipment shall remain the property of the CONTRACTOR and shall be disposed of in a manner compliant with applicable Federal, State, and local laws and regulations governing disposal of all wastes generated by the CONTRACTOR in the prosecution of this work.

END OF SECTION

DIVISION 11 - EQUIPMENT

SECTION 11 81 29 - FACILITY FALL PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the work to furnish and install fall prevention systems at each exterior fixed ladder on the tank as shown on the Drawings and as required to meet all safety and occupational code requirements.

B. The requirements of the Drawings and all other sections and provisions of the specifications are applicable to the work to be performed under this Section.

C. Section includes:

1. Rigid notched-rail ladder safety climb system.

1.2 REFERENCE STANDARDS

A. American National Standards Institute (ANSI): ASC A14.3-2008 - American Nation Standards for Ladders - Fixed - Safety Requirements.

1.3 SUBMITTALS

A. In accordance with Section 01 33 00, Submittal Procedures.

B. Product information, manufacturer’s installation, and operations instructions.

1.4 QUALITY ASSURANCE

A. Comply with local, state and federal requirements of Occupational Safety and Health Administration (OSHA) regulations and all applicable codes and standards.

B. Install according to manufacturer’s instructions.

C. Provide all system components from a single manufacturer that will assure compatibility of all components.

PART 2 PRODUCTS

2.1 FALL PREVENTION SYSTEM

A. Fall prevention systems shall be rigid notched rail ladder systems which include rail, shuttle, harness, double 4-foot shock absorbing lanyards, permanent extensions with

pivot dismounts, and all mounting, installation and alignment hardware and other accessories as may be necessary to provide a complete and operational system.

B. A permanent extension with pivot dismount shall be provided at the top of each ladder fall prevention system. The extension shall allow a person to step off of the ladder and onto the adjacent surface prior to unclipping from the cable.

C. Rail, mounting hardware, and appurtenances shall be Type 304 stainless steel for exterior ladder systems.

D. UV-resistant (EPDM, or equal) protective bushings shall be provided at all exterior ladder rung connections to prevent damage to coatings.

E. Provide two complete assemblies, including but not limited to the following:

1. Rail with clamp attachments and permanent pivot dismount extension (one system for lower ladder, one system for upper ladder).

2. Harnesses, in sizes to be determined by the OWNER during construction, with double 6-foot shock absorbing lanyards.

3. Shuttles for connecting to and operating system.

F. Manufacturer:

1. Fall prevention system (rail, mounting attachments, pivot dismount sections) shall be Saf-T-Climb with Saf-T-Grip shuttle as manufactured by Miller by Honeywell, or approved equal.

2. Harnesses shall be Saf-T-Climb Universal Harness with SofStop Lanyard as manufactured by Miller by Honeywell, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install fall prevention systems according to manufacturer's instructions.

B. Provide a copy of fall prevention system operation instructions.

END OF SECTION

DIVISION 26 - ELECTRICAL

SECTION 26 01 00 - BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work consists of furnishing all labor, materials, services, tools, and other equipment necessary for the construction, installation, connection, and testing of all electrical work for this project as shown on the drawings or specified herein.

B. This project includes the complete electrical installation for reservoir security.

1.2 INTENT OF DRAWINGS AND SPECIFICATIONS

A. Riser and other diagrams are schematic only and shall not be used for obtaining quantities.

B. The electrical drawings do not show complete details of the site conditions. The CONTRACTOR shall check actual conditions.

1.3 COORDINATION OF WORK

A. The CONTRACTOR shall plan work in coordination with OWNER Operations.

B. The CONTRACTOR shall field verify all dimensions of equipment to be installed or provided by others or by this contract so that correct clearances and connections may be made between the work installed by the CONTRACTOR and equipment installed or provided by others.

C. The CONTRACTOR shall arrange all conduit runs so that they do not interfere with duct work, structural members, equipment access openings, etc.

D. All working measurements shall be taken from the sites, checked with those shown on the drawings, and if they conflict, reported to the ENGINEER at once, and before proceeding with the work. Should the CONTRACTOR fail to comply with this procedure, the CONTRACTOR shall alter work at their own expense as directed by the ENGINEER.

E. No extra payments will be allowed where obstructions in the work of other trades, or work under this contract requires offsets to conduit runs.

F. The CONTRACTOR is responsible for all alterations in the work to accommodate equipment differing in dimensions or other characteristics from that shown or specified.

1.4 SUPERVISION

The CONTRACTOR shall maintain adequate supervision of the work and shall have a responsible person in charge at the site during all times that work under this contract is in progress, or when necessary for coordination with other work.

1.5 CODES

Work shall conform to the National Electrical Code, State codes, and other applicable codes, even though not specifically mentioned for each item. These shall be regarded as the minimum standard of quality for materials and workmanship.

1.6 WORKMANSHIP

A. All work shall be performed by personnel skilled in the particular trade. Workmanship shall conform to the standards of the NEC.

B. The ENGINEER shall be the sole judge as to whether or not the finished work is satisfactory; and if in his judgement any material or equipment has not been properly installed or finished, the CONTRACTOR shall replace the material or equipment whenever required, and reinstall it in a manner entirely satisfactory to the ENGINEER without any increase in cost to the OWNER.

1.7 PERMITS, FEES AND SERVICE CHARGES

The CONTRACTOR shall obtain all permits and pay all fees, including any line extension fees from any utility company.

1.8 CONTRACTOR'S RECORD DRAWINGS

The CONTRACTOR shall maintain a neatly marked set of record drawings. In addition, the locations of panels, field mounted instruments and panels, terminal boxes, junction boxes and any other materials included in this contract shall be shown. Drawings shall be kept current with the work as it progresses and shall be subject to inspection by the ENGINEER at any time.

PART 2 PRODUCTS

2.1 MATERIALS

See subsequent electrical sections and the drawings for specified materials.

2.2 PORTABLE OR DETACHABLE PARTS

A. The CONTRACTOR shall retain in possession and shall be responsible for all portable and detachable parts or portions of installations such as fuses, key locks, adaptors, blocking chips, and inserts until completion of his work.

B. These parts shall be delivered to the ENGINEER and an itemized receipt obtained. This receipt, together with 2 copies of the final inspection certificate, shall be attached to the CONTRACTOR's request for final payment.

C. All equipment shall be demonstrated to operate in accordance with the requirements of this specification and the manufacturer's recommendations.

PART 3 EXECUTION

3.1 SUPPORT BACKING

Provide any necessary backing required to properly support all fixtures and equipment installed under this contract.

3.2 CUTTING, PATCHING, AND FRAMING

A. The CONTRACTOR shall determine in advance the locations and sizes of all sleeves, chases, and openings necessary for the proper installation of his work.

B. Whenever practical, inserts or sleeves shall be installed prior to covering work. Cutting and patching shall be held to a minimum. All required holes in concrete construction shall be made with a core drill and patched with non-shrink grout.

C. Cutting, fitting, repairing, and finishing of carpentry work, metal work, or concrete work, and the like, which may be required for this work shall be done by craftsmen skilled in their respective trades. When cutting is required, it shall be done in such a manner as not to weaken walls, partitions, or floors; and holes required to be cut in floors must be drilled without breaking out around the holes.

3.3 TESTS

A. The CONTRACTOR shall furnish all labor, material, instruments, and tools to make all connections for testing of the electrical and instrumentation installation. All equipment shall be demonstrated as operating properly prior to the acceptance of the work. All protective devices shall be operative during testing of equipment. The tests shall be made under the supervision of the ENGINEER. All deficiencies or unsatisfactory conditions as determined by the ENGINEER or inspecting authorities shall be corrected by the CONTRACTOR in a satisfactory manner at his own expense.

B. After visual inspection of joints and connections and the application of tape and other insulating materials, all sections of the entire wiring system shall be thoroughly tested for shorts and grounds. A log of results for each circuit shall be kept by the CONTRACTOR and presented to the ENGINEER.

C. A phase rotation check shall be made to demonstrate that all power receptacles, service feeders, and main power feeders have the same A-B-C phase rotation and ground relationships.

D. Equipment shall be tested by operating all electric motors, relays, controls, switches, heaters, etc. sufficiently to demonstrate proper installation and electrical connections. Control and emergency conditions shall be artificially simulated where necessary for complete system or subsystem test.

E. Insulation resistance measurements of each circuit shall be made with loads connected and contactors, if any, blocked closed to give complete circuits. Insulation resistance of complete circuit shall be measured from the circuit breaker load terminals with the breaker open. A log of complete results shall be prepared by the CONTRACTOR and presented to the ENGINEER. Values of resistance shall be 10 megaohms or greater.

END OF SECTION

SECTION 26 01 01 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

The work consists of furnishing all labor, materials and equipment required for electrical work shown on the Drawings and as further described in these specifications.

1.2 REGULATIONS AND PERMITS

A. The CONTRACTOR shall comply with all applicable codes, ordinances, and regulations, including the National Electrical Code, National Electrical Safety Codes, and the State of Oregon.

B. The CONTRACTOR shall obtain a Certificate of Electrical Inspection from the local inspecting authority and submit to the owner upon completion of the project.

1.3 EXCAVATION AND BACKFILL

A. Perform all necessary excavation and backfilling for buried conduits and conductors as specified.

B. No backfilling shall be done until all direct burial cables, conduits, and penetrations to be covered have been inspected and approved.

PART 2 PRODUCTS

2.1 QUALITY OF MATERIALS

All contract materials shall be new, of proven quality, and without imperfections or blemishes. All material not specifically detailed in this specification required to accomplish the completion of this contract shall be of compatible quality to the item specified and be approved by the ENGINEER. All materials shall be products of manufacturers regularly engaged in production of such equipment and shall be of the manufacturer's latest design. Where two or more units of the same classes of equipment are required, these units shall be of the same manufacturer. All material and equipment shall be per NEMA, ANSI, IEEE or ICEA Standards as applicable, except as modified by these specifications. All material shall be UL labeled as applicable.

2.2 RACEWAYS

A. All raceways shall be UL approved for the application.

B. Rigid steel conduit -- Provide zinc-coated rigid steel conduit conforming to Federal Specification WW-C-581.

C. Flexible metallic conduit -- Provide liquid tight flexible conduit, zinc-coated steel core, extruded gray PVC cover, UL approved, Sealtite type "UA" or Liquatite type "LA", or equal. Where permitted by local inspection authority, sizes larger than 3-inch shall be Sealtite type "EF", or Liquatite type "LT", or equal.

D. Rigid PVC conduit -- Provide rigid polyvinyl chloride (PVC) conduit, Schedule 80, UL listed for concrete encased and direct burial underground. Rigid PVC conduit, including couplings, elbows, and nipples, shall conform to the requirements of the latest edition of Federal Specification WW-C-1094, and NEC.

2.3 CONDUIT FITTINGS

Provide conduit fittings as follows unless otherwise noted or detailed. Catalog numbers shown are RACO//Appleton Electric Company unless otherwise noted. Similar products of other manufacturers are equally acceptable.

Rigid Conduit Insulating Bushings	Series 1400//Series BBU
Rigid Conduit Set Screw Fittings	3010-3022, 3102-3116// Series SRNTC and SNTCC
Flexible Metallic Conduit Fittings	Pylets (Pyle-National)//Unilets
Expansion Joints	Adalet Type STR//OZ Type AX or TX
Conduit Wall Entrance Sealing	OZ Type FSK-GALV Fittings
Conduit Seal-Offs	OZ Type FSK-GALV

2.4 OUTLET BOXES

Provide outlet boxes as follows unless otherwise noted or detailed. Catalog numbers shown are Appleton Electric Company. Similar products of other manufacturers are equally acceptable.

Lighting Outlet Boxes	FS/FD Series
Same (exterior and damp locations)	As required by fixture
Switch, Receptacles, Telephone, and Junction Boxes	FS/FD Series with cast cover and gasket

Provide extension rings as required and increase the above specified minimum box sizes to conform to allowable fill permitted by the code.

For boxes installed in concrete or flush in walls or ceilings below finished grade, provide cast FS/FD series boxes.

2.5 PULL BOXES

Provide code gage galvanized sheet steel pull boxes as shown on the drawings. Provide removable screw cover on the largest access side of the box unless otherwise detailed. Where cast boxes are indicated or specified, provide conduit entrances with threaded hubs. Provide stainless steel screws at all exterior and damp locations. Where pull boxes are required but not shown, provide pull boxes as specified above sized per NEC requirements.

2.6 CONDUCTORS

A. This specification covers all conductors not specified in other sections. All conductors and cable shall conform to UL, Federal Specification J-C-30, or ICEA as applicable. Provide new cable manufactured within one year of installation.

B. 600-volt power, lighting, and control cable -- Provide stranded copper conductors unless otherwise specified, conforming to Federal Specification J-C-30. For cable type TW or THW, provide insulation conforming to Federal Specification J-C-30. FOR types THHN or THWN, provide insulation conforming to UL-83.

For type RHW and RHH, provide insulation conforming to ICEA S-19081. For type XHHW, provide insulation conforming to ICEA S-66-524. Provide neoprene jacket on RHW-RR type cables in accordance with ICEA S-19-81 specifications.

Provide control cable with 600-volt TW type insulation for all multi-conductor, Class 1 remote control and signal wiring unless otherwise specified. Provide overall jacket complying with ICEA S-61-402. Color code control cable in accordance with ICEA S-61-402, Table 5-1.

C. Minimum conductor size -- Provide No. 12 AWG minimum branch circuit wire size. Provide No. 14 AWG control circuits unless otherwise specified or required by over-current protection. Provide smaller conductor sizes for specific application where shown on the drawings.

D. Class 2 remote control and signal conductors -- Provide cables UL approved for such use. Voltage rating shall be not less than 600 volts. Utilize multi-conductor cables with like or related functions generally grouped together. Unless otherwise specified or shown on the drawings, utilize No. 14 AWG conductors.

E. Instrumentation cables -- Multi-conductor cables shall have the quantity and size of conductors shown on the plans. Individual conductors shall be bare soft annealed copper Class B, 7-strand concentric per ASTM B-8. Individual conductor insulation shall be flame-retardant per UL 13, 15 mils nominal thickness, with a 105 degree C temperature rating. Conductor pairs shall be uniquely identified according to manufacturer's standard method. Overall cable assembly shall have 2.35 mils

(minimum) aluminum-polyester tape shield overlapped for 100% coverage and provided with a 7-strand tinned copper drain wire the same size as an individual conductor. The jacket shall be flame-retardant per UL 13, with a 105°C temperature rating and a rip cord laid longitudinally under the jacket to facilitate removal. Conductors shall be twisted pairs and the cable shall be rated for operation to 300 volts.

F. Twisted shielded pairs (TSP) shall be 7 or 19-strand, No. 18 AWG, tinned-copper conductors, 600 volt, individually insulated with color-coded cross-linked polyethylene, insulated conductors twisted into a pair, pair-shielded with a spirally applied aluminum/mylar tape shield and a 7-strand drain wire. Cable to have an overall 45 mil jacket.

PART 3 EXECUTION

3.1 CONDUIT INSTALLATION

A. Conduit buried in earth -- Install raceways to provide not less than 24 inches cover to finished grade. Pitch to drain away from buildings; avoid trapped runs. Grade trenches and place pipe bedding material to provide uniform trench bottom for raceway support. Buried raceway shall not be smaller than 1 inch and shall be Schedule 80 PVC as specified.

B. Provide rigid steel conduit for raceways embedded in structural reinforced concrete; in hazardous areas; in exposed locations; for sizes 1-1/4-inch and larger; and at all locations not otherwise specified.

C. Provide flexible metallic conduit connections at all motors and transformers plus other equipment connections subject to vibration. Utilize suitable fittings, keep route neat, at nominal right angles, and in conformance with equipment lines.

D. Exposed conduit shall be run in straight lines parallel to column lines, walls, or beam. Where conduit is grouped, the bends and fittings shall be installed to present an orderly appearance. Unnecessary bending or crossing shall be avoided.

E. Supports for exposed conduit runs shall be furnished and installed within 3 feet of each box. Supports shall be secured by means of expansion inserts in concrete.

F. Conduit and fittings shall be properly protected during the construction period against mechanical injury from any cause. Conduit which extends out of floors, walls or slabs shall be boxed or otherwise protected and ends shall be capped with metal pipe plugs.

G. Rigid conduit joints and connections shall be made thoroughly watertight and rustproof by means of thread compound which will not insulate the joint. Each

threaded joint shall be thoroughly cleaned to remove all the cutting oil before the compound is applied. Running threads will not be allowed. Erickson couplings may be used in dry and exposed locations provided that they are installed with fixed threaded connection at the top of vertical runs.

H. Size -- Use raceways no smaller than ¾-inch except that ½-inch or larger may be used for switch legs; and control circuit wiring specified to be No. 14 AWG wire.

I. Raceways in plain concrete -- Do not place raceways in cement toppings on structural floors without special approval. Install, however, in nonreinforced concrete headers and similar locations provided for their installation and in cement fill on precast concrete roofs.

J. Raceways in reinforced concrete -- Do not displace reinforcing steel to accommodate the installation of raceways and outlet boxes. In general, locate all embedded conduits in the physical center of the particular section of concrete. Wooden plugs inserted in concrete or masonry are not acceptable as a base for raceway fastenings. Provide raceways embedded in reinforced concrete in conformance with the following usual types of conditions unless otherwise instructed by the ENGINEER. Particular attention is called to the fact that there are many extenuating conditions where the CONTRACTOR may be instructed during the course of the project not to place embedded conduits in certain areas, generally due to the possibility of unsightly cracking or for structural reasons. This instruction does not entitle the CONTRACTOR to extra compensation. Special approval will be required for any condition not covered by the following usual conditions:

Location	Maximum Allowance
Columns	Displacement of 4% of plan area of column
Floors and walls	Displacement of 1/3 of thickness of concrete, spaced not less than three diameters o.c.
Beams and joists	Displacement of 1/3 of least dimension, spaced not less than three diameters o.c.
Sleeves through floors and walls	Two-inch maximum pipe size, not less than three diameters o.c.

K. Raceways entering the facility below grade -- Provide raceways with galvanized cast iron wall entrance seals having a watertight sealing gland assembly.

3.2 WIRE AND CABLE INSTALLATION

A. Conduit shall be thoroughly cleaned of all foreign material just prior to pulling the wire or cable. Lubricants shall be compounds specifically prepared for cable pulling and shall not contain petroleum or other products which will affect cable insulation. Lubrications shall be UL approved.

B. Splicing of conductors No. 8 AWG or smaller shall be by preinsulated spring-pressure connectors, such as "Scotchlok" Types Y, R and B, Ideal "Wingnut" or equal. All uninsulated splices, joints and free ends of conductors shall be covered with rubber and friction tape or high-dielectric strength, plastic tape. All splices in underground boxes or direct buried shall be insulated and waterproofed, using scotchcast epoxy splicing compounds suited for the purpose.

C. Terminal strips in panels shall be identified throughout the equipment utilizing a unique numbering system.

D. Wires terminating on terminal strips shall be tagged with the designation of the terminal strip and the number of the terminal to which they are connected. Wires shall be numbered with Brady nylon wire markers at all accessible locations. Wire markers shall be permanent type. Submit shop drawings of the type to be used for approval.

E. Wiring diagram shall show the terminal strips, terminals, and their identifying designations.

F. Color code

1. All secondary service, feeder, and branch circuit conductors shall be color coded as follows:

240/120 Volt	Phase
Black	A
Red	B
White or Gray	Neutral

24 Volt DC	
Blue	(+)
Yellow	(-)

2. All No. 12 and No. 10 branch circuit conductors shall have solid color compound or solid color coating. All neutral sizes shall have solid color compound or solid color coating.

3. No. 8 AWG and larger phase conductors shall have either:

   a. Solid color compound or solid color coating; or

   b. Stripes, bands, or hashmarks of colors specified above; or

   c. Colored pressure-sensitive plastic tape. Tape shall be applied in half overlapping turns for a minimum of 3 inches for all terminal points, and in all junction boxes, pull boxes, troughs, manholes, and handholes. Tape shall be 3/4-inch-wide with colors as specified above. The last two laps of tape shall be applied with no tension to prevent possible unwinding. Where cable markings are covered by tape, apply tags to cable stating size and insulation type.

G. Installation -- 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. For type THHN/THWN conductors, avoid abrasion and damage to outer jacket. Wiring showing damage after installation shall be replaced.

H. 600-volt conductors -- Provide one of the conductor types indicated for the function and location listed below unless otherwise indicated on the drawings or approved by the ENGINEER. Provide ground and neutral wires identical to circuit wires.

I. Observe code restrictions with respect to wet and dry locations. At the CONTRACTOR's option, conductors with insulation systems rated for high operating temperatures may be substituted for lower temperature rated conductors. However, no reduction in conductor size will be permitted from that indicated. When using small diameter wire, do not reduce conduit size below that required for Type THW as shown in NEC Table 3A.

Location	Insulation Type	
	THW, THWN	RHH, THHN, XHHW
Lighting circuits, interior		
General	x	x
Special fixture requirements	x	x
Within 3 inches of ballast		x
Receptacle and single-phase	x	
Motor circuits		
Interior	x	

3.3 EQUIPMENT INSTALLATION

A. Boxes and cabinets shall be installed on the surface, level and plumb and affixed to the surface with expansion inserts in concrete and machine screws to tapped holes in metal surfaces.

B. Interconnections between equipment shall be made per manufacturer's wiring diagram. All wiring shall be clearly labeled and external connections in control panel and remote cabinet brought out to terminal blocks. All equipment connected to telephone lines shall be protected against voltage transients.

END OF SECTION

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

SECTION 28 31 00 - INTRUSION SWITCHES

PART 1 GENERAL

1.1 SUMMARY

A. This Section covers all work necessary for furnishing, installing, adjusting, testing, documenting, and starting up the complete and operational Instrumentation and Control (I & C) Systems specified and shown of the Drawings.

B. Section Includes:

1. Intrusion switches at the lower ladder entrance, and the roof access hatch.

C. Major constituents for the System include, but are not limited to, all materials, equipment, and work required to implement a complete and operating System. The System shall include primary elements for process variable measurements, analog display and control elements, and discrete display and control elements.

D. Additional constituents for the System include, but are not limited to, all materials, equipment and work related to implementing System communications. System communications includes sending and receiving data between components of the System, and monitoring and alarming status of System components. This shall include the supply, installation, and testing of components and cabling required for System operation, and components specified in this Section.

E. Responsibility for Complete System:

1. The CONTRACTOR shall be ultimately responsible and shall provide for all labor, equipment, and materials that are necessary for the supply, installation, certification, adjustment, testing, and start-up of a complete coordinated System that shall reliably perform the specified functions.

2. The OWNER shall be responsible for integrating the control panel into OWNER's existing SCADA system. The OWNER shall participate in the testing of the System (including PLC, SCADA, and Operator Interface systems) and all associated field devices at start-up.

1.2 REFERENCE STANDARDS

A. NFPA – National Fire Protection Association

1. NFPA No. 70, NEC - National Electrical Code.
2. NFPA No. 79, Electrical Standard for Industrial Machinery.

B. ISA – Instrumentation, Systems, and Automation Society.

C. ICS – NEMA (National Electrical Manufacturer's Association) Industrial Control and Systems including:

1. ICS-1 – General Standards for Industrial Control and System.
2. ICS-2 – Standards for Industrial Control Devices, Controllers and Assemblies.
3. ICS-3 – Industrial Systems.
4. ICS-4 – Terminal Blocks for Industrial Control Equipment and Systems.
5. ICS-6 – Enclosures for Industrial Controls and Systems.

D. ANSI/IEEE – American National Standards Institute/Institute for Electrical and Electronics Engineers.

E. State and Local codes and ordinances.

F. NETA – National Electrical Testing Association.

G. Electrical Testing Laboratory Labeling

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. The intent of the submittal requirements herein is to ensure complete project scope coverage and does not relieve the supplier from fulfilling any specified requirements. The submittal shall consist of legible printed text and high-quality CAD drawings, bound, with index tabs that identify major sections of the document. The submittal shall address all hardware and software to be supplied.

C. Catalog information shall be submitted for all equipment, regardless of whether it is of the same manufacturer as that listed in the Specifications.

D. Where allowed, requests for substitution must be made in writing, and shall include corresponding copies of all literature and information required for evaluation of the proposed substitution. This must be done within 30 days of the contract award.

E. All submittals shall be complete, neat, and orderly. Partial submittals are not acceptable and may be returned, without being reviewed, for correction. All components shall be referenced by the instrument name tag designations.

F. If in the opinion of the ENGINEER a submittal is not clear, it will be returned to the CONTRACTOR, and it shall be revised and resubmitted within 15 days.

G. Before any components are fabricated, and/or integrated into assemblies, or shipped to the site, the CONTRACTOR shall furnish to the ENGINEER, and receive their review

of full details, shop drawings, catalog cuts, and such other descriptive matter and documentation as may be required to fully describe the equipment and to demonstrate its conformity to these Specifications. The decision of the ENGINEER upon the acceptability of any submittal shall be final.

H. Equipment List:

1. All equipment to be supplied shall be listed, followed by descriptive data sheets. The Equipment List shall include:

    a. Each component's name and tag number;
    b. Manufacturer;
    c. Model number;
    d. Description of the operation;
    e. Quantity to be supplied; and
    f. Any special setup and operation and maintenance characteristics.

2. Similar components used in the project shall be the product of a single manufacturer.

3. Service and replacement components for all equipment shall be normally stocked and readily available from service centers and suppliers within a 100-mile radius of the project site.

I. Description and operation of all remote site hardware and the configuration features of the I/O and local control loop characteristics.

J. Catalog information, descriptive literature, wiring diagrams, and shop drawings on all electrical devices, components, panels, and enclosures furnished under this Section.

K. Individual data (or specification) sheets shall be provided for all components provided under this section. The purpose of these data sheets is to supplement the generalized catalog information provided by citing all specific features for each specific component (e.g. materials of construction, special options included, calibration data including scale and range, etc.). Each component data sheet shall bear the component name and instrument tag number designation.

L. Panel elementary diagrams of pre-wired panels. Show all signals, analog and discrete, and all auxiliary devices such as relays, terminals, alarms, fuses, lights, fans, heaters, etc. Diagrams, device designations, and symbols shall be in accordance with NEMA ICS 1-101.

M. Panel elementary diagrams of panel assemblies. Show all signals, analog and discrete, and all auxiliary devices such as relays, terminals, alarms, fuses, lights, fans, heaters, etc. Diagrams, device designations, and symbols shall be in accordance with NEMA ICS 1-101.

N. Interconnecting wiring diagrams, with terminal identification numbers and external wire numbers, for the System. This diagram shall include all intermediate terminations between field elements and panels (e.g. terminal junction boxes, motor control centers, etc.). This diagram shall be coordinated with the CONTRACTOR's electrical subcontractor and shall bear his mark showing that this has been done. Diagrams, device designations, and symbols shall be in accordance with NEMA ICS 1-101.

O. Loop diagrams, with terminal identification numbers and external wire numbers for each control loop in the System. This diagram shall include all intermediate terminations between field elements and panels (e.g. terminal junction boxes, motor control centers, etc.). This diagram shall be coordinated with the CONTRACTOR's electrical subcontractor and shall bear his mark showing that this has been done. Diagrams, device designations, and symbols shall be in accordance with ISA Standards and Practices for Instrumentation.

P. Calibration:

1. Provide calibration information of any supplied instrumentation, including calibrated set point.

2. Provide documentation of all field-calibrated instruments and equipment.

3. Provide shop-calibration documentation after initial submittal has been approved.

4. Provide field-calibration documentation after installation before final testing.

5. Information on any modifications or further details as may be required to supplement the contract documents and adequately define the installation of the equipment.

1.4 OPERATION AND MAINTENANCE MANUALS

A. Provide detailed sets of electronic Operation and Maintenance (O&M) manuals for the equipment, with complete information concerning the operation of the System within 30 days after start-up of the equipment. The O&M manuals shall include information related to diagnosis, down to the module and card replacement level.

B. The manuals shall include all project specific information and shall be furnished electronically in PDF, ACAD DWG, or Microsoft Word compatible formats, as required. The O&M Manuals shall contain descriptive material, drawings, and figures.

C. The manuals shall include operation and maintenance literature for the entire System and all components provided. The submitted literature shall be in sufficient detail to facilitate the operation, removal, installation, adjustment, calibration, and maintenance of each component provided.

D. The manuals shall include data sheets for all significant equipment used in the System. Significant equipment is defined as equipment performing a function other than simple interconnection. The data shall include, as a minimum, the component name, manufacturer, model number, quantity, and any special O&M characteristics.

E. Factory calibration data sheets shall be included for all transmitters and transducers.

F. The manuals shall include wiring diagrams for all components provided. These wiring diagrams shall clearly show all terminals, terminal block number designations, and wire numbers. Diagrams, device designations, and symbols shall be in accordance with NEMA ICS 1-101.

G. The manuals shall include final “as-built” drawings of equipment. These drawings shall include:

H. Layout drawings for each panel shall include overall dimension details for each component and all door mounted operator devices including nameplate designations.

I. Interconnecting wiring diagrams of all equipment installed or connected under this contract.

J. The manuals shall include a detailed functional description of the System. Control loops shall be fully described in the functional description. A detailed description of remote site features such as I/O and local control loops shall be included.

K. The manuals shall include a listing of all recommended spare parts.

1. Spares and Expendables Recommendations: The CONTRACTOR shall provide a list of recommended spares and expendable items in sufficient quantities to sustain the System for a period of one (1) year after acceptance.

2. In addition to the Spares and Expendables List, the CONTRACTOR shall provide a Component Parts List. The Component Parts List shall be a complete parts list for the entire System and shall have the following features:

    a. All components shall be grouped by component type, with the component types identified in a similar manner to the component identification code used in these Specifications.

    b. All components shall be listed with their exact and complete manufacturer's part number, including all options and accessories.

L. All components shall be identified with their complete tag number as shown in these Specifications, or as modified or assigned by CONTRACTOR and approved by the ENGINEER.

M. All components without tag numbers shall be grouped within component type by manufacturer's part number. Exact quantities shall be listed for each part number.

PART 2 PRODUCTS

2.1 GENERAL

A. Analog signals shall be 4 to 20 mA DC conforming to the compatibility requirements of ISA Standard S50.1, and shall be Type 2 two-wire, unless otherwise noted. Transmitters shall have a load resistance capability conforming to Class L. Transmitters and receivers shall be fully isolated.

B. Discrete signals are two-state logic signals of two types: control and alarm. Control and alarm signals shall utilize 120 VAC or 24VDC sources. All alarm signals shall open on alarm condition, and have isolated contacts rated for 10 amperes at 120 VAC, unless otherwise shown or specified.

C. Nameplates, name tags, and service legends shall be used to identify all major components provided under this section. Major components are defined as components that perform a function other than simple interconnection.

1. Nameplates are defined as engraved rigid laminated plastic plates bearing the entire identifying text or ISA tag number of the component. Nameplates shall be securely mounted under or near a mounted component.

2. Name tags are defined as stamped stainless steel tags, unless otherwise noted, bearing the entire identifying text or ISA tag number of the component. Nametags shall be securely attached to the component.

3. Service legends are defined as engraved rigid laminated plastic legends bearing the entire identifying text or ISA tag number of the component integrally mounted on a panel face mounted instrument.

4. Service legends and panel interior mounted nameplates shall be black with white letters, and letter height shall be minimum 3/16-inch high characters, unless otherwise noted.

5. Panel exterior mounted nameplates shall be black with white letters, and letter height shall be minimum 3/8-inch high characters, unless otherwise noted.

6. Each panel assembly shall be provided with a face mounted engraved rigid laminated nameplate bearing the entire identifying text for the panel assembly. The nameplate shall be securely attached to the panel.

D. Wire labels are defined as machine printed heat-shrink tube type labels bearing the entire identifying text of the wire. Wire labels shall be furnished for all wires in each panel assembly provided. Label both ends of wires more than 6 inches in length. Label one end of wires less than or equal to 6 inches in length. Shrink labels in place with lettering in position to be easily read and no more than one (1) inch from the connecting terminal.

E. Terminal markers are defined as machine printed markers bearing the entire identifying text of the terminal. Terminal markers shall be furnished for all terminal blocks, fuse blocks, and grounding blocks provided. Securely mount terminal markers with lettering in position to be easily read.

F. Interposing relays, loop isolators, intrinsically safe barriers, and terminating resistors shall be furnished wherever necessary, as indicated by the instrument and/or installation, regardless of whether they are indicated in the drawings, to perform the functions of the system.

2.2 PROGRAMMABLE LOGIC CONTROLLER (PLC) INTEGRATION

A. The new systems installed shall be connected to the existing programmable logic controller (PLC) system by the CONTRACTOR in the Pumphouse, as shown on the Drawings.

B. All terminations and landing of all wires shall be performed by the CONTRACTOR.

C. The OWNER will provide all programming and system integration required on the project.

2.3 ENCLOSURES

A. Enclosures shall be provided as a Panel Assembly component where indicated, specified, or required to meet the functional requirements of the System, as specified.

B. Enclosures shall meet the following minimum specifications, unless otherwise noted.

1. NEMA 4X.

2. Minimum metal thickness shall be 14-gauge.

3. All doors shall be rubber gasketed.

4. Wherever practical, enclosures shall be a manufactured item.

5. All enclosures that are to be structurally modified or shop fabricated shall be summarized, and the summary together with catalog cuts and/or shop drawings shall be submitted to the ENGINEER for approval prior to purchase or fabrication.

6. Enclosures shall be sized, provided with forced air ventilation, or provided with a cooling system to adequately dissipate heat generated by equipment mounted in or on the enclosure.

7. Enclosures over 59 inches in height shall be provided with a door switch and fluorescent tube fixture. Where possible, lamp shall be the same type and size as the facility standard lamp.

8. All surfaces, internal and external, shall be primed and painted in accordance with the following, unless otherwise noted:

    a. Sand panel and remove all mill scale, rust, grease, and oil. Fill all imperfections and sand smooth. Paint panel interior and exterior with one coat of epoxy coating metal primer, two finish coats of two-component type epoxy enamel. Sand surfaces lightly between coats. Dry film thickness shall not be less than 3.0 mils.

    b. Touch up panel after installation.

    c. Paint shall be polyester urethane powder coat, alkyd liquid enamel, or epoxy.

    d. Interior panel color shall be white and exterior panel color shall be ANSI gray.

C. Manufacturers:

1. Circle AW;
2. Hammond;
3. Hennessey;
4. Hoffman;
5. Or approved equivalent. Approval of substitutions is solely at the discretion of the ENGINEER.

2.4 PANEL ASSEMBLIES

A. Panel Assemblies shall be provided where indicated, specified, or required to meet the functional requirements of the System, as specified. Panel Assemblies shall be completely fabricated, instruments installed, and wired in the panel assembly manufacturer's factory. All wiring shall be completed and tested prior to shipment. All external connections shall be by way of numbered terminal blocks.

B. Panel Assembly Electrical Power Distribution

1. Power Distribution

    a. Each panel will be provided with one or more 120 VAC, 60-Hz feeder circuits from the associated circuit breaker distribution panel provided under Division

26 - Electrical, unless otherwise shown. On each panel, make provisions for feeder circuit entry and provide circuit breakers, disconnects, and power distribution blocks as required for termination of the wires.

b. Provide circuit breakers sized per NEC for all 120VAC circuits. Circuit breakers shall be DIN rail mounted type.

c. Provide fuse blocks and fuses for all 24VDC circuits. Fuse blocks shall be DIN rail mounted, finger-safe type.

C. Provide blown fuse indication for all fused circuits.

D. Provide independent fuse block and fuse for each PLC module.

1. Wiring

a. All electrical wiring shall be in accordance with the applicable requirements of Division 26 - Electrical.

E. Wiring for discrete signal circuits shall be 300-volt class, PVC insulated, stranded copper, and shall be of the size required for the current to be carried, but not smaller than 16 AWG, enclosed in plastic wiring duct unless otherwise noted.

F. Wiring for analog signal circuits shall be 300-volt class, PVC insulated, stranded copper, twisted shielded pairs or twisted shielded triads, as required by the application, no smaller than No. 18 AWG, and shall be separated at least 6 inches from any power wiring.

G. Separate AC and DC wiring by a minimum of 6 inches where possible. Where AC and DC wires must be run together with less than 6 inches separation, provide grounded metallic barrier for separation between AC and DC wires. Where AC and DC wires must cross, make crossings at 90 degrees.

1. All interconnecting wires between panel mounted equipment and external equipment shall be terminated at terminal blocks. All terminal blocks shall have terminal markers.

2. All interconnecting wires between panel mounted equipment and external equipment shall be identified per the requirements of Division 26 - Electrical.

3. All wires of a panel assembly shall have wire labels per the requirements of this section. This shall be done at all wire terminations including terminal blocks, I-O terminals (even if the number is duplicated on the terminal), and terminations on panel-mounted devices.

H. All major components of the panel assemblies shall be identified with nameplates or service legends per the requirements of this section. Adhesive embossed plastic tape type labels are not acceptable.

I. Crate all panel assemblies with solid plywood sheeting and sufficient blocking and protective material to prevent damage during shipment and storage. Identify the contents of the crate with the full identifying text of the panel assembly, in block letters not less than two (2) inches in height, to allow the contents of the crate to be readily determined without opening the crate.

2.5 PRIMARY DISCONNECTS

A. Primary Disconnects shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

1. Primary Disconnects are defined as Circuit Breakers, Molded Case Switches, Fused Switches, Non-Fused Switches, Rotary Switches, and appurtenances by which the Panel Assembles can be disconnected from their source of supply.

B. All Primary Disconnects shall comply with Division 26 - Electrical.

2.6 CIRCUIT BREAKERS

A. Circuit breakers shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. All Circuit Breakers shall be din-rail mounted circuit breakers with thermal magnetic trip units, and a common trip bar for two or three-pole breakers, connected internally to each pole so that the tripping on one pole will automatically trip all poles of each breaker. Handle bales or clips will not be acceptable. Provide breakers of the trip-free and trip-indicating type, with quick-make, quick-break contacts. Provide single, two or three pole breaker interchangeability.

C. All circuit breakers shall be UL listed or component recognized and approved for required application.

2.7 FUSES

A. Fuses shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. All Fuses shall be U.L. listed or component recognized and approved for required application.

2.8 POWER DISTRIBUTION AND GROUNDING BLOCKS

A. Power Distribution and Grounding Blocks shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. All Power Distribution and Grounding Blocks shall comply with Division 26 - Electrical.

2.9 SURGE SUPPRESSORS

A. Surge Suppressors shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

1. Surge Suppressors are intended to protect dedicated control equipment such as PLCs, Operator Interface Terminals, and instrumentation from high energy spikes in the electrical supply.

B. Surge Suppressors shall meet the following minimum requirements, unless otherwise noted:

1. 120 VAC single phase input voltage.
2. 47-63 Hz line frequency.
3. 20 Amp continuous rating.
4. All mode protection; L-N, L-G, N-G.
5. 330 VAC minimum Suppressor Classification per UL-1449-2
6. Form “C” status contact.
7. Response time of 0.5 nsec. or less.

2.10 TERMINAL BLOCKS

A. Terminal Blocks shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. Terminal Blocks shall meet the following minimum requirements, unless otherwise noted:

1. Single circuit, feed-through type.
2. DIN rail mounted.
3. Screw clamp connection.
4. Sized for the application, minimum 30 A rated.
5. 300 VAC/VDC rated.
6. It shall be possible to use a ‘standard’ instrument screwdriver blade on the terminal screws. Terminals which require ‘reduced size’ or ‘tweak’ screwdrivers to access terminals will not be accepted.

C. Manufacturers:

1. Allen-Bradley;
2. Entrelec, Int'l.;
3. Phoenix Contact Inc.;
4. Weidmuller;
5. Or approved equivalent. Approval of substitutions is solely at the discretion of the ENGINEER.

2.11 FUSE-HOLDING TERMINAL BLOCKS

A. Fuse-holding Terminal Blocks shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. Fuse-holding Terminal blocks shall meet the following minimum specifications, unless otherwise noted.

1. Single circuit, feed through type.
2. DIN rail mounted.
3. Screw clamp connection.
4. Sized for the application.
5. Blown fuse indication unless otherwise noted.
6. Include appropriately sized fuses with all Fuse-holding Terminal Blocks.
7. It shall be possible to use a 'standard' instrument screwdriver blade on the terminal screws. Terminals which require 'reduced size' or 'tweak' screwdrivers to access terminals will not be accepted.

C. Manufacturers and products:

1. Allen-Bradley Bulletin, 1492-WFB424/4250;
2. Entrelec Intl., Type M 4/8 .SFL/SFD;
3. Phoenix Contact Inc., Type UK-5 HESI;
4. Weidmuller, Type ASK;
5. Or approved equivalent. Approval of substitutions is solely at the discretion of the ENGINEER.

2.12 PILOT DEVICES

A. Pilot Devices shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified. All Pilot Devices shall meet the following minimum specifications, unless otherwise noted.

1. All pilot devices shall be of heavy-duty, metallic, type 4/13, watertight/oil-tight construction. Units shall mount through a 30.5 mm round hole.

2. All pilot devices shall have custom legends as shown. Legends shall be black with white letters, and letter height shall be minimum 3/16-inch high characters.

3. All button and lens colors shall be as shown. Color code is as follows: A = Amber, B = Blue, G = Green, R = Red, Y = Yellow, W = White

B. All pilot devices shall be equipped with a sufficient number of contact blocks to accomplish the switching functions specified.

C. Indicating lights shall meet the following minimum specifications, unless otherwise noted.

1. All indicating lights shall be 120-volt AC or 24VDC, full voltage type with LED lamps.
2. All indicating lights shall be "push-to-test" type.
3. All indicating light lenses shall be plastic.

D. Selector switches shall meet the following minimum specifications, unless otherwise noted.

1. All selector switches shall be knob.
2. Illuminated selector switches shall be 120-volt AC or 24VDC, full voltage type with LED lamps where specified.

E. Pushbuttons shall meet the following minimum specifications, unless otherwise noted.

1. All pushbuttons shall be flush type.

2. All emergency stop pushbuttons shall be red colored, jumbo mushroom head, push operate / twist release type, with one form C contact, minimum. Emergency stop pushbutton legends shall be red with white letters, and letter height shall be minimum 3/16-inch high characters.

3. Unless otherwise shown, all other pushbuttons shall be black in color.

4. Illuminated push buttons shall be 120-volt AC or 24VDC, full voltage type with LED lamps where specified.

F. Provide to the OWNER one complete set of specialty tools required for maintenance of the pilot devices provided, including, but not limited to, lamp removal tools, lens removal tools, button removal tools, mounting wrenches, and retaining nut wrenches.

G. Manufacturers and products:

1. Allen-Bradley, Bulletin 800T;

2. Square D. Co., Type T;

3. Or approved equivalent. Approval of substitutions is solely at the discretion of the ENGINEER.

2.13 POWER SUPPLIES

A. Power supplies shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. Power supplies shall convert 120 VAC, 60-Hz power to DC power of the appropriate voltage(s) with sufficient voltage regulation and ripple control to assure that the components being supplied can operate within their required tolerances.

C. Power supplies shall meet the following minimum specifications unless otherwise noted:

1. DIN rail mounted finger-safe type.

2. Mounted such that dissipated heat does not adversely affect other components.

3. Input shall be rated for 82-132 VAC, 47-63 Hz.

4. Output shall be rated ±2% or less with 25 mV ripple phase to phase maximum.

5. Wiring connections shall be made via screw terminals. Solder lugs are not acceptable.

6. Protected against short-circuit, overload, over-voltage, and open-circuit type faults.

7. Sized for the application, with a minimum of 25% spare capacity.

D. Manufacturers and products:

1. Phoenix Contact, Type QUINT;

2. Sola/Hevi-Duty, Type SDN;

3. Or approved equivalent. Approval of substitutions is solely at the discretion of the ENGINEER.

2.14 AUXILIARY RELAYS

A. Auxiliary relays shall be provided as a Panel Assembly component where indicated, specified, or required to perform the functional requirements of the System, as specified. Relays shall be suitable for control, interfacing, and interposing functions.

B. Auxiliary Relays shall meet the following minimum specifications unless otherwise noted:

1. Plug-in general purpose, 3PDT minimum, power type relays rated for industrial use.

2. Equipped with a push-to-test button and indicator light.

3. Coil voltage shall match the control circuit voltage.

4. Contacts shall be 10 Amp, 120 volt (resistive) rated.

5. Mounted via DIN rail mounted, finger-safe sockets.

6. Manufacturers and products:

a. Allen-Bradley Bulletin 700-HB;
b. Allen-Bradley Bulletin 700-HL;
c. Or approved equivalent.

2.15 SPECIALTY SWITCHES

A. Specialty Switches shall be provided where indicated, specified, or required to perform the functional requirements of the System, as specified.

B. Ladder/Hatch Security Switches:

1. Ladder/Hatch security switches shall indicate OPEN/CLOSED position of entry point with a levered limit switch. The switch shall include a limit switch body, lever and rollers and include the following features:

a. Automatic spring return lever. Adjustable lever length of 1-3/16-inch to 3-inch minimum.

b. Rollers: Nylon, 3/4-inches diameter.

c. DPDT maintained contacts rated 5 amps at 120VAC.

d. Enclosure: NEMA 4

e. Manufacturer:

1) Cutler-Hammer, Model E50AR1 with E50KL537 adjustable roller;
2) Allen Bradley, No. 802X-124 or 802X-114 with No. 802T-W2 roller levers;
3) Or approved equivalent.

2. Locations:

    a. Water Tower:

        1) At existing roof access hatch.
        2) At new Climb Prevention Shield door entrance to new lower ladder.

PART 3 EXECUTION

3.1 PLC/SCADA

A. General:

1. Installation of the system components shall connect to the OWNER’s existing SCADA system.

2. All alarm status data shall be sent to the OWNER’s existing SCADA system.

3. The CONTRACTOR shall coordinate and provide all required services in order to establish communications between the new items and the OWNER’s existing SCADA system. The OWNER will work with the CONTRACTOR to integrate the new equipment signals into the existing SCADA system.

4. Before the final acceptance tests, the CONTRACTOR shall notify the ENGINEER that the system is functional. This will allow the OWNER to make a final system's check.

3.2 PANELS AND PANEL MOUNTED EQUIPMENT

A. Control Panel Construction Methods

1. Construction practices should result in a neatly wired assembly.

2. All terminations (including CONTRACTOR’s field terminations) shall be made with spade-type terminals to facilitate easy removal from screw terminals.

3. Where special equipment mating connectors are required, they shall be provided using insulated type connectors.

4. Equipment ground wires shall be terminated on terminal blocks that are referenced to the back panel.

5. Incoming drain lines of shielded conductors shall be terminated on ground blocks provided.

B. Panels and panel-mounted equipment shall be pre-assembled at the panel supplier's factory. No work, other than correction of minor defects or minor transit damage, shall be done to the panels at the job site.

C. Anchorage:

1. Anchor all panels.
2. Provide shims as required to set panels level.
3. Conflicts with other equipment shall be brought to the attention of the ENGINEER for direction before taking any further action.

D. Panel Assemblies

1. The supplier shall assume single source responsibility for each panel assembly. A panel assembly may include mounting and wiring of relays, motor starters, transformers, and disconnecting means, or other control devices as specified by customer-supplied documentation.

2. The supplier shall provide mounting and wiring of the panel assembly in a NEMA type enclosure as specified.

3. The supplier shall wire all controller inputs and outputs to terminal blocks as specified.

4. The panel assembly shall include fuse blocks as required.

5. All electrical control products within the panel assembly shall be grounded to meet equipment specifications.

6. All cables (with associated plugs, connectors, and receptacles) requiring user field installation shall be designed for use in an industrial environment.

7. Upon receipt of the purchase order, but prior to starting the manufacture of any panel assembly, the supplier shall submit drawings, as specified, of all panel assemblies for approval.

8. At the time a panel assembly is shipped, one (1) complete, reproducible copy of the panel assembly drawings shall be provided with the panel assembly.

3.3 INSTALLATION

A. Protection During Construction: Throughout this Contract, the CONTRACTOR shall provide protection for materials and equipment against loss or damage and from the effects of the weather. Prior to installation, store items in indoor, dry locations. Provide heating in storage areas for items subject to corrosion under damp conditions.

B. Material and Equipment Installation: Follow manufacturer's installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturer's instructions, and these Contract Documents, follow ENGINEER's decision, at no additional cost to OWNER. Always keep a copy of manufacturer's instructions on the job site available for review.

C. The CONTRACTOR shall bear ultimate responsibility and shall provide for the supply, installation, adjustment, and startup of a complete, coordinated System that shall reliably perform the specified functions.

D. The CONTRACTOR shall make all final power and signal connections (hydraulic, pneumatic, and electric) to all elements provided under this Section. The CONTRACTOR shall verify and certify by written notice to the ENGINEER the correctness of final signal connections and the correctness of adjustment for all elements provided under this section and all elements interfaced with the System

E. All conduits are provided and installed under Division 26 - Electrical.

F. All wiring and cables, with the exception of certain specified special control cables, are provided and installed under Division 26 - Electrical. Specific special control cables as specified in this section shall be provided and installed under this section.

G. Cleaning and Touch-up Painting: Keep premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch-up scratches, scrapes, and chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the color, consistency, and type of surface of the original finish.

3.4 ELECTRICAL POWER AND SIGNAL WIRING

A. Control and signal wiring external to the panels and all power wiring shall conform to the requirements of Division 26 - Electrical.

B. Control and signal wiring in panels shall be restrained by plastic ties or ducts.

1. Hinge wiring shall be double secured at each end with mechanically fastened, not adhesive, tie blocks or straps.

2. Hinge crossings shall be either longitudinal crossings with a minimum length of 12 inches, so that any bending or twisting will be around the longitudinal axis of the wire, or loop crossings with a minimum loop diameter of 6 inches.

3. The entire length of wire in the bend area, (between the tie blocks) shall be protected from abrasion with either convoluted tubing or spiral wrap.

4. Wire bundles that pass-through holes shall be protected from abrasion with either grommets or sleeves.

5. Wires that pass across edges of sheet metal shall be protected from abrasion.

C. Arrange wiring neatly, cut to proper length, and remove surplus wire.

D. Use manufacturer's recommended tool with the proper sized anvil for all crimp terminations. No more than two wires may be terminated in a single crimp lug and no more than two lugs may be installed on a single screw terminal.

1. All crimp lugs used in applications with two wires terminated in a single crimp lug shall be rated by the manufacturer for multiple wire use.

E. Wiring shall not be spliced or tapped except at device terminals or terminal blocks.

3.5 TESTING, START-UP, AND TRAINING

A. All elements of the System shall be tested to demonstrate that the System satisfies all requirements of this Section.

B. The CONTRACTOR shall provide all special testing materials and equipment.

C. The CONTRACTOR shall coordinate all testing with the OWNER and all other associated contractors.

D. Within 12 weeks after award of the contract, and no later than 60 days prior to the testing, the CONTRACTOR shall prepare and submit to the ENGINEER for review, a detailed description of the test procedures proposed to demonstrate conformance of the System to this Section and the report forms to be used for recording the test results. The testing procedures shall be designed by the CONTRACTOR to duplicate normal operating and all alarm conditions. The CONTRACTOR shall ensure that the equipment and facilities are not damaged during testing. The decision of the ENGINEER upon the acceptability of the test procedures and report forms shall be final.

E. As a minimum, the testing shall include the following:

1. Factory tests: Prior to shipment, all panel assemblies shall be tested for proper operation at the manufacturer's factory. Results of the factory tests shall be recorded and submitted for approval before shipment of any panel assembly to the project site.

a. CONTRACTOR shall notify the ENGINEER one (1) week prior to the date of factory tests to allow the ENGINEER to witness the tests.

b. CONTRACTOR shall schedule at least one (1) full day of testing at the test facility.

c. All analog and discrete signals (inputs and outputs), power distribution equipment, pilot devices, control relays, and other devices shall be tested on a “line-by-line” basis using the schematics for reference. All analog and discrete field connections shall be simulated at the panel terminal blocks. At a minimum, analog signals shall be tested at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of signal to verify device operation. Alarm and control setpoints shall also be tested as directed by the ENGINEER.

d. Control components that are found to be non-functional or damaged shall be replaced prior to panel assembly approval and shipment to the project site.

2. Operational Acceptance Tests

a. The test objective is to demonstrate System readiness for final operation.

b. The System shall be checked for proper installation, adjustment, and calibration on an “element-by-element” basis to verify that it functions as specified and that all terminations have been made correctly.

c. All discrete element set points shall be adjusted and checked for proper operation (e.g., interlock function, contact closure on rising/falling P.V., etc.).

d. All analog loops shall have three-point calibrations performed.

e. All initial controller tuning constants shall be adjusted to preliminary settings as recommended by the manufacturer.

f. The "Operational Acceptance Tests" shall be completed prior to starting the "Functional Acceptance Test". The actual testing program shall be conducted in accordance with prior approved procedures and shall be documented.

F. In addition to the test procedures, the CONTRACTOR shall provide System training on-site for a total of (1) 8-hour day. The CONTRACTOR shall also provide an outline for the training to be provided that covers basic software and equipment training, operator training, System maintenance training, and programming training. Identify the course content and the time to be spent on each subject area.

END OF SECTION

DIVISION 33 - UTILITIES

SECTION 33 01 13 - ELEVATED STEEL WATER STORAGE TANK REHABILITATION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

This Section defines the work required for design, fabrication, and installation of various appurtenances for an existing, elevated, welded steel, multi-column supported water storage tank. The work described in this Section includes the exterior welded steel tank ladders, access upgrades, and roof vent replacement. Maintenance painting and coatings application is specified elsewhere.

1.2 QUALIFICATION OF METAL FABRICATOR AND INSTALLER

The CONTRACTOR's attention is directed to the Bid Documents in order to demonstrate qualifications to perform metal fabrication and installation work for this Project.

1.3 DESIGN

A. General

The elevated steel tank accessories and appurtenances shall be designed in accordance with the latest edition of the American Water Works Association (AWWA) Standard for Welded Steel Tanks for Water Storage, ANSI/AWWA D100-11, as applicable, except as herein modified by these specifications.

B. Design Loads

1. Seismic Loads

All applicable components of the existing steel tank specified in the Drawings or herein for rehabilitation shall be designed and constructed to resist all seismic forces under both full and empty conditions. Using the effective mass procedure of AWWA D100-11 Sec. 13.2.4 for Seismic Site Class D, the seismic design factors shall be applied.

Utilize site specific response spectra if required to replace the seismic coefficient in accordance with AWWA D100-11 Sec. 13.2.8. The tank appurtenance design shall be based upon the most conservative value of the site-specific response spectra or the seismic coefficient.

2. Wind Loads

The tank appurtenances shall be designed to resist wind loading under both full and empty conditions. The design method shall be in accordance with the 2018 IBC

as amended by the State of Oregon or AWWA D100-11 with the following factors applied:

Wind Speed = 90mph (AWWA) or 120 mph (IBC); Exposure B; Importance Factor, Iw = 1.15 (AWWA) or N/A (IBC). Minimum wind load shall not be less than 18 pounds per square feet in accordance with AWWA D100.

3. Snow Loads

Snow loads shall be per City of Woodburn Minimums. For the site, the uniform ground snow load is 15 pounds per square feet. The design snow load for the tank roof is 25 pound per square feet based on design minimums.

C. Codes and Standards

In addition to compliance with the provisions of ANSI/AWWA D100-11 (or latest edition), the tank accessories and appurtenances shall be designed and constructed in accordance with all applicable local requirements including the following Codes, Standards:

1. 2019 Oregon Structural Specialty Code.

2. Oregon Occupational Safety and Health Standards, Oregon Administrative Rules, Chapter 437

3. Oregon Administrated Rules, Oregon Health Authority, Public Health Division Chapter 333 Division 61 Drinking Water

Details of design and construction shall be such as to allow access to all surfaces for maintenance, cleaning, and coating and to eliminate all moisture pockets. All welds shall be “seal” welds. There shall be no open crevices caused by overlap of steel plate on a supporting member.

D. Design by Metal Fabricator and Installer

It is anticipated that the Metal Fabricator and Installer will bid based on the details and requirements provided in the construction documents. The supplied accessories and appurtenances shall conform to the details shown and described unless ENGINEER approvals are made otherwise during the shop drawing review process.

E. Acceptable Metal Fabricator and Installers

The Metal Fabricator and Installer shall be a supplier normally involved in the design and manufacture of the type of tank accessories and appurtenances specified. Refer to the Instructions to Bidders for a list of pre-qualified Metal Fabricator and Installers,

as well as the requirements to submit a Statement of Qualifications to be added to the list.

1.4 FIELD MEASUREMENTS

A. The CONTRACTOR shall make provisions for gathering all required field measurements prior to preparation of Shop Drawings and fabrication. Indicate field measurements on Shop Drawings and locations where field trimming and adjusting may be required.

1.5 SUBMITTAL REQUIREMENTS

The CONTRACTOR shall submit information provided by the Metal Fabricator and Installer as identified below. The submittal shall be transmitted electronically. All items shall be included in this single submittal package.

A. Letter Certifying Design Compliance for all elements (approved by the ENGINEER) varying from the details included in the construction documents and/or not included in the construction document.

B. For the deferred submittal (CONTRACTOR-supplied) design elements described in the Drawings and Section 05 50 00, Metal Fabrications, as well as any changes in design proposed by the Metal Fabricator and Installer, the CONTRACTOR shall provide a letter from the Metal Fabricator and Installer's tank improvement designer, where applicable, who certifies conformance of the design with requirements of these specifications and all applicable codes and standards of the State of Oregon. That letter shall include a summary of design data, which identifies live and dead design base loads for wind, snow, and seismic loading. The calculated lateral force coefficient shall also be identified. That letter, and the above-described design drawings and structural calculations, shall have affixed thereto the current and valid Professional Engineer's seal of an Engineer licensed to practice in the State of Oregon. The ENGINEER reserves the rights to review and reject with proper cause all or portions of the submittal.

C. Shop Drawings and Stamped and Signed Deferred Submittals –

1. The CONTRACTOR shall provide all design drawings required by the ENGINEER to clearly delineate all proposed details of construction. All components which will be shop fabricated shall be clearly identified. Shop drawings shall also be provided for all proposed accessories.

2. Design drawings for varying details and/or details not included in the construction documents including plans, sections, elevations, and other miscellaneous details, including all accessories, shall be stamped by an Oregon State licensed Professional Engineer unless otherwise approved. Supporting calculations stamped by an Oregon State licensed Professional Engineer qualified to conduct structural calculations are also required.

3. Include layout, materials, and thicknesses for accessories and appurtenances indicating which sections are to be shop fabricated and which are to be field fabricated. Shop drawings shall include weld locations, types and sizes, fabrication details of all required components and accessories, support details for all pipes and conduits, and any other information as may be required by the ENGINEER.

D. Radiographic Weld Testing – Submit qualified radiographic testing company and manufacturer and model of equipment proposed to be used for testing of weld joints; include detailed outline description of equipment operation and testing evaluation methods.

PART 2 PRODUCTS

2.1 MODIFICATION TO TANK ACCESSORIES AND APPURTENANCES

The completed tank upgrades shall include all accessories shown on the drawings and described herein. All accessories shall be designed and constructed in accordance with all applicable Federal, State, and local codes and standards.

A. Ladders – Fixed external ladders, platforms, handrails, and other access upgrades shall be supplied as described in Section 05 50 00, Metal Fabrications. All vertical ladders shall include a fall prevention system as per Section 11 81 29, Facility Fall Protection.

B. Tank Vent – The existing 12-inch diameter roof vent shall be removed and discarded, an expanded penetration (30-inch diameter, concentric with existing penetration) created, and a new vent collar, flange, and flange-mounted roof vent constructed on the tank roof at the center peak of the roof as shown on the plans.

1. Vent shall include integral vacuum and pressure relief in the event of frost or other clogging of the screen.

2. Vent shall include tamper-resistant hardware and means of keyed locking of the hood to the vent body.

3. Vent shall be sized for adequate airflow at extreme tank fill/empty flow rates. Calculations shall be submitted for vent air flow that will accommodate a full pipe break of the 16-inch diameter inlet/outlet piping immediately adjacent to the tank.

4. Vent shall be fitted with No. 24 stainless steel screening for insect and pest obstruction and shall be secured continuously around all edges. Screen securing system shall be such as to allow maintenance replacement of screen.

5. Vent shall include an aluminum rainproof hood and shall be removable by means of a bolting system accessible and operable from the tank roof without the need for entry into the tank.

6. Vent shall include flange isolation hardware to eliminate dissimilar metals in contact where the aluminum vent is mounted to the steel flange.

7. Vent shall meet all recommendations of the Oregon Health Authority Drinking Water Services.

8. Tank vent replacement shall be Model #30 AST Roof Vent as manufactured by Advance Tank and Construction Co. Alternatively, an equivalent vent design by the Manufacturer shall be submitted for approval by the ENGINEER.

C. Cabling, Antenna, and Telemetry Work –

1. Furnish and install new welded standoffs and Unistrut conduit mounting for railroad radio antenna from ground up Column 7 to the catwalk. Transfer cabling and conduit to new Unistrut run.

2. Reroute and re-mount the existing police antenna from the existing rooftop antenna scaffolding to the new roof handrail, including furnishing and installing new welded standoffs and Unistrut conduit mounting from the ground up Column 3 to the catwalk and to the roof handrail. Transfer cabling and conduit to new Unistrut run.

3. Intrusion Switch Replacements:

a. Furnish and install new roof hatch intrusion switch. Install new welded standoffs and Unistrut conduit mounting brackets, conduit, and cabling as required on Column 2 to the catwalk, along the catwalk handrail, and up the elevated tank to the existing roof hatch for the roof hatch intrusion switch

b. Furnish and install new lower ladder intrusion switch. Install new welded standoffs and Unistrut conduit mounting brackets, conduit, and cabling as required on Column 2 to the lower ladder climb prevention shield for the lower ladder intrusion switch.

c. Route the new instrument cabling from the bottom of Column 2 through existing conduits to the Telemetry Building adjacent to the tank and terminate in the appropriate locations identified by the OWNER in the field.

d. Coordinate with the OWNER as needed for successful startup of the new instruments in the City's SCADA programming at the PLC.

D. All plates, doubler plates, etc. shall be minimum ASTM A36 steel unless otherwise noted. Refer to Section 05 50 00, Metal Fabrications for minimum grades.

PART 3 EXECUTION

3.1 GENERAL

All workmanship required for the improvements of the steel tank structures and all accessories shall be of the highest quality. All work shall conform to the standards set forth in AWWA D100-11 except as modified herein. The steel tank structure improvements and all integral accessories and components shall be the product of one manufacturer. The structure improvements shall be constructed to true, plumb, and concentric lines and dimensions.

3.2 STANDARDS

All construction shall be in full conformance with all applicable Federal, State, and Local codes, standards and specifications including those set forth by the American Water Works Association (AWWA), International Building Code (IBC), American Welding Institute (AWI), the American Institute of Steel Construction (AISC), American Society of Testing Materials, (ASTM) and the Occupational Safety and Health Administration (OSHA).

3.3 IMPROVEMENTS

A. Welding:

1. All welds shall be “seal” welds. Any overlap of plates shall be seal welded to prevent moisture pockets. All exposed sharp edges, burrs and corners shall be ground smooth. All weld splatter shall be removed by grinding. All welds not uniform and continuous shall be ground smooth.

2. Door Sheet – If elected, one door sheet will be allowed to be temporarily cut-in to the riser pipe. The design of stiffening and other applicable elements of a door sheet cut-out shall be the responsibility of the CONTRACTOR. All circumferential and longitudinal steel plate shell welds shall be full penetration butt welds along existing weld seams, location as approved by the OWNER during construction.

B. Inspection and Testing

1. Inspection of shop fabrication, surface preparation and welding procedures may be conducted by the ENGINEER or the ENGINEER’s agent. The CONTRACTOR shall provide the ENGINEER with a schedule identifying all planned shop fabrication activities.

2. The quality of tank riser column welded joints following installation of a door sheet as may be utilized shall be determined by visual inspection and the radiograph method as specified in AWWA D100-11 Sec. 11. The CONTRACTOR shall provide all necessary radiographic testing equipment and shall perform all tests as may be required by the ENGINEER. All radiographic films shall become the property of the OWNER. Field-testing shall be conducted immediately following the field welding

operations and inspection of radiographs will be made to establish the acceptable quality of work.

3. The CONTRACTOR shall provide and submit a written report as per the requirements of AWWA D100-11 Sec. 11.2.1 Radiographic methods shall be used for testing of all welds where possible. The CONTRACTOR shall notify the ENGINEER 24 hours in advance of any radiographic testing and shall provide ample opportunity for all testing and inspections as may be required by the ENGINEER.

C. Painting and Disinfection – Painting and disinfection shall be accomplished in accordance with requirements included elsewhere in these Contract Documents.

3.4 FIELD TESTING SCHEDULE

A. The CONTRACTOR shall complete field testing in accordance with the following schedule. Additional source material testing shall be completed as necessary to establish the basis of field tests. Testing locations to be determined by the ENGINEER.

Material to be Tested	Payment Responsibility for Testing	Minimum Testing Frequency
Weld Testing	OWNER	See Section 05 50 00, Metal Fabrications, As required by AWWA D100, weld testing (visual inspection and non-destructive testing, as applicable) by qualified personnel shall be the responsibility of the OWNER.
Coating Testing	OWNER	OWNER will employ a qualified Coatings Inspector. However, CONTRACTOR personnel shall perform daily ambient conditions measurements and documentation, dry film thickness readings and documentation, holiday (pinhole) testing, and other measures required for complete and verified coating systems, in addition to any quality control oversight provided by the OWNER.
Reservoir – Disinfection	CONTRACTOR (disinfection) and OWNER (sampling analysis)	See Section 33 13 13, Disinfection of Water Utility Storage Tanks. CONTRACTOR shall perform tank disinfection, and OWNER will take samples and coordinate that analysis for the first round of sampling. If additional samples are required due to failures, this will be the responsibility of the CONTRACTOR.

END OF SECTION

SECTION 33 13 13 - DISINFECTION OF WATER UTILITY STORAGE TANKS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes methods of disinfecting water storage tanks for potable water.

B. Section includes:

1. Water storage tank disinfection.
2. Bacteriological testing.

1.2 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C652 - Disinfection of Water Storage Facilities.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Disinfection Procedure:

1. Submit description of procedure, including type of disinfectant and calculations indicating quantities of disinfectants required to produce specified chlorine concentration.

2. Comply with Sections 3 and 4 of AWWA C652.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Certify that disinfectants meet or exceed AWWA C652 requirements.

E. Test and Evaluation Reports: Indicate results of bacteriological and residual chlorine laboratory test reports.

F. Field Quality-Control Submittals: Indicate results of CONTRACTOR-furnished tests and inspections.

1.4 QUALITY ASSURANCE

A. Perform Work in compliance with AWWA C652.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store disinfectants according to manufacturer's recommendations and in a cool, dry place away from combustibles such as wood, rags, oils, and greases.

C. Handle disinfectants according to manufacturer's safety precautions.

PART 2 PRODUCTS

2.1 DISINFECTANTS

A. Chlorine Forms: According to AWWA C652, Section 4.

1. Liquid chlorine.
2. Sodium hypochlorite.
3. Calcium hypochlorite.

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspection:

1. Conduct inspection of tank interior before beginning disinfection.

2. Verify tank is clean and free of polluting materials.

3. Verify tank piping and vent connections are properly made and clear of obstructions.

4. Verify all interior paint is thoroughly cured according to paint manufacturer's instructions.

3.2 PREPARATION

A. Furnish personnel working inside tank during disinfection with equipment to comply with Federal and State regulations for Work conducted in a hazardous atmosphere.

B. Coordinate with the ENGINEER and OWNER for scheduling of disinfection activities.

1. The OWNER may require up to one weeks’ time following notice to supply water for filling of tank.

3.3 APPLICATION

A. Use Chlorination Method 2 for disinfecting tank in Section 4 of AWWA C652, generally detailed as followed:

1. Clean the tank of all foreign materials, dust, debris, etc. and flush out the drainage system in coordination with the OWNER prior to performing disinfection.

2. Spray or brush a solution of 200 mg/L available chlorine directly on the surfaces of all parts of the storage facility that will be in contact with water when the storage facility is full to the overflow elevation.

3. The solution shall thoroughly coat all surfaces to be treated, including the inlet and outlet piping and shall be applied to any separate drain piping such that it will have available chlorine of not less than 10 mg/L when filled with water.

4. Disinfected surfaces shall remain in contact with the strong chlorine solution for at least 30 min.

5. Following the completion of the chlorination procedure, potable water shall be admitted, the drain piping purged of the 10 mg/L chlorinated water, and the storage facility filled to its overflow level.

B. A sample shall be taken by the OWNER for microbiological analysis according to State Health Standards for potable water.

1. Contact the ENGINEER and/or OWNER to arrange for samples to be taken for microbiological analysis.

2. Microbiological analysis must indicate that the water is free of coliform organisms before the facility can be put into service.

3. It will not be necessary to flush the tank after the chlorine solution is applied by spraying or brushing providing a passing microbiological test is achieved.

C. When water samples fail to meet State Health Standards for potable water, perform corrective measures until water quality conforms to State Health Standards.

D. Any superchlorinated water shall be discharged through an approved connection to the public sanitary sewer system or shall be dechlorinated to limits acceptable by the applicable jurisdiction in charge for discharge into the existing storm drainage system. If superchlorinated water is to be discharged into the public sanitary sewer system, notify the sewage treatment plant notifying the planned time, location, and quantity of discharge. No superchlorinated water shall be discharged into the storm drainage system or natural drainage way prior to approved dechlorination treatment, which shall be the responsibility of the CONTRACTOR.

3.4 FIELD TESTING SCHEDULE

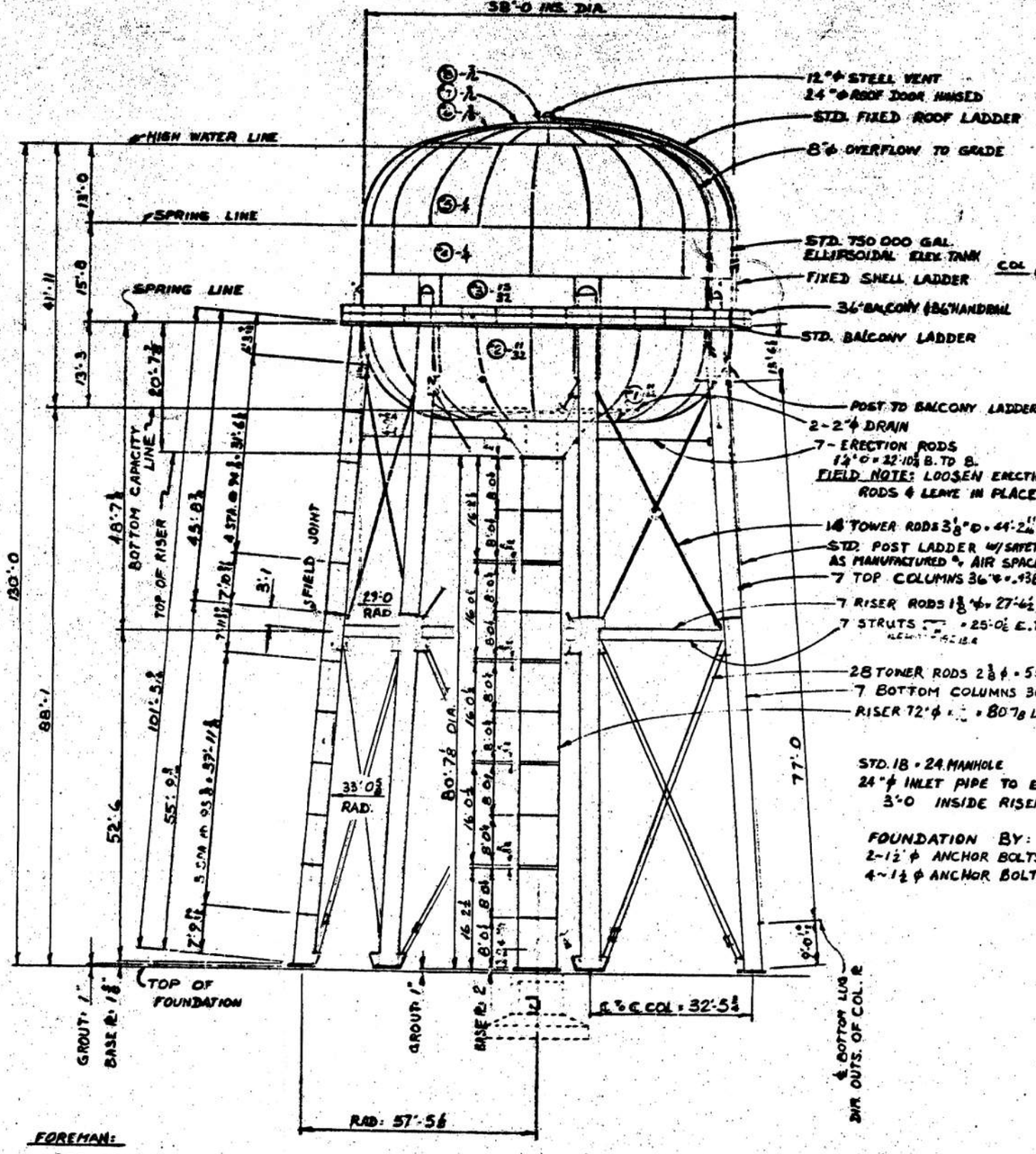
A. The CONTRACTOR shall complete field testing in accordance with the following schedule. Additional source material testing shall be completed as necessary to establish the basis of field tests. The frequency of testing listed in this schedule lists the minimum number of tests per quantity of work completed by the CONTRACTOR. Testing locations to be determined by the ENGINEER.

Material to be Tested	Payment Responsibility for Testing	Minimum Testing Frequency
Disinfection Procedures	CONTRACTOR	Following OWNER approval of all coatings and welding work required before placing the tank back into service, CONTRACTOR shall perform procedures described herein. CONTRACTOR shall provide all materials and equipment required and shall verify disinfection solution strength.
Disinfection Testing	OWNER	OWNER will perform initial bacteriological, VOC, and other necessary testing. If testing fails, all subsequent tests shall be the responsibility of the CONTRACTOR.

END OF SECTION

SUPPLEMENTARY INFORMATION

EXISTING WATER TANK GENERAL PLAN SHOP DRAWING
CHICAGO BRIDGE AND IRON
CIRCA 1964

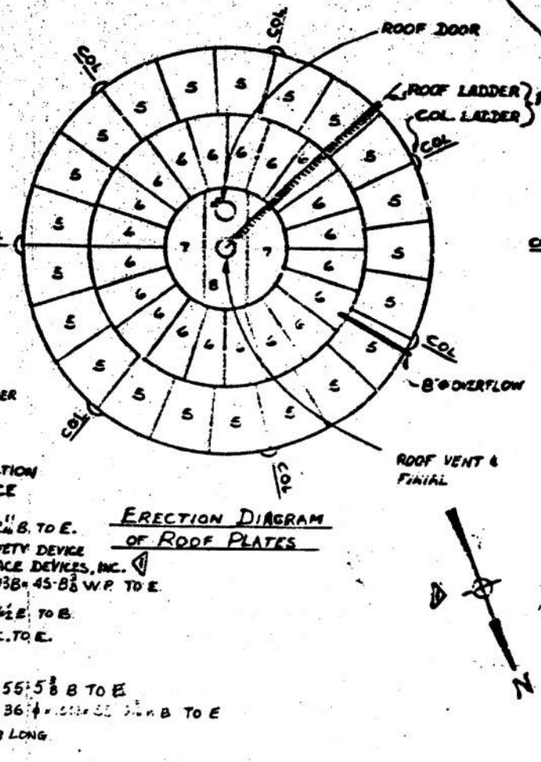


ELEVATION

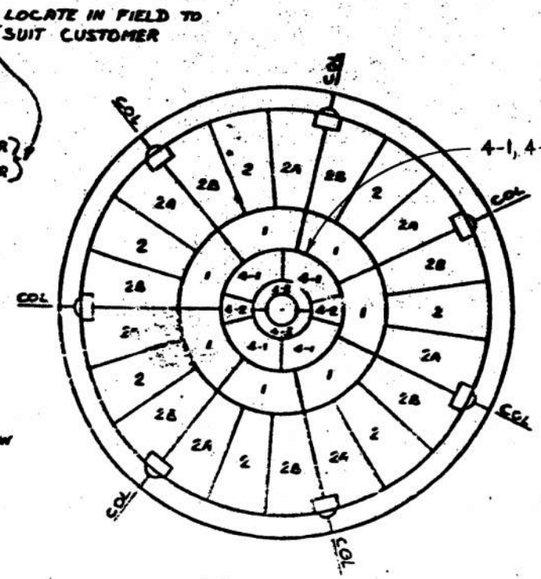
FOREMAN:
SEE FOUNDATION PLAN FOR CONCRETE THRUST BLOCK.

FIELD NOTE:
AFTER ERECTION OF TANK BUT BEFORE THE TANK IS FILLED WITH WATER GROUT UNDER RISER & COL. AS SHOWN

GENERAL NOTE:
1. PRIOR TO APPLICATION OF EXTERIOR PRIME COAT TO EXISTING RESERVOIR BALCONY, CONTRACTOR SHALL BE REQUIRED TO DRILL APPROXIMATELY 12-¾" DIAMETER HOLES IN BALCONY WALKWAY AT LOCATIONS AND PATTERNS AS DIRECTED BY ENGINEER.



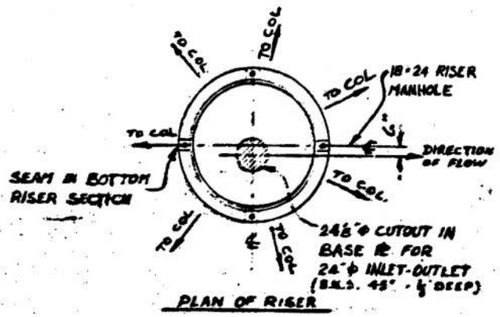
ERECTION DIAGRAM OF ROOF PLATES



ERECTION DIAGRAM OF BOTTOM PLATES

GENERAL NOTES

SPECIFICATIONS: AWWA, 1964 UBC & CUSTOMER
ERECTION BY: C. B. & I. CO.
MATERIALS: ALL R — A283-C
STRUCTURAL — A36
INSPECTION: MILL-NO SHOP-NO FIELD-CUST.
PICKLE & PAINT: SEE PAINT SHEET
▷ TANK DESIGNED FOR 7% EARTHQUAKE FACTOR



PLAN OF RISER

DESIGNED UNDER ONE OR MORE OF THE FOLLOWING UNITED STATES PATENT NOS.

2,457,155	2,665,827	2,720,694
2,462,101	2,682,550	2,754,012
2,541,095	2,690,273	2,746,422
2,567,928	3,019,806	3,074,564

OTHER PATENTS PENDING — PATENTED IN FOREIGN COUNTRIES

CHICAGO BRIDGE & IRON COMPANY
BIRMINGHAM, ALA.

GENERAL PLAN
750M GAL ELLIPSOIDAL ELEV. TANK
88'-1 To LWL CITY OF WOODBURN
WOODBURN, OREGON

DRAWN BY S.E.N.T. DATE 12-12-66
CHECKED BY F.T.H. DATE 12-12-66
W. C. FORSWELL

9-1745

EXTERIOR COATING SAMPLE ANALYSIS REPORT
SANAIR TECHNOLOGIES
09/10/29

SanAir Technologies Laboratory

Analysis Report

prepared for

EnviroLead

Report Date: 9/10/2019
Project Name: City Of Woodburn
Project #: 106
SanAir ID#: 19044670

NVLAP LAB CODE 200870-0

AIHA LAP, LLC ACCREDITED LABORATORY ENVIRONMENTAL LEAD ENVIRONMENTAL MICROBIOLOGY ISO/IEC 17025:2005 LAB # 162952

Virginia SBE Certification # 652931

Texas Licensed Mold Analysis Laboratory License # LAB0166

SanAir Technologies Laboratory

804.897.1177 www.sanair.com

SanAir Technologies Laboratory, Inc.
1551 Oakbridge Drive, Suite B, Powhatan, VA 23139
804.897.1177 Toll Free: 888.895.1177 Fax: 804.897.0070
Web: http://www.sanair.com E-mail: iaq@sanair.com

EnviroLead
108 Ashley Ct.
Dayton, OR 97114

September 10, 2019

SanAir ID # 19044670
Project Name: City Of Woodburn
Project Number: 106

Dear Sue Gerhauser,

We at SanAir would like to thank you for the work you recently submitted. The 1 sample(s) were received on Tuesday, September 03, 2019 via FedEx. The final report(s) is enclosed for the following sample(s): 001.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:
- Cover Letter
- Analysis Pages
- Disclaimers and Additional Information

sample conditions:
1 sample(s) in Good condition

SanAir Technologies Laboratory
1551 Oakbridge Dr STE B
Powhatan, VA 23139
804.897.1177 / 888.895.1177
Fax 804.897.0070
sanair.com

Metals & Lead Chain of Custody

SanAir ID Number: 190441670

Company: EnviroLead, LLC	Project #: 106	Phone #: 541-404-2788
Address: 108 Ashley Ct	Project Name: City of Woodburn	Phone #: 971-716-0277
City, St., Zip: Dayton, OR 97114	Date Collected: 08/30/2019	Fax #:
Samples Collected By: Karl Gerhauser	P.O. Number: 106 Broadway St, water tank	Email: sue@envirolead.us
Account #: 2922		Email: absolute_inspection@yahoo.com

Matrix Types

Metals Analysis Types

☐ Air	(ug/m^3)	Total Concentration of Lead ☐	☐ ICP-total concentration of metals (please list metals):
☐ Wipe	(ug/ft^2)	Total Concentration of RCRA 8 Metals ☑	
☑ Paint ☐ Sludge ☐ Soil ☐ Bulk ☐ Dust	(ug/g or ppm)	TCLP for Lead ☐	
☐ Wastewater ☐ Liquid ☐ Water DW	(ug/ml or ppm)	TCLP for RCRA 8 Metals ☐	☐ Other:
☐ Other:		TCLP Full (w/ Organics) ☐	

*Turn Around Time	Same Day ☐	1 Day ☐	2 days ☐	3 Days ☐
	☑ Standard (5 day)	☐ Full TCLP (10d)		

***Courier charge for same day and one-day turnaround times for offsite work.**

Collection date & Time	Sample #	Sample Identification/Location	Flow Rate	Start Time	Stop Time	Volume (L) Area (Sq ft)
8/30 10:00am	001	Center column of water tower				

Special Instructions

Relinquished by	Date	Time	Received by	Date	Time
Karl Gerhauser	08/30/2019			SEP 03 2019	8:50am

Unless scheduled, the turnaround time for all samples received after 3 pm will begin at 8 am the next business morning.
Weekend or Holiday work must be scheduled ahead of time and is charged at 150% of the Rush TAT rate. There is a minimum charge of $100 for weekend work.
SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.

SanAir Technologies Laboratory, Inc

1551 Oakbridge Dr, Suite B Powhatan, VA 23139
804.897.1177 Toll Free 888.895.1177 Fax: 804.897.0070
www.sanair.com email:iaq@sanair.com

SanAir ID Number
19044670
Final Report

Name: EnviroLead
Address: 108 Ashley Ct.
Dayton,OR 97114

Project Number: 106
P.O. Number: 106 Broadway St, Water Tank
Project Name: City Of WoodBurn

Collected Date: 8/30/2019
Received Date: 9/3/2019 8:50 AM
Report Date: 9/10/2019 8:50 AM
Analyst : David Ortega

Analytes Requested: Paint RCRA 8 Metals
Test Method: EPA M3050B/6010C/7471B

REPORT OF ANALYSIS

Lab Sample #	Field Sample #	Analyte	Sample Description	Results in ug/g	MRL ug/Sample
19044670-1	001	Silver (Ag)	Center Colum OF Water Tower	<25.0	25.0
		Arsenic (As)		<25.0	25.0
		Barium (Ba)		4,700	25.0
		Cadmium (Cd)		<25.0	25.0
		Chromium (Cr)		1,130	25.0
		Lead (Pb)		1,210	25.0
		Mercury (Hg)		<0.500	0.500
		Selenium (Se)		<25.0	25.0

ug/g=ppm MRL: Method Reporting Limit based on 0.1g
Matrix Spike Failed for Ba, Cr, & Pb

Certification

Signature:
Date: 9/4/2019

Reviewed:
Date: 9/4/2019

Disclaimer

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA-LAP, LLC (Lab ID162952). Refer to our accreditation certificate or www.aihaaccreditedlabs.org for an up to date list of the Fields of Testing for which we are accredited. SanAir also participates in the State of New York's DOH-ELAP (Lab Id 11983), and has met the EPA's NLLAP program standards.
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Lead Exposure Limits

	Paint
0.5% by weight	HUD definition of lead based paint
1.0 mg/cm2	
5000 ppm	

INTERIOR TANK DIVE REPORT
LIQUIVISION TECHNOLOGY
11/08/2019

Tower

City of Woodburn

Report of Findings
From the
Diving Operations
Conducted on

November 8, 2019

by

LIQUIVISION TECHNOLOGY

DIVING SERVICES

711 Market Street, Klamath Falls, OR 97601, (800) 229-6959 www.divingservices.com

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LiquiVision Technology
DIVING SERVICES

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Klamath Falls, OR 97601
www.divingservices.com

Western Operations
835 Market Street
Klamath Falls, OR 97601
liquivision@divingservices.com

Toll Free: (800) 229-6959
Phone: (541) 883-6473
Fax: (541) 883-1361

Underwater Inspection of Tower

November 8, 2019

Byron Brooks
City of Woodburn
270 Montgomery St
Woodburn, OR 97071

Following is the report of findings during the underwater work conducted on your storage tank.

It will focus on issues of concern or areas that need attention. In order to see a complete and detailed inspection, please view each video.

Color images of all plumbing fixtures, components and areas of concern were taken via underwater digital camera. The images should give you a clear view of the conditions described. The video may give you another view and a clearer understanding of any area that you may wish to look at more closely.

METHODOLOGY:

Disinfection of All Equipment With 200ppm+ Chlorine Solution Immediately Prior to Entering System: This process prevents contamination of the water supply. All LVT equipment was properly disinfected prior to entering the potable water system.

Full-Time Voice Communication between surface and Diver: The system allowed for constant communication between the diver, and all surface personnel. In addition, customers were able to communicate with the diver at any time. For purposes of a more efficient inspection, cleaning, and repair program, that enabled the diver to immediately discuss any observations he made inside the storage tank.

Full-Time Live High-Resolution Color Video: Allowed for constant viewing of the diver's work and observations. This also enabled the district personnel to view what the diver in the storage tank was witnessing.

Tower

TERMINOLOGY:

When describing the features or areas of interest inside the storage tank, an image number is placed next to the description that corresponds with the inspection findings. The diagram is shown in a view looking from the top down. The entry hatch is referred to as the 12:00 o'clock position.

Following the diagram are pictures of the pertinent areas of the storage tank and the locations where the pictures were taken. Each picture is descripted and numbered.

The standards used to evaluate the condition of the storage tank include: Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 NACE Standard RP0196-96 & RP0388-2001 or Condition of Concrete In-service – ACI 201.1R-92.

Tower

OVERVIEW OF STORAGE TANK INSPECTED:

Customer Name:	City of Woodburn	**Tank Name:**	Tower
Manager:	Byron Brooks	Construction:	140' Elevated Tower
Job Number:	OR80895R1T1	Capacity (gal.):	750,000
Date of Inspection:	November 8, 2019	Diameter or L x W:	58'
Report Writer:	Tyler Johnson	Height:	35'
Diver:	Chris Westphal	Floor Square FT:	2642
Tender:	Nikolas Salas	Date Built:	Unknown

N/A –not applicable **Excellent** (Ex.) –like new condition, no repairs needed. **Good** – Cosmetic only problems, repairs if wanted. **Fair**-Minor problems, repairs needed, not immediate. **Poor** –Major problems, structural or like, immediate repairs needed.

1. Rust Grades

Grades	% of Surface Rusted	Description
10	0% - 0.01%	No rusting or less than 0.01% of surface rusted
9	0.01% - 0.03%	Minute rusting, less than 0.03% of surface rusted
8	0.03% - 0.1%	Few isolated rust spots, less than 0.1% of surface rusted
7	0.1%- 0.3%	Less than 0.3% of surface rusted
6	0.3% - 1%	Extensive rust spots, but less than 1% of surface rusted
5	1% - 3%	Rusting to the extent of 3% of surface rusted
4	3% - 10%	Rusting to the extent of 10% of surface rusted
3	10% - 16%	Approximately one sixth of the surface rusted (16%)
2	16% - 33%	Approximately one third of the surface rusted (33%)
1	33% - 50%	Approximately one half of the surface rusted (50%)
0	50% - 100%	Approximately 100% of the surface rusted

2. Concrete Deformities

Unable to Evaluate	Good Condition	Cracks	Blistering	Chalking	De-Lamination	Pitting	Pop outs	Scaling	Spalling	Warping
UE	GC	CK	BL	CH	DL	PT	PO	SC	SP	WA

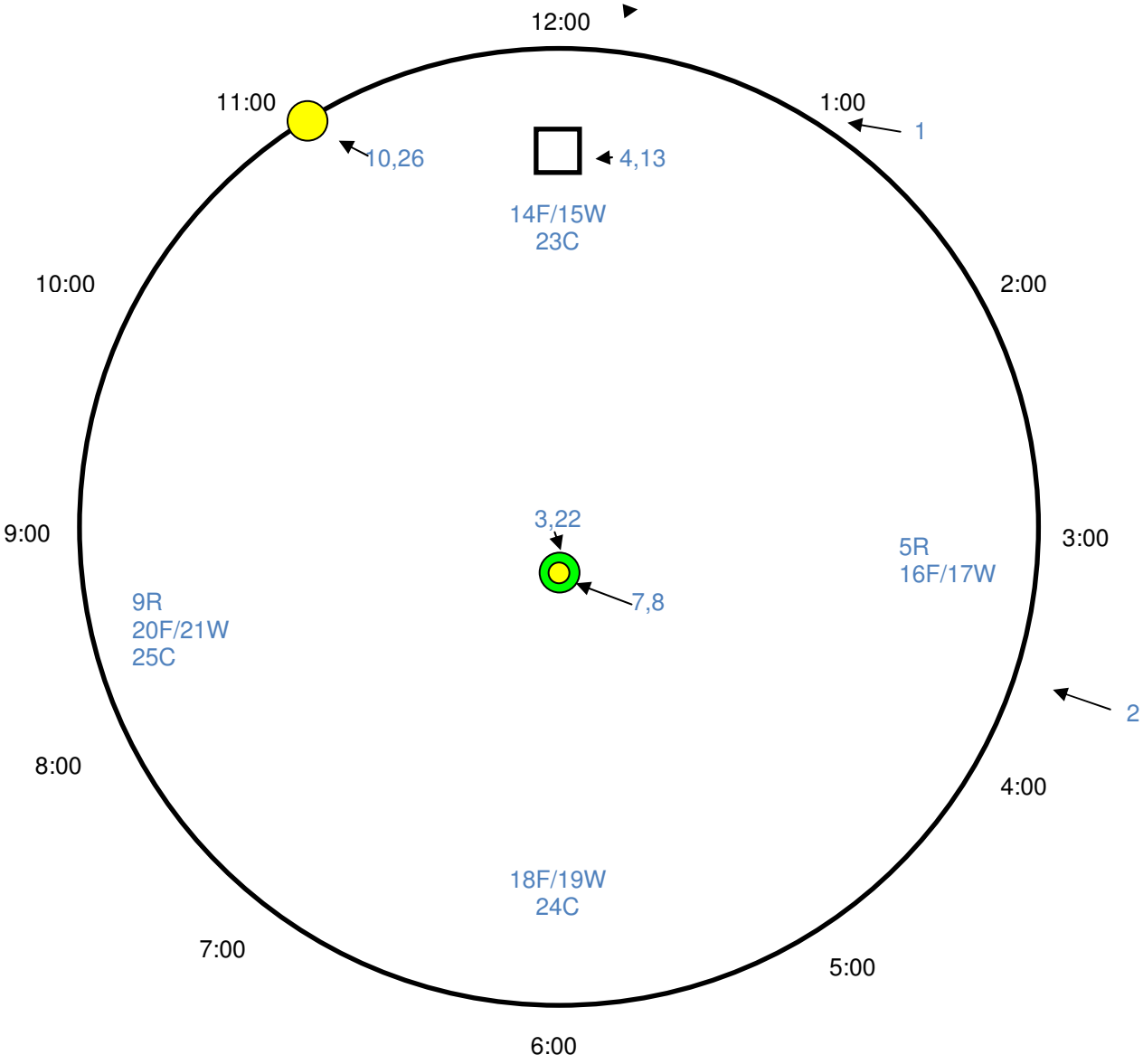
Tower

RECOMMENDATIONS:

Recommendation	Estimated Time - Hrs.
Install weather stripping on entry hatch to limit the risk of bugs and other matter from entering the storage tank.	Please contact our sales office for an estimate.
Clean the walls in order to remove the accumulated sediment, to give a better idea of the severity of coating problems noted on the walls and allow for easier and better repairs.	Please contact our sales office for an estimate.
Perform a regular cleaning, inspection and repair cycle every 2-3 years in order to ensure superior water quality and proper maintenance of coating condition and appurtenances is performed.	Please contact our sales office for an estimate.

Tower

Tank Diagram



Drawing Not to Scale

	Entry Hatch		Overflow		Air Vent
	Inlet/Outlet				

Tower

Image #**1** *Exterior Ladder* **Condition:** Rust Grade[1] **7.** **Description:** Exterior Ladder appeared to be in fair condition with a minor amount of corrosion.	
Image #**2** *Exterior Leg 3:30* **Condition:** Rust Grade[1] **8.** **Description:** 36" Exterior Leg appeared to be in good condition with a minor amount of corrosion.	

Tower

Image #**3** *Common Inlet/Outlet Center* **Condition:** Rust Grade[1] **8.** **Description:** 36" Inlet/Outlet appeared to be in good condition with a minor amount of corrosion.	
Image #**4** *Entry Hatch 12:00* **Condition:** Rust Grade[1] **7.** **Description:** 24" Entry Hatch appeared to be in fair condition with a minor amount of corrosion. There was no weather stripping observed.	

Tower

Image #**5** *Roof 3:00* **Condition:** Rust Grade[1] **8.** **Description:** Roof appeared to be in good condition with a minor amount of corrosion.	
Image #**6** *Capped Off Penetration* **Condition:** Rust Grade[1] **7.** **Description:** 3" Capped Off Penetration appeared to be in fair condition with a minor amount of corrosion. All 15 penetrations were in uniform condition.	

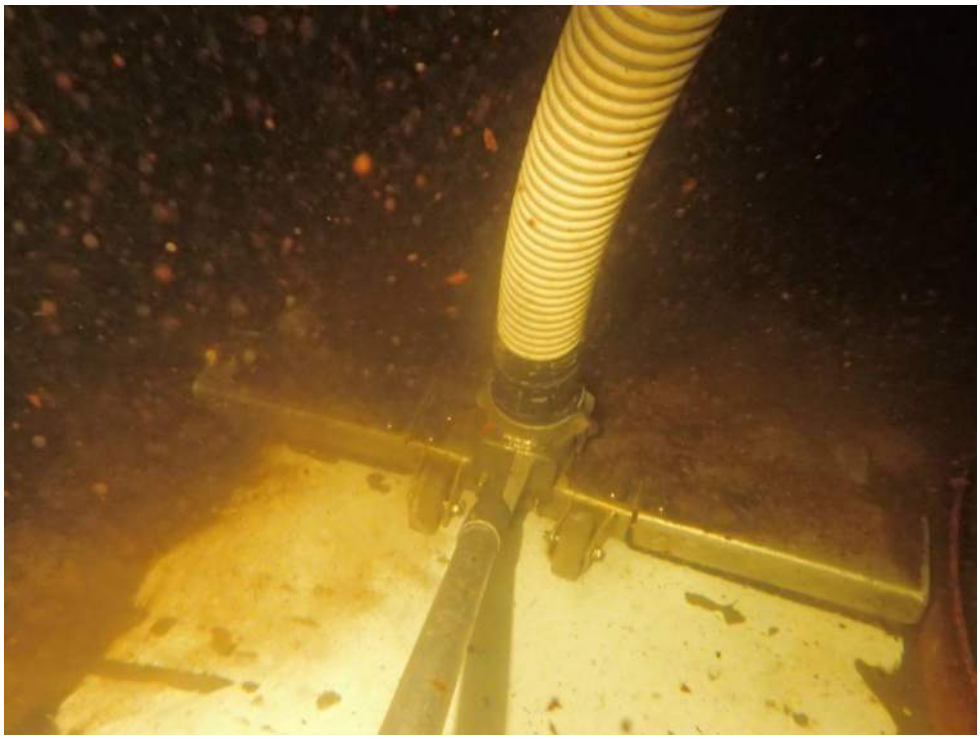
Tower

Image #**7** *Vent Center* **Condition:** Rust Grade[1] **7.** **Description:** 10" Vent appeared to be in fair condition with a minor amount of corrosion. A fine mesh screen was observed.	
Image #**8** *Vent Screen*	

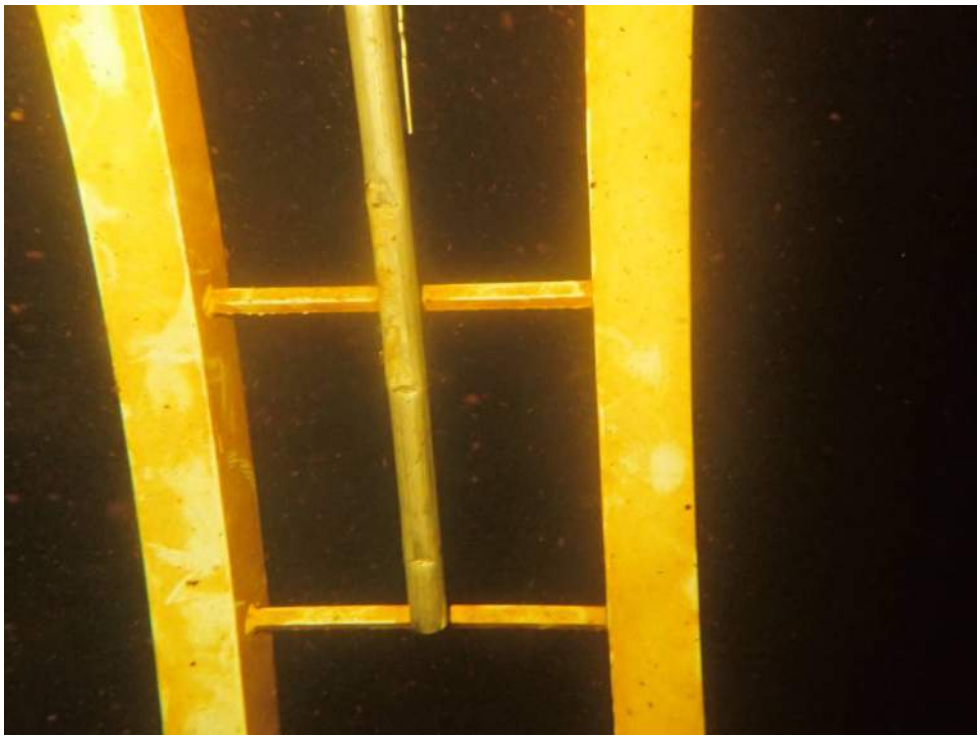
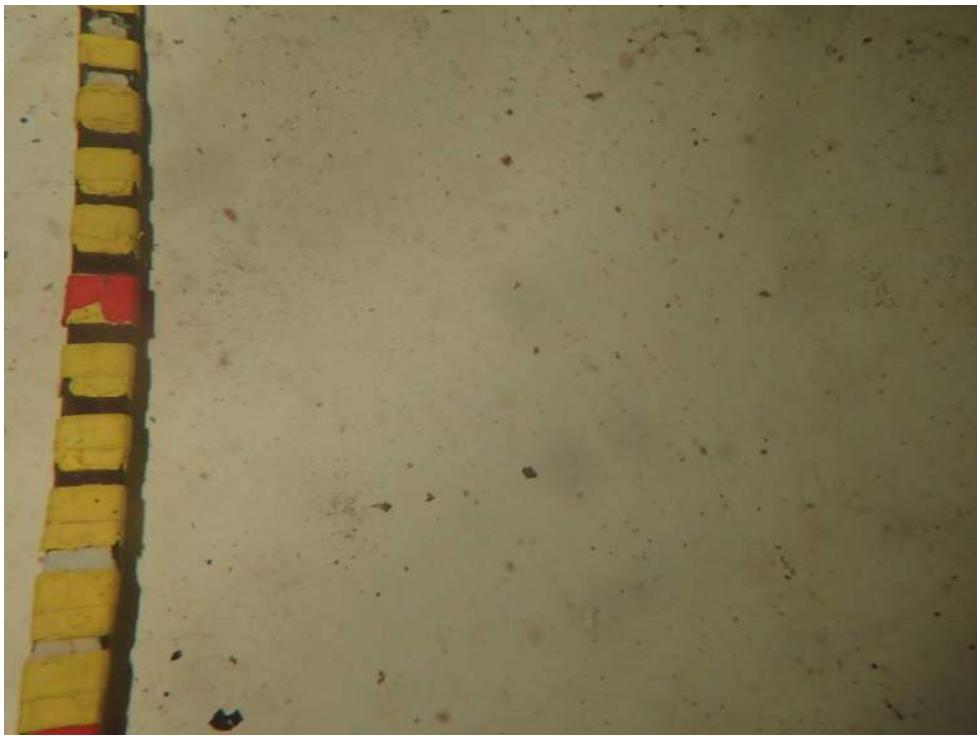
Tower

Image #**9** *Roof 9:00* **Condition:** Rust Grade[1] **8.** **Description:** Roof appeared to be in good condition with a minor amount of corrosion.	
Image #**10** *Overflow 11:00* **Condition:** Rust Grade[1] **8.** **Description:** 6" Overflow appeared to be in good condition with a minor amount of corrosion.	

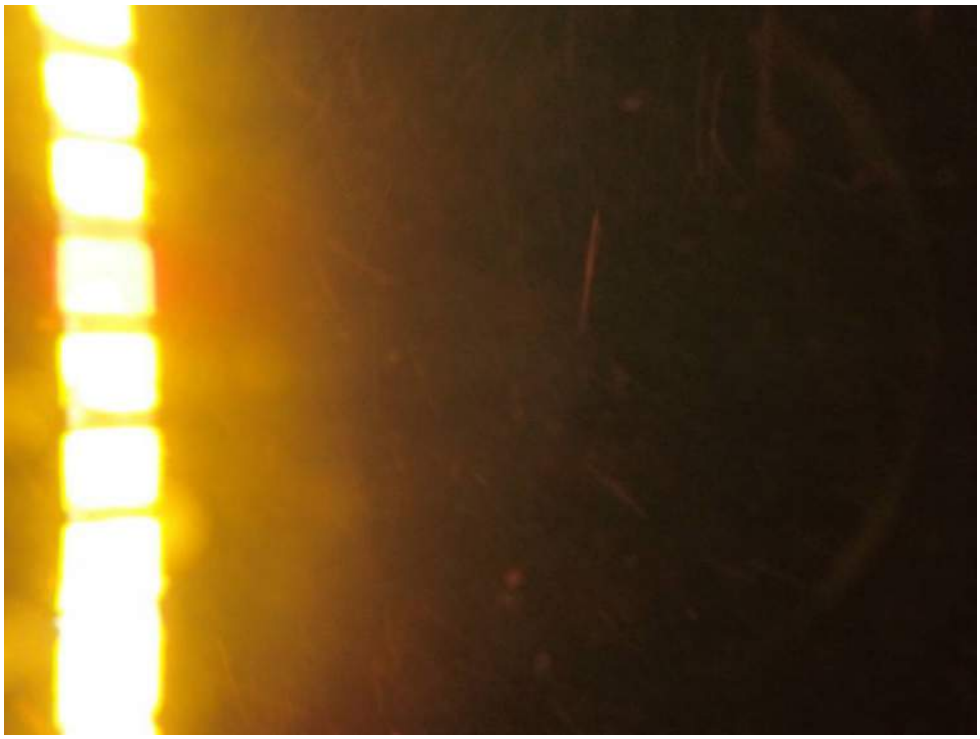
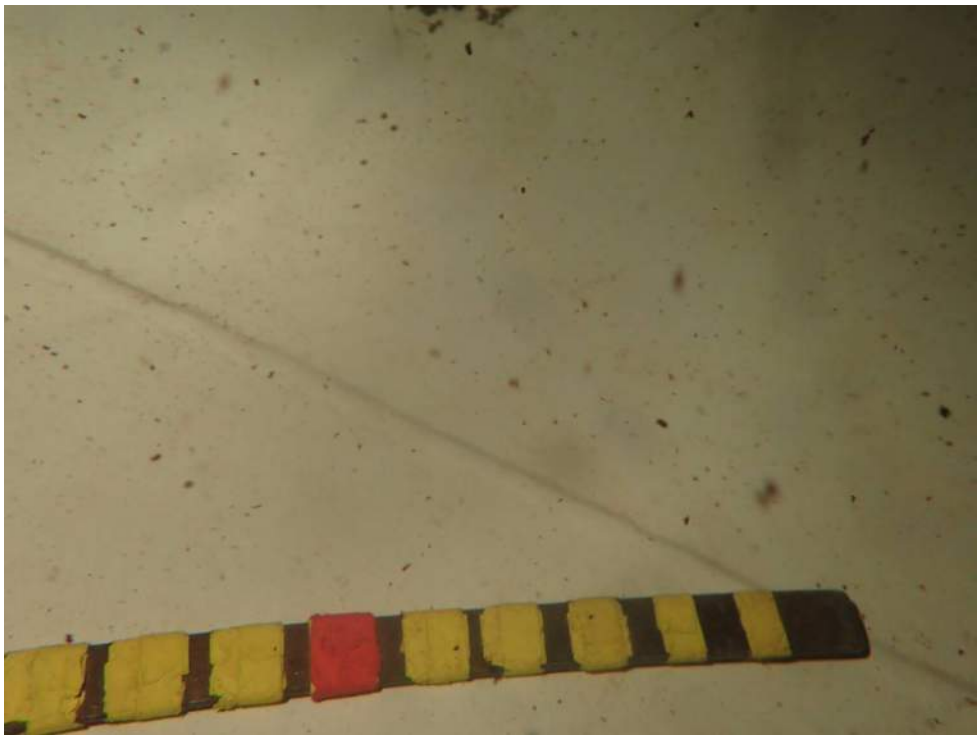
Tower

Image #**11** *Diver Sanitation*	
Image #**12** *Sediment* **Description:** 4'' of sediment was removed from reservoir floor.	

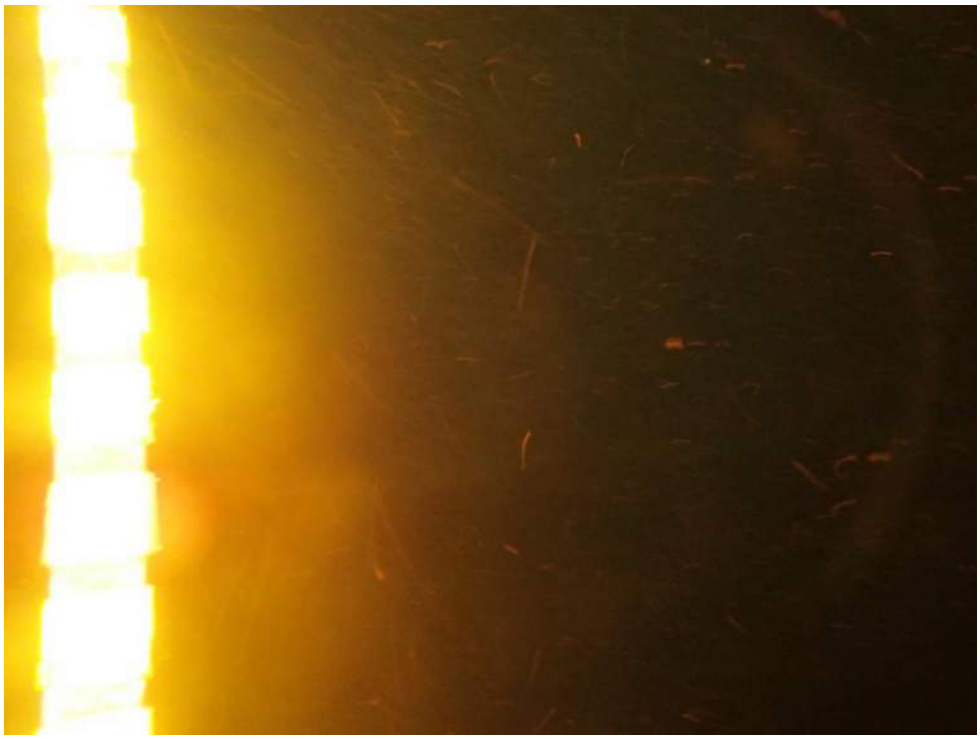
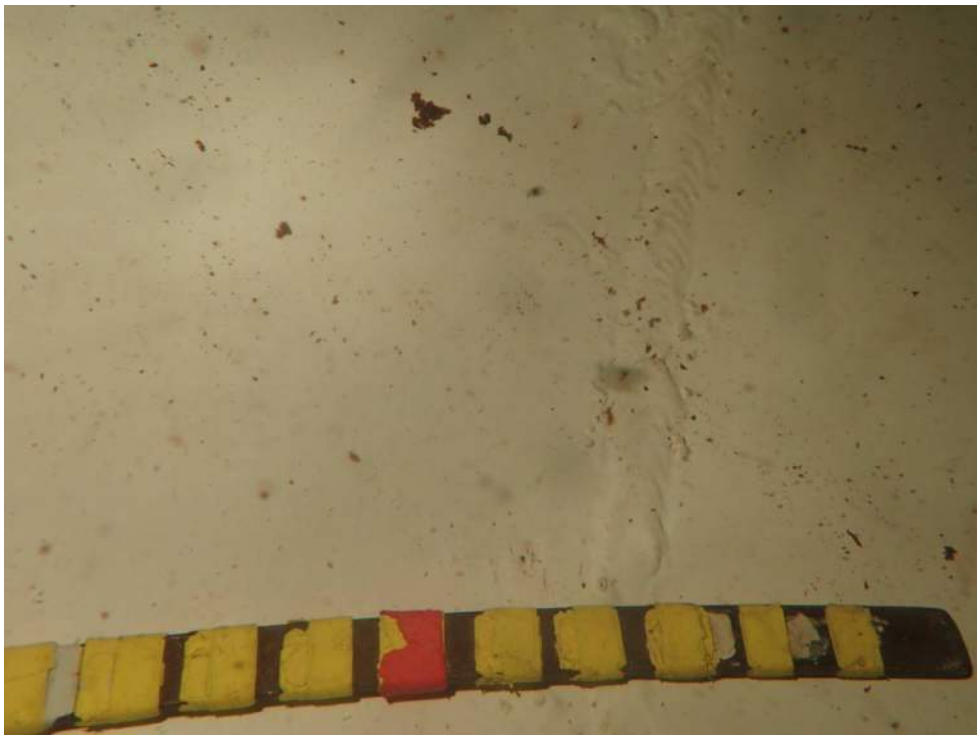
Tower

Image #**13** *Interior Ladder 12:00* **Condition:** Rust Grade[1] **8.** **Description:** Interior Ladder appeared to be in good condition with a minor amount of corrosion.	
Image #**14** *Floor 12:00* **Condition:** Rust Grade[1] **8.** **Description:** Floor appeared to be in good condition with a minor amount of corrosion.	

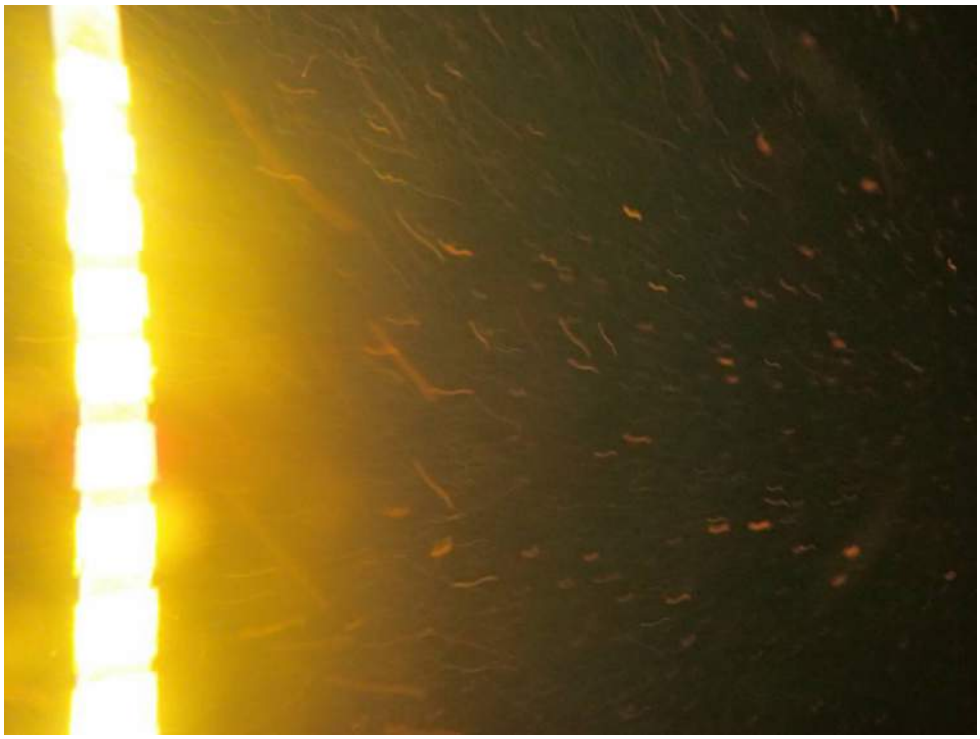
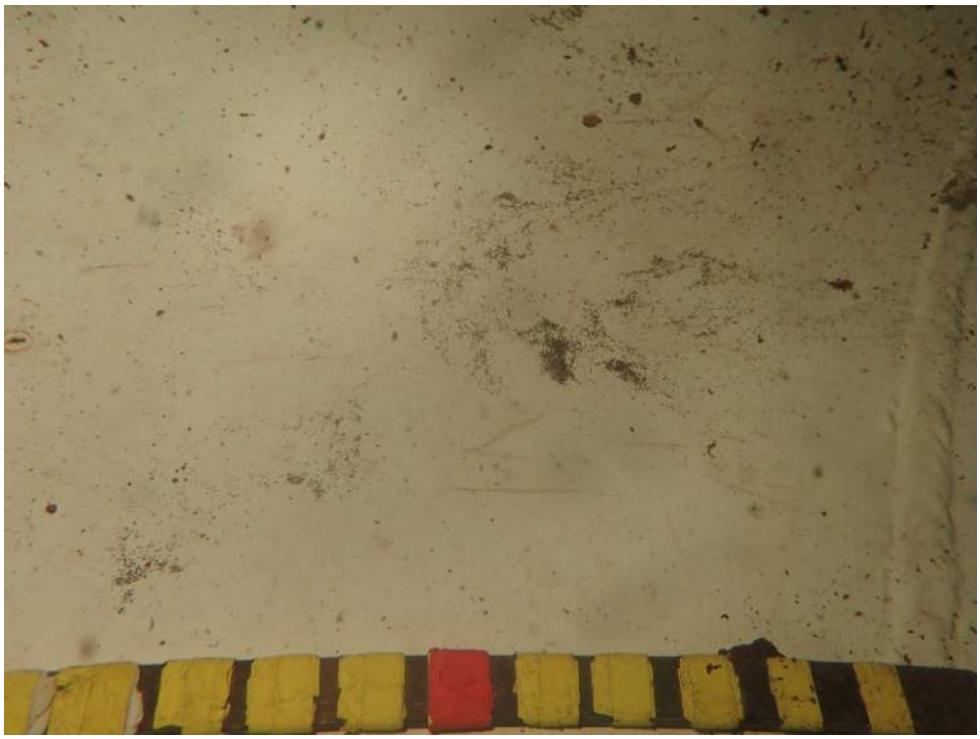
Tower

Image #**15** *Wall 12:00* **Condition:** Rust Grade[1] **UE.** **Description:** Unable to evaluate the condition of the Wall due to sediment buildup.	
Image #**16** *Floor 3:00* **Condition:** Rust Grade[1] **8.** **Description:** Floor appeared to be in good condition with a minor amount of corrosion.	

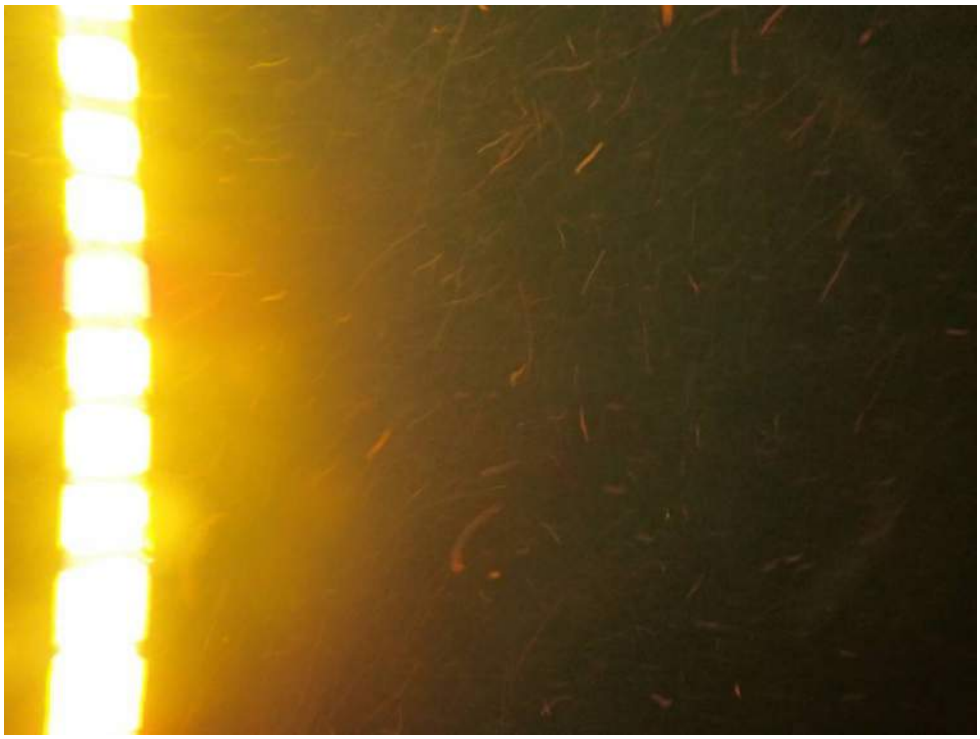
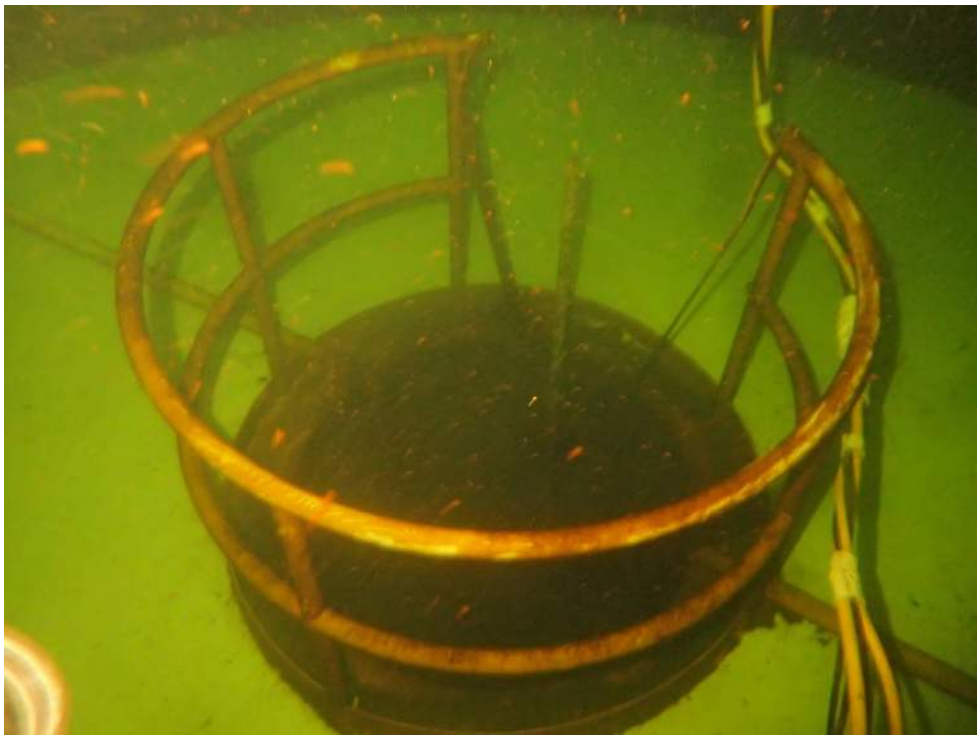
Tower

Image #**17** *Wall 3:00* **Condition:** Rust Grade[1] **UE.** **Description:** Unable to evaluate the condition of the Wall due to sediment buildup.	
Image #**18** *Floor 6:00* **Condition:** Rust Grade[1] **8.** **Description:** Floor appeared to be in good condition with a minor amount of corrosion.	

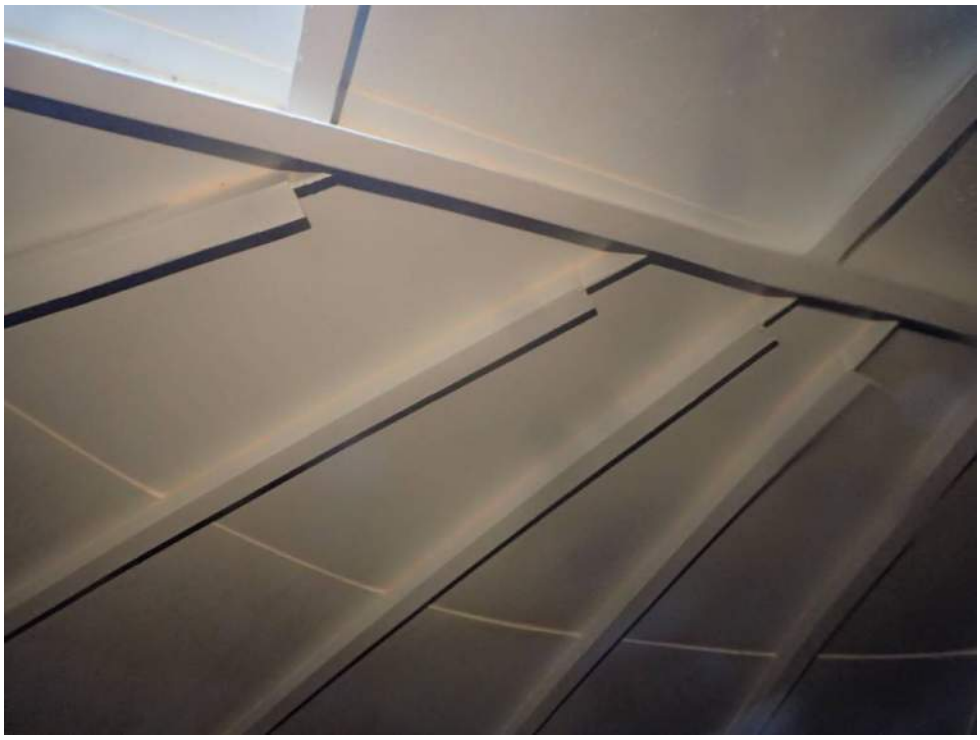
Tower

Image #**19** *Wall 6:00* **Condition:** Rust Grade[1] **UE.** **Description:** Unable to evaluate the condition of the Wall due to sediment buildup.	
Image #**20** *Floor 9:00* **Condition:** Rust Grade[1] **8.** **Description:** Floor appeared to be in good condition with a minor amount of corrosion.	

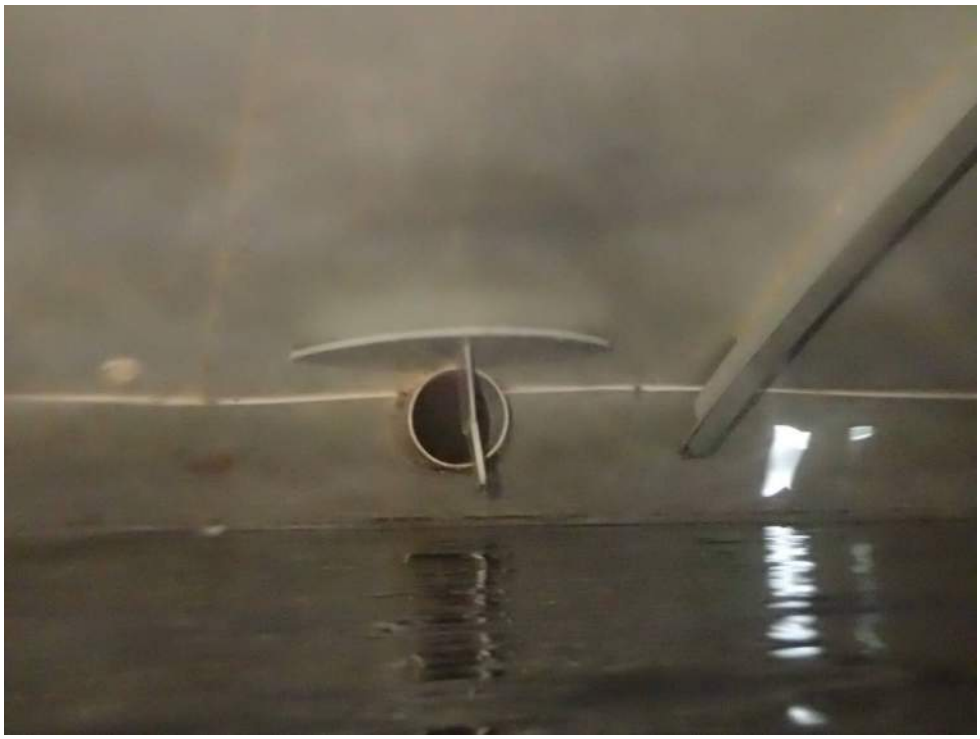
Tower

Image #**21** *Wall 9:00* **Condition:** Rust Grade[1] **UE.** **Description:** Unable to evaluate the condition of the Wall due to sediment buildup.	
Image #**22** *Inlet / Outlet Center* **Condition:** Rust Grade[1] **7.** **Description:** 60" Inlet / Outlet appeared to be in fair condition with a minor amount of corrosion.	

Tower

Image #**23** *Ceiling 12:00* **Condition:** Rust Grade[1] **8.** **Description:** Roof appeared to be in good condition with a minor amount of corrosion.	
Image #**24** *Ceiling 6:00* **Condition:** Rust Grade[1] **8.** **Description:** Ceiling appeared to be in good condition with a minor amount of corrosion.	

Tower

Image #**25** *Ceiling 9:00* **Condition:** Rust Grade[1] **8.** **Description:** Ceiling appeared to be in good condition with a minor amount of corrosion.	
Image #**26** *Overflow 11:00* **Condition:** Rust Grade[1] **8.** **Description:** 6" Overflow appeared to be in good condition with a minor amount of corrosion.	

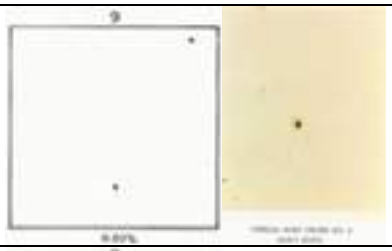
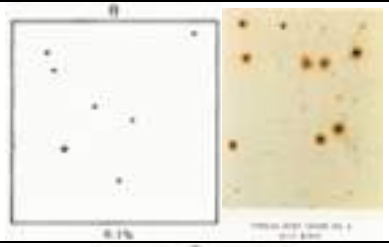
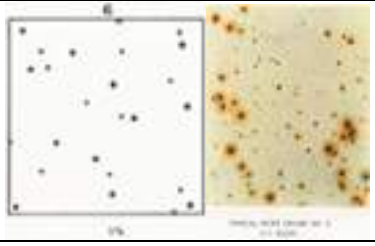
Tower

REFERENCES:

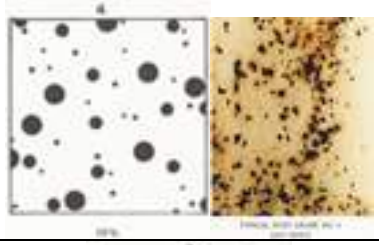
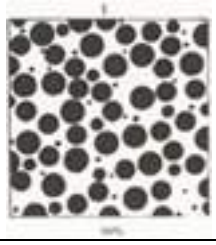
Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces – SSPC-Vis 2-82 & ASTM D 610-85 (1989)

The graphical representations show examples of area percentages, which may be helpful in rust grading. The use of photographical reference standards requires the following precautions:

1. Some finishes are stained by rust. This staining must not be confused with the actual rusting involved.
2. Accumulated dirt or other material may make accurate determination of the degree of rusting difficult.
3. Certain types of deposited dirt that contain iron or iron compounds may cause surface discoloration that should not be mistaken for corrosion.
4. It must be realized that failure may vary over a given area and discretion must therefore be used in applying these reference standards.
5. In evaluating surfaces, consideration shall be given to the color of the finish coating, since failures will be more apparent on a finish that shows color contrast with rust, such as white, than on a similar color, such as iron oxide finish.
6. The photographic reference standards are not required for use of the rust-grade scale since the scale is based upon the percent of the area rusted and any method of assessing area rusted may be used to determine the rust grade.

Rust Grades	Description	Graphical Representation
10	No rusting or less than 0.01% of surface rusted	Unnecessary
9	Minute rusting, less than 0.03% of surface rusted	
8	Few isolated rust spots, less than 0.1% of surface rusted	
7	Less than 0.3% of surface rusted	
6	Extensive rust spots, but less than 1% of surface rusted	

Tower

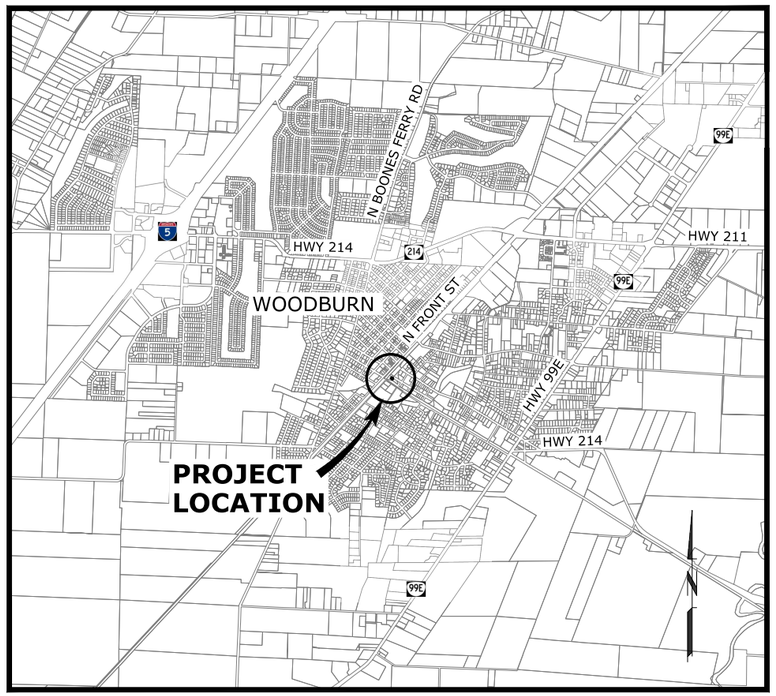
5	Rusting to the extent of 3% of surface rusted	
4	Rusting to the extent of 10% of surface rusted	
3	Approximately one sixth of the surface rusted (16%)	
2	Approximately one third of the surface rusted (33%)	
1	Approximately one half of the surface rusted (50%)	
0	Approximately 100% of the surface rusted	Unnecessary

DRAWINGS

WOODBURN
OREGON
Incorporated 1889

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

FEBRUARY 2022



VICINITY MAP
SCALE: 1"=2,000'

INDEX OF DRAWINGS

GENERAL

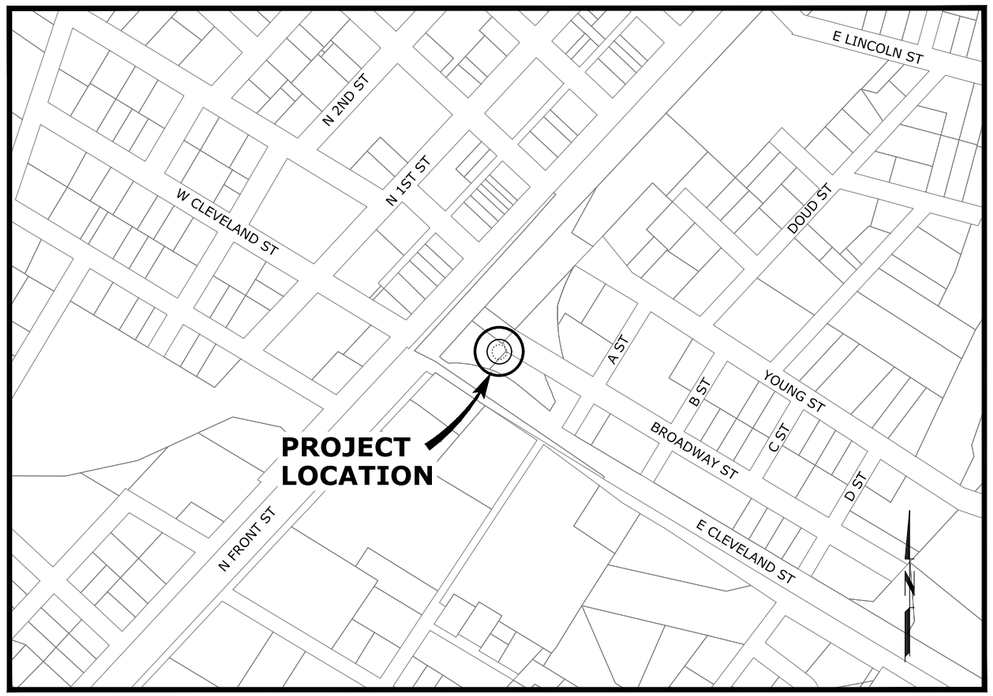
1	G-1	COVER SHEET, INDEX OF DRAWINGS, LOCATION MAP AND VICINITY MAP
2	G-2	GENERAL NOTES, ABBREVIATIONS AND LEGEND

CIVIL

3	C-1	SITE PLAN
4	C-2	EXISTING TANK ROOF PLAN AND ELEVATION, AND DEMOLITION PLAN
5	C-3	TANK IMPROVEMENTS ROOF PLAN AND ELEVATION
6	C-4	DETAILS - 1
7	C-5	DETAILS - 2

CITY PROJECT NO.: 2018-008-28.1
BID NO.: 2022-03

PROJECT ADDRESS:
106 BROADWAY STREET,
WOODBURN, OR 97071



LOCATION MAP
SCALE: 1"=200'

murraysmith
888 SW 5TH AVE, SUITE 1170
PORTLAND, OREGON 97204
P 503.225.9010

811
Know what's **below.**
Call before you dig.

NOTICE TO EXCAVATORS:
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
(NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)-232-1987).

POTENTIAL UNDERGROUND FACILITY OWNERS
Dig Safely.
Call the Oregon One-Call Center
1-800-332-2344

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE CITY OF WOODBURN, JURISDICTIONAL FIRE PROTECTION REQUIREMENTS, AND APPLICABLE STATE AND LOCAL STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL HAVE IN POSSESSION AT THE JOB SITE AT ALL TIMES ONE SIGNED COPY OF APPROVED PLANS, STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS. NOTIFY ENGINEER OF ANY CONFLICTING STANDARDS OR SPECIFICATIONS. IN THE EVENT OF ANY CONFLICTING STANDARD OR SPECIFICATION, THE MORE STRINGENT OR HIGHER QUALITY STANDARD, DETAIL OR SPECIFICATION SHALL APPLY.

2. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN EMERGENCY ACCESS ROUTES TO THE SITE AND STRUCTURE AT ALL TIMES PER THE APPLICABLE JURISDICTIONAL FIRE PROTECTION DISTRICT REQUIREMENTS.

3. THE CONTRACTOR SHALL OBTAIN, AT THE CONTRACTOR'S EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARD SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE REQUIRED PARTY (OWNER, ENGINEER, OR JURISDICTIONAL AUTHORITY) AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION, PRIOR TO BACKFILLING, AND AS REQUIRED BY JURISDICTIONAL AUTHORITY AND/OR PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL CONTINUE WITH NOTIFICATIONS THROUGHOUT THE PROJECT AS REQUIRED BY THE STANDARDS AND SPECIFICATIONS.

5. THE LOCATIONS OF EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION BASED ON INFORMATION BY OTHERS. NOT ALL UTILITIES MAY BE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT SIZE, LOCATION AND TYPE OF ALL EXISTING UTILITIES WHETHER SHOWN OR NOT BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ANY AND ALL DAMAGES AND COSTS WHICH MIGHT OCCUR BY CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC AND PRIVATE UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO PROCEEDING WITH GRADING AND CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF UTILITIES SHALL BE PERFORMED AND INSPECTED ACCORDING TO THE REQUIREMENTS OF THE UTILITY OWNER. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAPPING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, AND FOR RELOCATING ENCOUNTERED UTILITIES AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL CONTACT AND RECEIVE APPROVAL FROM THE APPROPRIATE UTILITY OWNER BEFORE RELOCATING ANY ENCOUNTERED UTILITIES. CONTRACTOR RESPONSIBLE FOR SERVICE CONNECTIONS, AND RELOCATING AND RECONNECTING AFFECTED UTILITIES AS COORDINATED WITH UTILITY OWNER AND/OR ENGINEER, INCLUDING NON-MUNICIPAL UTILITIES (TELEPHONE, GAS, CABLE, ETC., WHICH SHALL BE COORDINATED WITH THE UTILITY OWNER). THE CONTRACTOR SHALL IMMEDIATELY CONTACT ENGINEER UPON DISCOVERY OF A UTILITY DISCREPANCY OR CONFLICT. AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY NOTIFICATION CENTER OF OREGON.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND COMPLYING WITH ALL APPLICABLE PERMITS FOR GROUNDWATER DISCHARGE.

7. ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR. ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE DIRECTED BY THE MUNICIPALITY OR OWNER'S REPRESENTATIVE.

8. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE LOCAL JURISDICTION, AND THE APPROVED EROSION CONTROL MEASURES AT THE CONTRACTORS EXPENSE DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR PROHIBITING SILT AND DEBRIS LADEN RUNOFF FROM LEAVING THE SITE, AND FOR KEEPING ALL PUBLIC AREAS FREE OF MUD AND DEBRIS. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING FINAL GRADES AND FOR REMOVING ACCUMULATED SEDIMENTATION FROM ALL AREAS INCLUDING SWALES AND DETENTION/WATER QUALITY AREAS. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND MUNICIPALITY.

9. THE CONTRACTOR SHALL FURNISH THE ENGINEER OF RECORD A COMPLETE SET OF CONSTRUCTION RECORD DRAWINGS ("AS-BUILT"), FOR THE CONSTRUCTED IMPROVEMENTS. THE PLANS SHALL BE MARKED UP TO SHOW SUFFICIENT DIMENSION TIES TO REASONABLY PERMANENT SURFACE FEATURES FOR ALL BURIED FACILITIES TO ALLOW FOR FUTURE LOCATING. ENGINEER WILL PRODUCE FINAL RECORD DRAWINGS TO OWNER.

10. THE GENERAL PROJECT SCOPE OF WORK IS AS FOLLOWS.

DEMOLITION ITEMS:

- EXISTING ROOF CENTER VENT SHALL BE REMOVED AND DISCARDED
- EXISTING UPPER CURVED LADDER, FALL PREVENTION SYSTEM, AND ANTENNA SCAFFOLDING SHALL BE REMOVED AND DISCARDED
- FULL LENGTH OF EXISTING PCUN RADIO CABLE/ANTENNA, ROOF HATCH INTRUSION SWITCH, AND LOWER LADDER INTRUSION SWITCH SHALL BE REMOVED AND DISCARDED
- EXISTING LOWER LADDER, FALL PREVENTION SYSTEM, AND CLIMB PREVENTION SHIELD SHALL BE REMOVED AND DISCARDED

NEW APPURTENANCES, ACCESSORIES, AND OTHER ITEMS:

- FIELD MEASURE FOR ALL METALWORK UPGRADE ITEMS PRIOR TO CREATION OF SHOP DRAWINGS AND CALCULATIONS TO BE SUBMITTED FOR APPROVAL.
- NEW ROOF CENTER VENT WITH EXPANDED OPENING.
- NEW UPPER LADDER WITH FALL PREVENTION SYSTEM, PLATFORM, STAIRWAY, ANGLE TREADS, AND WALKWAY WITH HANDRAILS ON BOTH SIDES TO AND AROUND CENTER VENT.
- NEW HATCH INTRUSION SWITCH ON EXISTING ROOF ACCESS HATCH, RE-USING EXISTING BURIED COMBINED CONDUIT FROM TELEMETRY BUILDING TO COLUMN 2, AND EXTENDING ABOVE-GRADE CONDUIT TO ROOF HATCH AS REQUIRED.
- NEW LOWER LADDER WITH FALL PREVENTION SYSTEM, CLIMB PREVENTION SHIELD, CATWALK LANDING PAD, AND INTEGRATION WITH THE EXISTING CATWALK HANDRAIL ON COLUMN 2.
- NEW LADDER INTRUSION SWITCH ON NEW LOWER LADDER CLIMB PREVENTION SHIELD, RE-USING EXISTING BURIED COMBINED CONDUIT FROM TELEMETRY BUILDING TO COLUMN 2.

MAINTENANCE PAINTING FOR THE TANK SHALL INCLUDE THE FOLLOWING:

- INTERIOR COATING: SPOT SURFACE PREPARATION TO SSPC-SP11 AND SPOT PRIMING AS NEEDED TO REPAIR ALL COMPROMISED AREAS, AND TWO-COAT PROTECTIVE COATING SYSTEM
- DISINFECTION OF RESERVOIR INTERIOR FOLLOWING COMPLETED INTERIOR COATING APPLICATION AND APPROVALS.
- EXTERIOR COATING SYSTEM: FULL EXTERIOR WATERJET CLEANING TO SSPC-SP WJ-4, SPOT SURFACE PREPARATION TO SSPC-SP11 AND SPOT PRIMING AS NEEDED TO REPAIR ALL COMPROMISED AREAS, AND DRY-FALL SPRAYABLE OVERCOAT SYSTEM INCLUDING TWO-COAT PROTECTIVE COATING SYSTEM. TANK PAINTING CONTRACTOR SHALL WORK AROUND EXISTING CABLING AND ANTENNAS ON TANK COLUMNS, SHELL, AND CATWALK, PREPARING AND COATING THE SURFACES TO THE BEST OF THEIR ABILITIES WHERE ACCESS IS NOT OPTIMAL.

ABBREVIATIONS

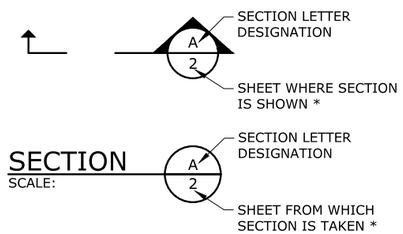
@	AT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
ABAN(D)	ABANDON(ED)
AC	ASPHALTIC CONCRETE
AL	ALUMINUM
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
AVE	AVENUE
BFILL	BACKFILL
BLDG	BUILDING
BM	BENCH MARK
C/L	CENTERLINE
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CND	CONDUIT
CO	CLEANOUT / COLORADO
CONC	CONCRETE
CR	CRUSHED ROCK
CULV	CULVERT
CY	CUBIC YARDS
D	DRAIN
DEFL	DEFLECT
DET	DETAIL
DIA	DIAMETER
DR	DRIVE
E	ELECTRIC / EAST / EASTING
EA	EACH
EL	ELEVATION
ELEC	ELECTRIC
EQ	EQUAL
ESMT	EASEMENT
EXIST	EXISTING
FT	FEET / FOOT
G	GAS
GALV	GALVANIZED
GR	GRADE
GRVL	GRAVEL
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HWY	HIGHWAY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
JB	JUNCTION BOX
LF	LINEAR FEET
MATL	MATERIAL
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
N	NORTH / NORTHING
NO.	NUMBER
NTS	NOT TO SCALE
OF	OVERFLOW
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTY	QUANTITY
R/W	RIGHT-OF-WAY
RD	ROAD
REQ'D	REQUIRED
RES	RESERVOIR
S	SOUTH
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SF	SQUARE FEET
SHT	SHEET
SLP	SLOPE
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
S/W	SIDEWALK
T	TELEPHONE
TELEM	TELEMETRY
THK	THICK
TYP	TYPICAL
UPRR	UNION PACIFIC RAILROAD
VERT	VERTICAL
W	WATER / WEST
W/	WITH

TOPOGRAPHIC LEGEND

	EXISTING	PROPOSED
WATERLINE	10"W	
ELECTRICITY	E	
TELEPHONE/TELEMETRY	T	
SANITARY SEWER LINE	8"SS	
STORM DRAIN	8"SD	8"SD
CULVERT	30"CMP	18"D
ABANDON PIPE		
DRAINAGE DITCH		
BARBWIRE FENCE		
TEMPORARY SILT FENCE		
TREE/BUSH LINE		
CENTERLINE		
EASEMENT/PROPERTY LINE		
RIGHT-OF-WAY		
EDGE OF PAVEMENT/AC		
EDGE OF GRAVEL		
CURB		
SIDEWALK	S/W	
STRUCTURE OR FACILITY		
CONTOUR MINOR		
CONTOUR MAJOR	200	200
MANHOLE		
CLEAN-OUT		
CATCH BASIN/FIELD INLET		
UTILITY POLE		
GUY WIRE		
SIGN		
BENCHMARK		
TREE DECIDUOUS		
TREE CONIFEROUS		
TREE TO BE REMOVED		
BORE PIT		

SECTION AND DETAIL DESIGNATIONS

SECTION DESIGNATIONS



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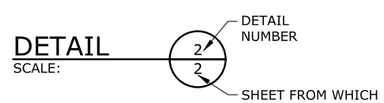

* NOTE: IF PLAN AND SECTION FOR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON THE SAME DRAWING, DRAWING NUMBER IS REPLACED WITH A DASH.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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KAU DESIGNED
EJJ DRAWN
JHF CHECKED

REGISTERED PROFESSIONAL ENGINEER 88888 Justin H Ford MAY 21, 2010 JUSTIN HENRY FORD
RENEWS 12-31-23

murraysmith

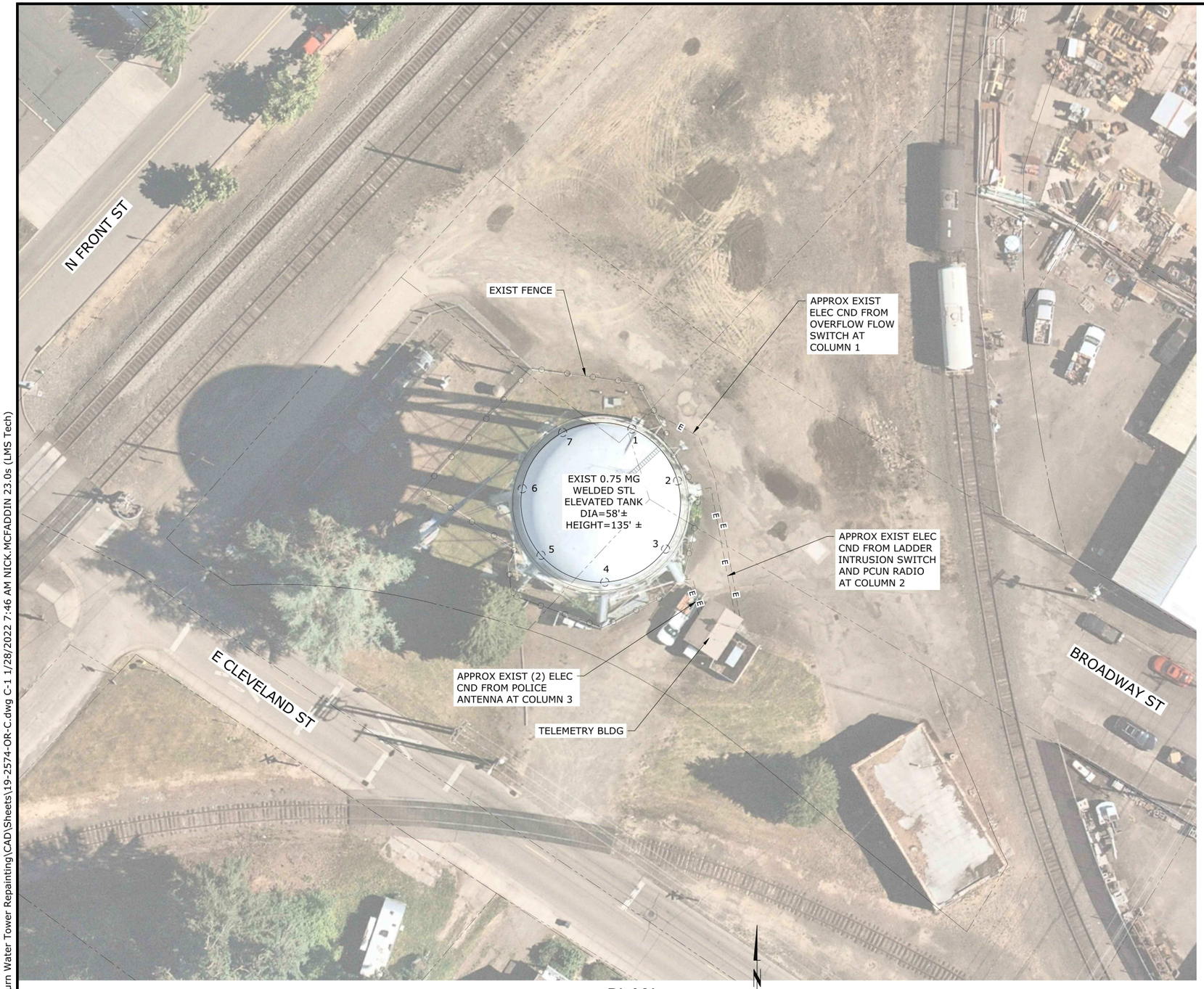
WOODBURN OREGON Incorporated 1889

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

GENERAL NOTES, ABBREVIATIONS AND LEGEND

PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET G-2



PLAN
SCALE: 1"=20'

NOTES:

1. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES AND FACILITIES ON-SITE THROUGHOUT CONSTRUCTION. ANY DAMAGE CAUSED SHALL BE REPAIRED AT THE CONTRACTOR'S SOLE EXPENSE.

2. CONTRACTOR MAY UTILIZE AREA WITHIN EXISTING SITE SECURITY FENCE FOR STAGING AND STORAGE OF MATERIALS. STAGING AND STORAGE OF MATERIALS WILL BE PERMITTED OUTSIDE OF FENCE AS WELL, ON CITY PROPERTY, BUT CONTRACTOR SHALL NOTE THERE IS NO FENCING. PROTECT ALL EXISTING FACILITIES AND REPAIR ANY DAMAGE TO STRUCTURES OR OTHER SITE FEATURES TO PRE-CONSTRUCTION CONDITIONS.

3. THERE ARE EXISTING CONDUITS INSTALLED FROM THE TELEMETRY BUILDING TO THE RESERVOIR COLUMNS, SOME OF WHICH EXTEND UP TO THE RESERVOIR ROOF. THE FOLLOWING SCHEDULE LISTS THE EXTENTS AND WORK REQUIRED FOR EACH CONDUIT:

POLICE RADIO: TWO EXISTING CONDUITS (±1.5" DIAMETER) INSTALLED FROM THE TELEMETRY BUILDING TO COLUMN 3, EXTEND VERTICALLY UP THE COLUMN, THEN HORIZONTALLY (COUNTER CLOCKWISE) ALONG THE CATWALK RAILING, UNTIL CROSSING THE WALKWAY NEAR THE UPPER LADDER, AND TERMINATING AT A ROOF ANTENNA. THE SECTION OF THESE CONDUITS ALONG COLUMN 3 SHALL BE RE-MOUNTED FOLLOWING THE CONDUIT-MOUNTING BRACKET DETAIL ON DETAIL 3, SHEET C-5. PRESERVE AND PROTECT THE CABLE ALONG THE CATWALK RAILING. THE PORTION OF THE CABLE EXTENDING UP THE UPPER LADDER TO THE ROOF ANTENNA SHALL BE REMOVED AND REINSTALLED WITH NEW CONDUIT MOUNTING BRACKETS PER SAME DETAIL 3 ON SHEET C-5.

LADDER INTRUSION SWITCH/PCUN RADIO/HATCH INTRUSION SWITCH: ONE EXISTING CONDUIT (±1.5" DIAMETER) INSTALLED FROM THE TELEMETRY BUILDING TO COLUMN 2 (SAME COLUMN AS THE LOWER LADDER), HOUSES THE LADDER INTRUSION SWITCH THAT TERMINATES AT THE BOTTOM OF THE LOWER LADDER AND THE ABANDONED PCUN RADIO CABLE. THE EXISTING LADDER INTRUSION SWITCH CABLE SHALL BE REMOVED AND DISCARDED, RETAINING THE BURIED CONDUIT FOR INSTALLING NEW INTRUSION SWITCHES. THE PCUN RADIO CABLE EXTENDS UP COLUMN 2, FOLLOWS THE CATWALK RAILING TO THE UPPER LADDER, AND TERMINATES AT A ROOF ANTENNA. THE PCUN RADIO CABLE, ANTENNA, AND ALL ASSOCIATED MOUNTING APPURTENANCES FROM THE TELEMETRY BUILDING TO THE ROOF ANTENNA SHALL BE REMOVED. THE NEW LOWER LADDER INTRUSION SWITCH AND THE ROOF HATCH INTRUSION SWITCH SHALL BE ROUTED THROUGH THE EXISTING BURIED CONDUITS TO COLUMN 2. NEW CONDUIT AND CONDUIT MOUNTING BRACKETS SHALL BE INSTALLED UP COLUMN 2 IN A WAY THAT ALLOWS THE LADDER INTRUSION SWITCH TO TERMINATE 10-FEET ABOVE GROUND AT THE CLIMB PREVENTION SHIELD, WHILE THE ROOF HATCH INTRUSION SWITCH EXTENDS UP COLUMN 2. THE HATCH INTRUSION SWITCH SHALL BE MOUNTED TO THE RAILING, CROSS THE CATWALK NEAR THE UPPER LADDER, AND BE MOUNTED ON CONDUIT MOUNTING BRACKETS UNTIL TERMINATING AT THE ROOF HATCH.

OVERFLOW FLOW SWITCH: ONE EXISTING CONDUIT (±3/4" DIAMETER) INSTALLED FROM THE TELEMETRY BUILDING TO COLUMN 1 (WHERE THE OVERFLOW PIPE IS LOCATED) HOUSES THE FLOW SWITCH CABLE WHICH TERMINATES NEAR THE BOTTOM OF COLUMN 1. PRESERVE AND PROTECT THIS CABLE DURING CONSTRUCTION.

4. FOLLOWING ALL WORK, APPLY TOP SOIL, SEED MIXTURE, AND/OR GRAVEL SURFACING AS NEEDED TO MATCH PRE-CONSTRUCTION SURFACE CONDITIONS. CONTRACTOR TO SUBMIT SEED MIXTURE FOR REVIEW.

RECOMMENDED CONSTRUCTION SEQUENCING:

1. PERFORM METALWORK TANK UPGRADES, LEAD ABATEMENT, AND EXTERIOR COATING WITH TANK IN SERVICE.

2. PERFORM INTERIOR COATING SPOT REPAIRS AND TANK LETTERING WHILE TANK IS OUT OF SERVICE. THE TANK SHALL BE OUT OF SERVICE NO EARLIER THAN SEPTEMBER 15, 2022, CONTINGENT ON WEATHER AND WATER CONSUMPTION PROJECTIONS. THE TANK OUT OF SERVICE PERIOD SHALL BE NO MORE THAN 30 CALENDAR DAYS.

3. RESTORE ALL SITE FEATURES TO PRE-CONSTRUCTION CONDITIONS.

NO.	DATE	BY	REVISION

NOTICE
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REGISTERED PROFESSIONAL ENGINEER 88688 Justin H Ford MAY 21, 2014 JUSTIN HENRY FORD RENEWS 12-31-23

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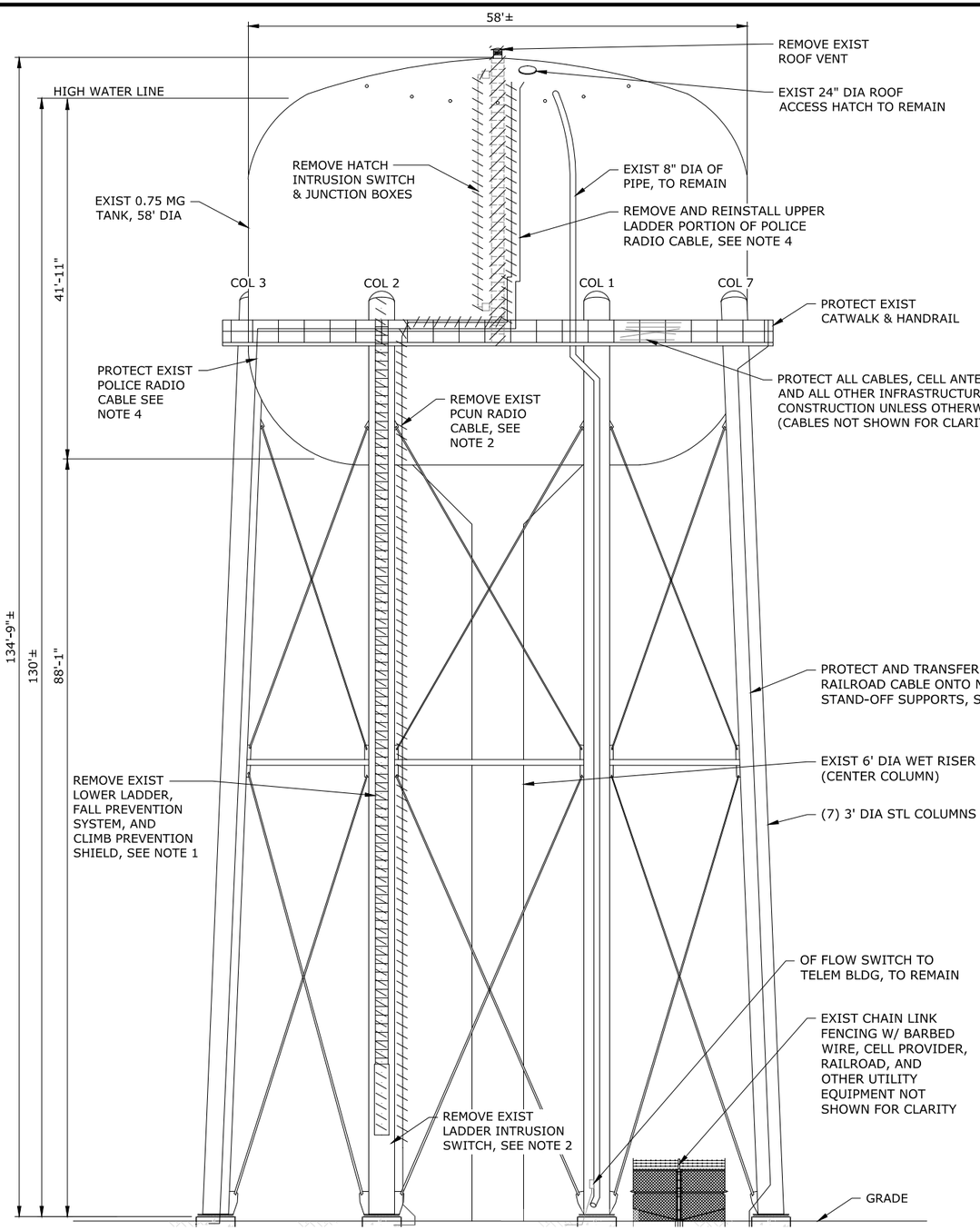
WOODBURN OREGON Incorporated 1889

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

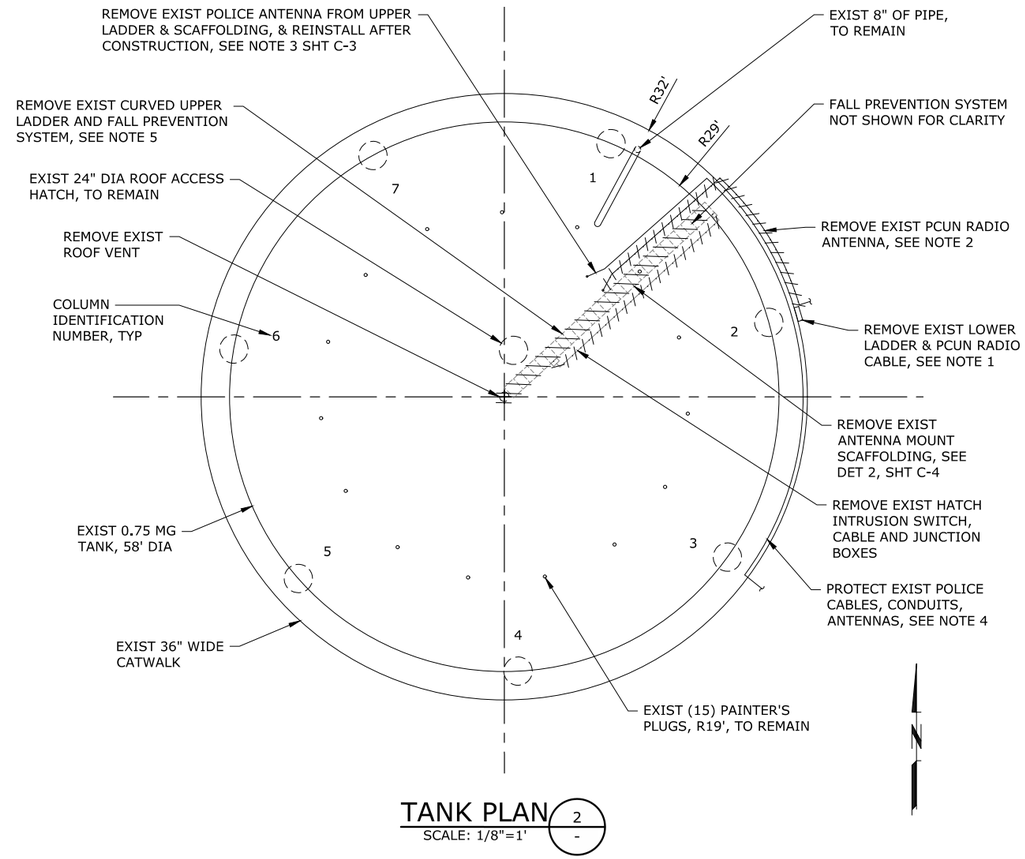
SITE PLAN

PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET C-1



ELEVATION 1
SCALE: 1/8"=1'



TANK PLAN 2
SCALE: 1/8"=1'

SHEET NOTES:

1. THE EXISTING LOWER LADDER, FALL PREVENTION SYSTEM, AND LADDER CLIMB PREVENTION SHIELD SHALL BE COMPLETELY REMOVED AND DISCARDED. GRIND ALL UNUSED CONNECTION POINTS FLUSH WITH THE TANK SHELL. SEE SHEET C-3 FOR NEW LADDER AND ANCILLARY SYSTEM INSTALLATION REQUIREMENTS.

2. REMOVE AND DISCARD FULL LENGTH OF THE ABANDONED PCUN RADIO CABLE FROM TELEMETRY BUILDING TO ROOF ANTENNA MOUNTED ON SCAFFOLDING, INCLUDING ALL ASSOCIATED MOUNTING HARDWARE AND STRAPS, EXCEPT FOR THE PVC CONDUIT MOUNTED AT THE BOTTOM OF COLUMN 2, WHICH ALSO HOUSES THE LADDER INTRUSION SWITCH. REMOVE AND DISCARD FULL LENGTH OF THE EXISTING LADDER INTRUSION SWITCH CABLE FROM TELEMETRY BUILDING TO THE BOTTOM OF THE LOWER LADDER, APPROXIMATELY 10 FEET ABOVE GROUND. THE EXISTING BURIED CONDUIT WILL HOUSE TWO NEW CABLES: ROOF HATCH INTRUSION SWITCH AND LADDER INTRUSION SWITCH. THE NEW CABLES, CONDUIT, AND MOUNTS ARE DESCRIBED ON SHEET C-3.

3. PROTECT EXIST UNION PACIFIC RAILROAD (UPRR) CABLE, WHICH EXTENDS FROM THE UPRR BUILDING ADJACENT TO COLUMN 2, UP COLUMN 7 TO A RAILING MOUNTED ANTENNA. REMOVE AND DISCARD THE EXISTING STAINLESS STEEL MOUNTING STRAPS ON COLUMN 7, AND RE-MOUNT THE CONDUITS AS DESCRIBED ON SHEET C-3.

4. PROTECT THE TWO EXISTING POLICE RADIO CABLES AND CONDUITS, WHICH EXTEND FROM THE TELEMETRY BUILDING, UP COLUMN 3, THEN SPLIT TO A ROOF-MOUNTED ANTENNA AND A RAILING MOUNTED ANTENNA. REMOVE AND DISCARD THE EXISTING STAINLESS STEEL MOUNTING STRAPS ON COLUMN 3, AND RE-MOUNT THE TWO CONDUITS AS DESCRIBED ON SHEET C-3. REMOVE AND REINSTALL THE PORTION OF THE POLICE ANTENNA, CABLE, AND CONDUIT EXTENDING UP THE UPPER LADDER TO THE ROOF-MOUNTED ANTENNA AS FURTHER DESCRIBED ON SHEET C-3.

5. THE EXISTING CURVED UPPER LADDER, FALL PREVENTION SYSTEM, AND ANTENNA MOUNT SCAFFOLDING SHALL BE COMPLETELY REMOVED AND DISCARDED. GRIND ALL UNUSED CONNECTION POINTS FLUSH WITH THE TANK SHELL. SEE SHEET C-3 FOR NEW LADDER AND ANCILLARY SYSTEM INSTALLATION REQUIREMENTS.

6. ALL EXISTING GROUND-LEVEL AND TANK-MOUNTED EQUIPMENT SHALL BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE NOTED. CONTRACTOR SHALL COORDINATE WITH CITY AND CELL PROVIDERS TO GAIN ENTRY INTO FENCED CELLULAR EQUIPMENT AREAS FOR ACCESS TO COLUMNS.

7. FOLLOWING DEMOLITION OF EXISTING FACILITIES AS DESCRIBED, ALL UNUSED CONNECTION POINTS TO TANK SHELL OR COLUMNS SHALL BE GROUND FLUSH.

NO.	DATE	BY	REVISION

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REGISTERED PROFESSIONAL ENGINEER 88688 Justin H Ford MAY 21, 2014 JUSTIN HENRY FORD
RENEWS 12-31-23

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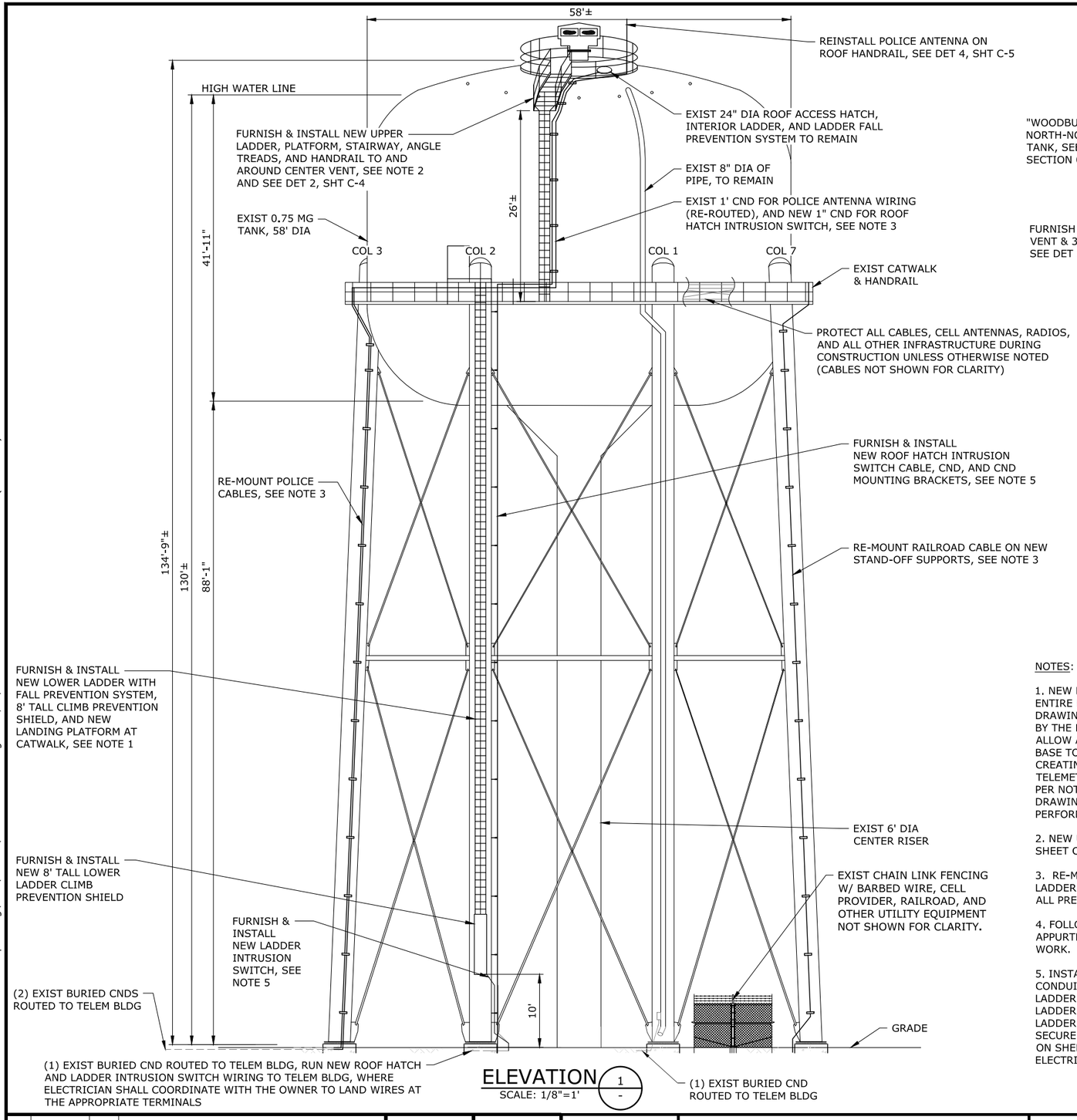
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

EXISTING TANK ROOF PLAN, ELEVATION, AND DEMOLITION PLAN

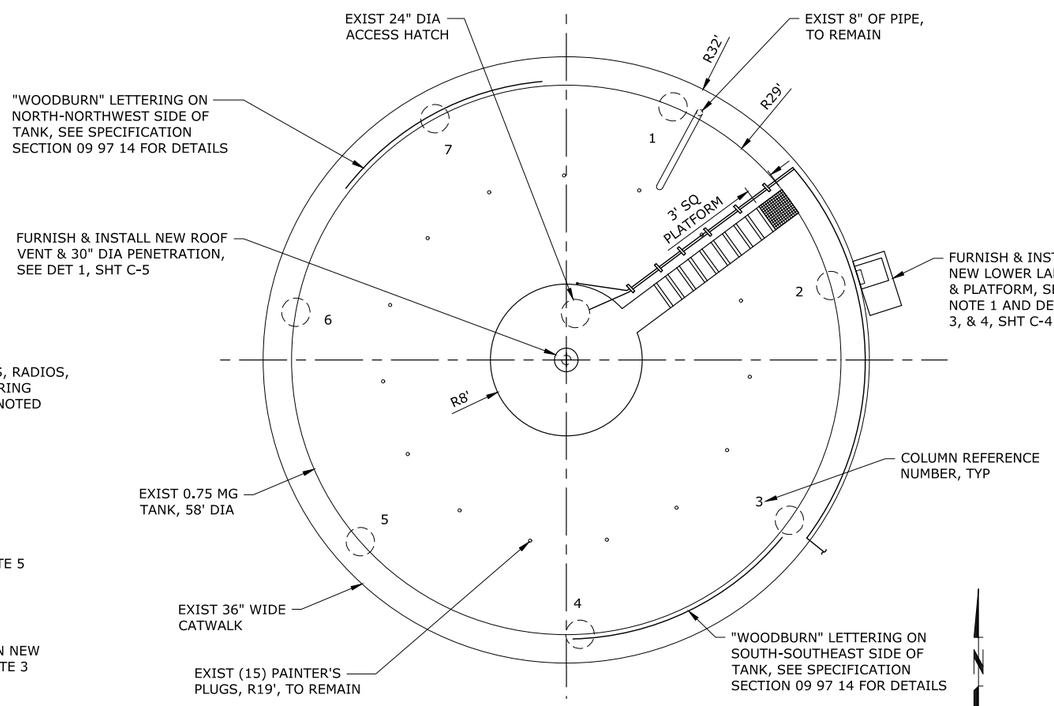
PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET C-2

4 of 7



ELEVATION 1
SCALE: 1/8"=1'



TANK PLAN 2
SCALE: 1/8"=1'

NOTES:

1. NEW LOWER LADDER SHALL BE DESIGNED AND INSTALLED PER THE DETAILS INCLUDED ON SHEET C-4, AND SHALL BE INSTALLED VERTICALLY FOR THE ENTIRE HEIGHT AND IN COMPLIANCE WITH ALL OSHA REQUIREMENTS. CONTRACTOR SHALL FIELD VERIFY LADDER HEIGHT PRIOR TO CREATING SHOP DRAWINGS FOR APPROVAL AND FABRICATION.FURNISH AND INSTALL NEW 8' TALL CLIMB PREVENTION SHIELD, WHICH SHALL BE A DEFERRED SUBMITTAL BY THE FABRICATOR FOR APPROVAL PRIOR TO FABRICATION AND CONSTRUCTION. THE SHIELD SHALL BE LOCKABLE AND HINGED AND WHEN OPEN SHALL ALLOW A USER TO CLIMB UP THE LADDER UNIMPEDED. WHEN CLOSED THE SHIELD SHALL COMPLETELY ENCLOSE ALL ELEMENTS OF THE LADDER AT THE BASE TO ELIMINATE ANY POTENTIAL FOR UNWANTED CLIMBING. FIELD VERIFY THE COLUMN, BRACING, AND CABLE MOUNTING ELEMENTS PRIOR TO CREATING SHOP DRAWINGS AND FABRICATION. THE SHIELD SHALL BE EQUIPPED WITH AN INTRUSION SWITCH AND THE SIGNAL WIRING ROUTED TO THE TELEMETRY BUILDING THROUGH THE EXISTING BURIED CONDUIT. EXTEND NEW CONDUIT FOR INTRUSION SWITCH LOCATION ON NEW STANDOFF MOUNTS PER NOTE 5. CONTRACTOR SHALL FIELD MEASURE FOR ALL ELEMENTS PRIOR TO CREATING SHOP DRAWINGS, AND SHALL PROVIDE FINAL DESIGN, SHOP DRAWINGS, AND CALCULATIONS FOR APPROVAL FOR ALL LADDER ELEMENTS INCLUDING LANDING PLATFORM AT CATWALK IN COORDINATION WITH THE PERFORMANCE DETAILS PRESENTED ON SHEET C-4.

2. NEW UPPER LADDER WITH FLARED OPENING AT THE NEW LANDING PLATFORM SHALL BE DESIGNED AND INSTALLED PER THE DETAILS INCLUDED ON SHEET C-4.

3. RE-MOUNT THE EXISTING POLICE AND RAILROAD CABLES USING WELDED STUD ATTACHMENTS WITH UNISTRUT PER DETAIL 3 ON SHEET C-5. NEW LADDER INTRUSION SWITCH AND HATCH INTRUSION SWITCH CABLES SHALL BE MOUNTED USING THE SAME WELDED STUD ATTACHMENT DETAIL. ENSURE ALL PREVIOUS STAINLESS STEEL MOUNTING STRAPS HAVE BEEN REMOVED AND DISCARDED.

4. FOLLOWING ALL RESERVOIR METALWORK AND UPGRADES, THE RESERVOIR INTERIOR AND EXTERIOR INCLUDING ALL ATTACHMENTS AND APPURTENANCES SHALL BE COATED PER SPECIFICATIONS. INTERIOR COATING IS LIMITED TO SPOT REPAIRS FROM DAMAGE DUE TO EXTERIOR WELDING WORK.

5. INSTALL NEW ROOF HATCH INTRUSION SWITCH AND NEW LOWER LADDER CLIMB PREVENTION SHIELD INTRUSION SWITCH. REUSE EXISTING BURIED CONDUIT FROM TELEMETRY BUILDING TO COLUMN 2. REUSE EXISTING 2" DIAMETER ± VERTICAL PVC CONDUIT WHICH TERMINATES AT BOTTOM OF LADDER. EXTEND 1" DIAMETER PVC CONDUIT UP TO ROOF HATCH. THE LADDER INTRUSION SWITCH SHALL TERMINATE AT THE BOTTOM OF THE LOWER LADDER CLIMB PREVENTION SHIELD DESCRIBED IN NOTE 1, AND THE HATCH INTRUSION SWITCH SHALL EXTEND UP COLUMN 2 AND ALONGSIDE THE UPPER LADDER TO THE ROOF HATCH USING WELDED STUD AND UNISTRUT CONDUIT MOUNTING BRACKETS PER DETAIL 3 ON SHEET C-5. CONDUITS SHALL BE SECURELY MOUNTED TO EXISTING CATWALK RAILING USING GALVANIZED U-BOLTS. REINSTALL THE UNISTRUT CATWALK CABLE CROSSING PER DETAIL 5 ON SHEET C-5. MOUNTING BRACKETS ON COLUMN 2 SHALL BE MOUNTED ON THE INSIDE OF EXISTING FENCE LIMITS, TO LIMIT RISK OF TAMPERING. ELECTRICIAN SHALL LAND WIRING AT TERMINAL LOCATIONS IN TELEMETRY BUILDING IDENTIFIED BY THE OWNER IN THE FIELD DURING CONSTRUCTION.

NO.	DATE	BY	REVISION

NOTICE
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JHF CHECKED

REGISTERED PROFESSIONAL ENGINEER 88888 Justin H Ford MAY 21, 2014 JUSTIN HENRY FORD
RENEWS 12-31-23

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WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

TANK IMPROVEMENTS ROOF PLAN AND ELEVATION

PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET C-3

5 of 7

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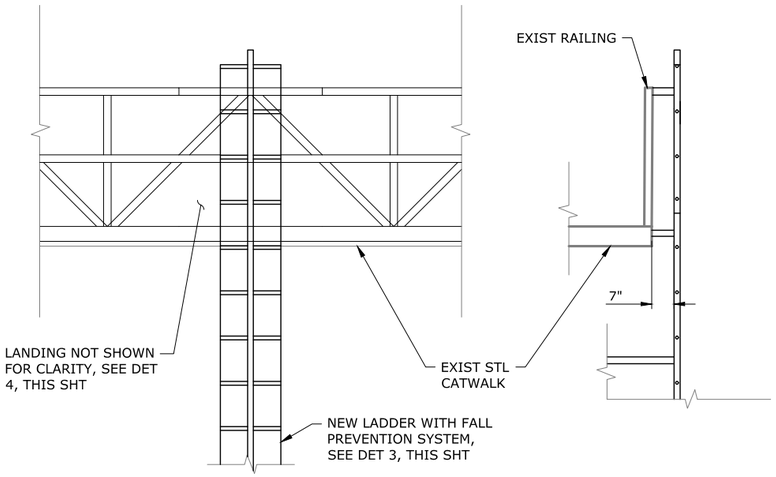
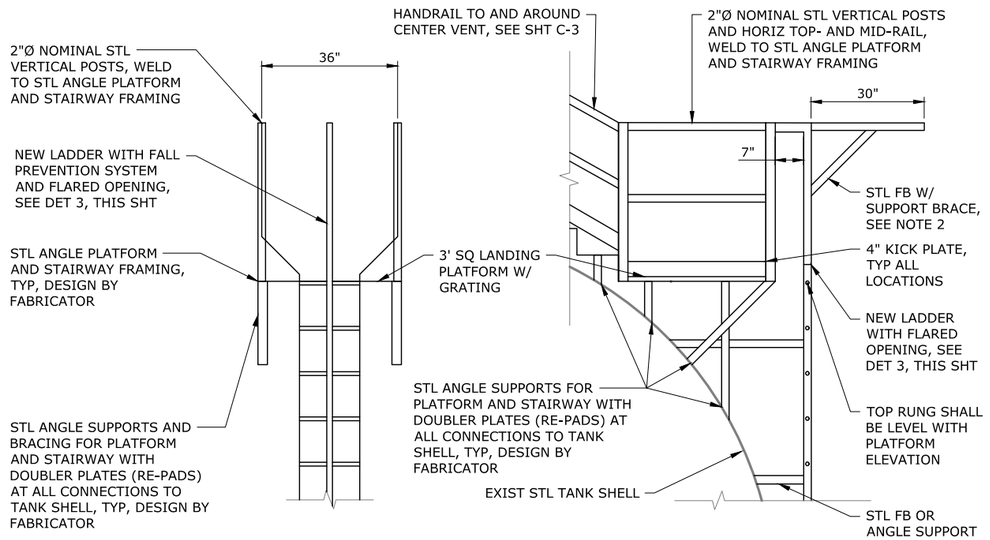


FRONT ELEVATION SIDE ELEVATION

NEW LOWER LADDER AT CATWALK

SCALE:3/8"=1'-0"

1 / C-3



FRONT ELEVATION SIDE ELEVATION

NEW UPPER LADDER OPENING AT PLATFORM

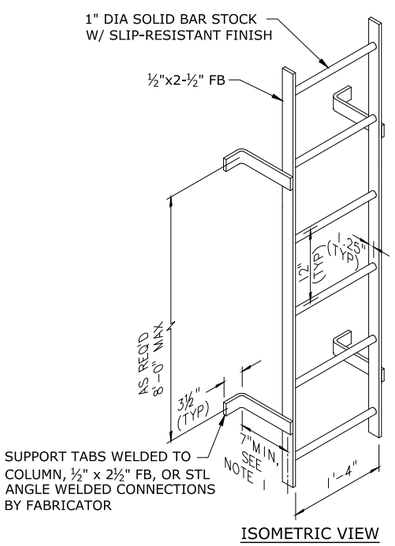
SCALE:3/8"=1'-0"

2 / C-3

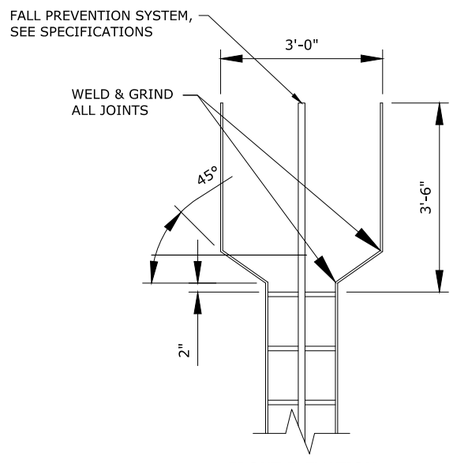
NOTES:

1. THE NEW UPPER LADDER WITH FLARED OPENING AT THE NEW LANDING PLATFORM SHALL BE DESIGNED AND INSTALLED PER THE DETAILS INCLUDED. THE NEW LANDING PLATFORM, STAIRWAY, HANDRAIL TO AND AROUND CENTER VENT, AND ANGLE TREADS SHALL BE A DEFERRED SUBMITTAL FOR APPROVAL PRIOR TO FABRICATION AND CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LADDER HEIGHT PRIOR TO CREATING SHOP DRAWINGS FOR APPROVAL AND FABRICATION. CONSTRUCTION OF THE PLATFORM, STAIRS, AND WALKWAY TO CENTER VENT SHALL INCLUDE THE FOLLOWING:
   - MINIMUM 3' SQUARE PLATFORM WITH ANGLE STEEL SUPPORTS AND FRAMING FOR STEEL GRATING, DESIGNED BY FABRICATOR. ALL CONNECTIONS TO THE TANK SHALL INCLUDE A ¼" THICK DOUBLER PLATE (RE-PAD) OF 8" DIAMETER, MINIMUM.
   - MINIMUM FOUR (4) STAIRS TO THE ELEVATION WHERE THE ROOF PITCH LOWERS AT 7" VERTICAL RUN AND 12" HORIZONTAL RUN, WITH STEEL GRATING, DESIGNED BY FABRICATOR.
   - MINIMUM EIGHT (8) STEEL ANGLE TREADS AT 18" ON CENTER. ANGLES SHALL BE ¼" THICK, 4" HORIZONTAL LEG, WITH A COPED VERTICAL LEG AT A LENGTH AS REQUIRED TO WELD TO THE TANK ROOF. ANGLES SHALL BE WELDED FULL LENGTH TOP AND BOTTOM, AND SHALL INCLUDE AN END CAP ON BOTH SIDES WELDED TO THE ANGLE TO SEAL THE AREA FROM TRAPPING DEBRIS AND MOISTURE.
   - HANDRAIL SHALL BE CONSTRUCTED OF SCHEDULE 40 STEEL AND PER ALL OSHA REQUIREMENTS, MINIMUM 3'-6" TALL WITH ¼" THICK x 4" TALL KICK PLATE, 2" NOMINAL DIAMETER TOP RAIL, 2" NOMINAL DIAMETER MIDDLE RAIL (COPED TO MEET POSTS), AND 2" NOMINAL DIAMETER POSTS AT 6' ON CENTER MAXIMUM SPACING.
   - ALL HANDRAIL COMPONENTS SHALL BE ROLLED TO MATCH ROOF RADIUS OR SHALL BE DESIGNED TO BE INSTALLED AT A HEIGHT COMPLIANT WITH ALL OSHA REQUIREMENTS. ALL POSTS SHALL BE COPED ON THE BOTTOM FOR VERTICAL PLUMB INSTALLATION, AND SHALL INCLUDE A ¼" THICK DOUBLER PLATE (RE-PAD) OF 8" DIAMETER, MINIMUM.
   - INSTALL NON-SKID SURFACING ABOVE THE STAIRWAY FOR ALL AREAS WITHIN THE NEW HANDRAIL PER THE SPECIFICATIONS.

2. PROVIDE WELDED FLAT BAR AT TOP OF LADDER FLARE WITH BRACING EACH SIDE FOR ADDITIONAL CLIMBING CONVENIENCE. THE DESIGN SHALL INCLUDE A STRAIGHT SECTION ON EACH SIDE OF LADDER, AND A RADIUSED SECTION. FINAL DESIGN PER FABRICATOR.



ISOMETRIC VIEW



FRONT ELEVATION

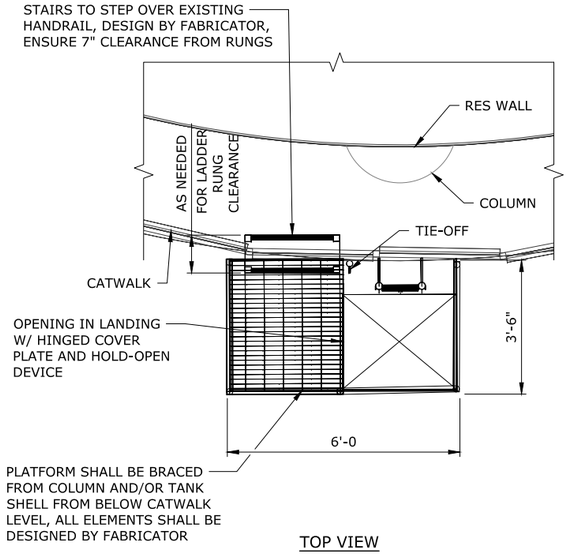
TYPICAL LADDER AND FLARE OPENING

SCALE:NTS

3 / -

NOTES:

1. TYPICAL STANDOFF CONSTRUCTION SHOWN. 7" MINIMUM CLEARANCE REQUIRED BEHIND ALL LADDER RUNGS. THE UPPER LADDER STANDOFFS CAN BE FABRICATED WITHOUT THE HORIZONTAL PORTION OF THE STANDOFF IF REQUIRED, AND TRIMMED AS NEEDED IN THE FIELD TO WELD TO THE RESERVOIR SHELL WITH 8" DIAMETER DOUBLER PLATES (RE-PADS). THE LOWER LADDER STANDOFF LENGTHS SHALL BE FIELD MEASURED PRIOR TO PROVIDING SHOP DRAWINGS FOR APPROVAL AND FABRICATION, TO MAINTAIN 7" MINIMUM CLEARANCE AT CATWALK, WHICH WILL REQUIRE LONGER LEGS TO CONNECT THE LADDER TO THE COLUMN.



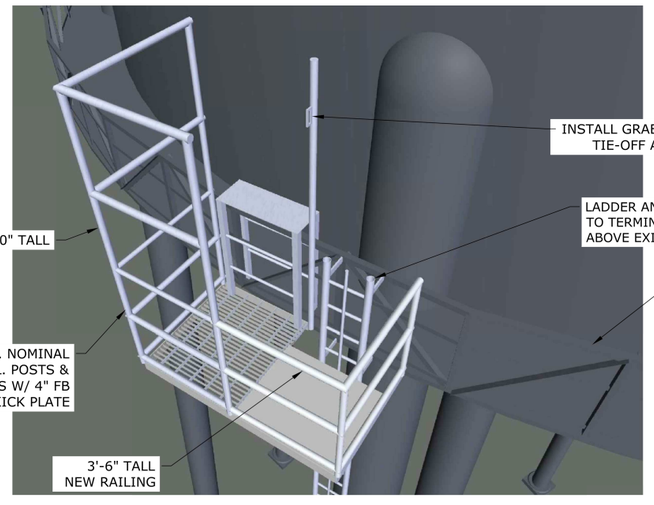
TOP VIEW

NOTES:

1. CABLES, ANTENNAS, AND OTHER CELL COMPANY EQUIPMENT NOT SHOWN ON EXISTING HANDRAIL FOR CLARITY.

2. CONTRACTOR SHALL FIELD MEASURE FOR ALL LANDING PLATFORM ELEMENTS PRIOR TO CREATING SHOP DRAWINGS, AND A REGISTERED STRUCTURAL ENGINEER SHALL PROVIDE FINAL DESIGN, SHOP DRAWINGS, AND CALCULATIONS. SEE NOTE 1 ON SHEET C-3.

3. HINGED COVER PLATE SHALL OPEN FACING THE LADDER IN A WAY WHICH ALLOWS A CLIMBER TO EASILY OPEN AND CLOSE THE COVER WITH ONE HAND. NEW LADDER PLATFORM SHALL BE INSTALLED AT SAME ELEVATION AS EXISTING CATWALK. STEPS OVER EXISTING RAILING SHALL BE DESIGNED FOR A SAFE AND EASY CLIMB AND DISMOUNT FROM THE LADDER PLATFORM ONTO THE EXISTING CATWALK, WHILE NOT AFFECTING ANY EXISTING CABLES AND EQUIPMENT IN PLACE ON THE RAILING.



ISOMETRIC VIEW

NEW LOWER LADDER PLATFORM AT CATWALK

SCALE:1/2"=1'-0"

4 / C-3

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

KAU DESIGNED

EJJ DRAWN

JHF CHECKED

REGISTERED PROFESSIONAL ENGINEER 88888 Justin H Ford OREGON MAY 31, 2014 JUSTIN HENRY FORD

RENEWS 12-31-23

murraysmith

WOODBURN OREGON Incorporated 1889

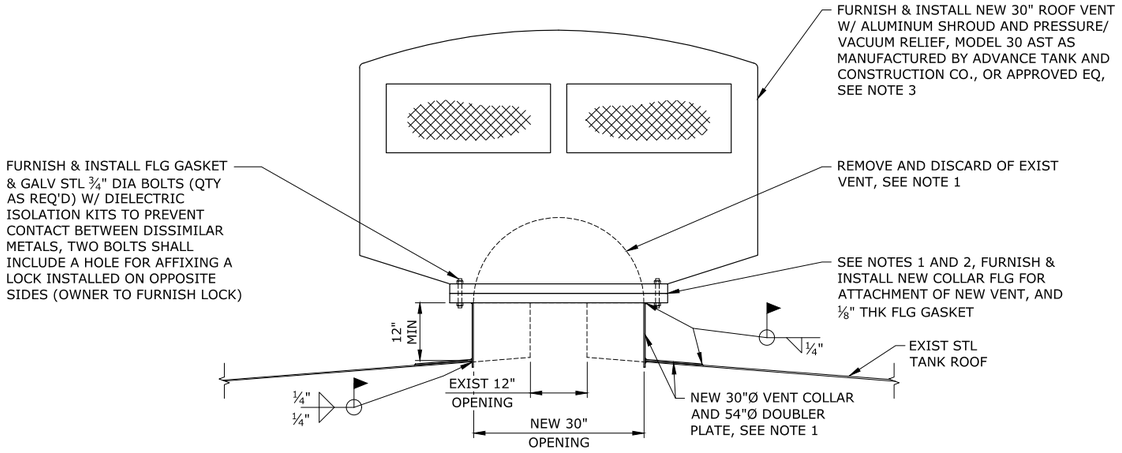
WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

DETAILS - 1

PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET C-4

6 of 7



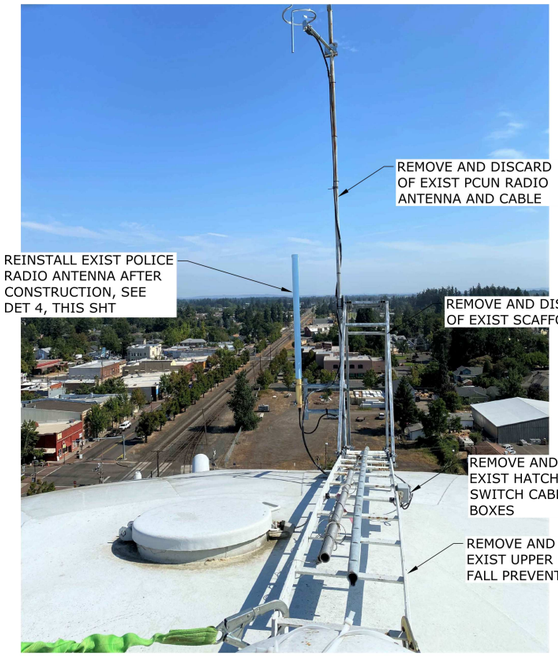
NOTES:

1. CONTRACTOR SHALL CUT AND REMOVE THE EXISTING 12" ROOF VENT. INSTALL A NEW 30" DIAMETER PENETRATION, STEEL COLLAR, AND FLANGE, AND FURNISH AND INSTALL THE NEW VENT AND FLANGE GASKET. DISPOSE OF THE EXISTING ROOF VENT.

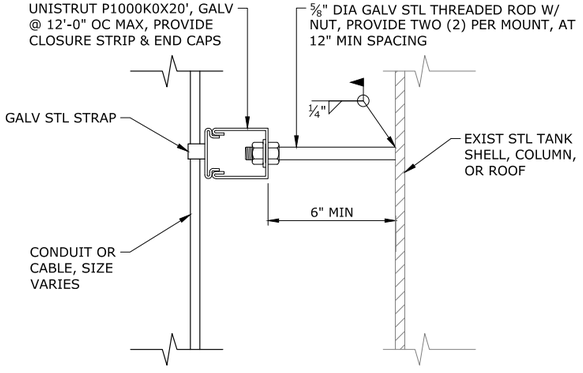
2. CONTRACTOR SHALL ENSURE THE NEWLY FURNISHED FLANGE IS COMPATIBLE WITH THE VENT TO BE FURNISHED (FLANGE BOLT HOLE PATTERNS ALIGN). PROVIDE 1/8-INCH THICK FLANGE GASKET, GALVANIZED BOLTS (TWO WITH LOCKING CAPABILITIES), AND DIELECTRIC ISOLATION KITS (ISOLATION WASHERS AND SLEEVES).

3. CONTRACTOR SHALL ENSURE VENT SCREEN IS NO. 24 MESH, AND SHALL INCLUDE PRESSURE AND VACUUM RELIEF AND ALL OTHER ITEMS AS SPECIFIED IN SECTION 33 16 13.13 PART 2.2. VENT SHALL BE MODEL #503 ALUMINUM 30 AST AS MANUFACTURED BY ADVANCE TANK AND CONSTRUCTION, OR APPROVED EQUAL.

VENT REPLACEMENT
SCALE: NTS
1 / C-3



EXISTING ROOF AND ANTENNA SCAFFOLDING
SCALE: NTS
2 / C-2

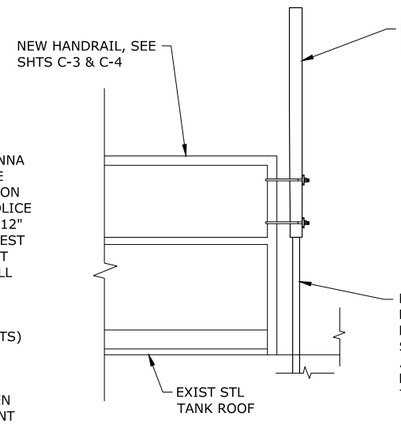


NOTES:

1. MOUNTING BRACKETS HAVE TWO STUDS PER MOUNT, SPACED 12" APART.

2. INSTALL DUAL STUDS AND UNISTRUT ALONG COLUMNS OR TANK AS DESCRIBED THROUGHOUT DRAWINGS AT 12' MAXIMIUM SPACING.

CONDUIT MOUNTING BRACKET
SCALE: NTS
3 / C-3



NOTES:

1. THE EXISTING POLICE ANTENNA SHALL BE RE-MOUNTED TO THE NEW HANDRAIL IN THE LOCATION SHOWN ON SHEET C-3. THE POLICE ANTENNA SHALL BE MOUNTED 12" HIGHER THAN THE APEX (HIGHEST POINT) OF THE NEW ROOF VENT FOR CLEAR VISIBILITY FROM ALL SIDES.

2. THE EXISTING ANTENNA MOUNTING HARDWARE (U-BOLTS) SHALL BE RE-USED.

3. PROVIDE UV-RESISTANT GASKETING MATERIAL BETWEEN HANDRAIL AND ANTENNA MOUNT FOR PROTECTION OF COATINGS.

SIDE ELEVATION

POLICE ANTENNA MOUNT
SCALE: NTS
4 / C-3

NOTES:

1. PROTECT ALL EXISTING CELLULAR EQUIPMENT, CABLES, AND CONDUITS AT ALL TIMES.

2. REINSTALL UNISTRUT CATWALK CONDUIT CROSSING WITH MINIMUM 6'-8" VERTICAL CLEARANCE FROM CATWALK. EXTEND UNISTRUT AS NEEDED FOR VERTICAL CLEARANCE OR TO MATCH HEIGHT OF UPPER LADDER STANDOFFS.

CATWALK CONDUIT CROSSING
SCALE: NTS
5 / C-3

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

KAU DESIGNED
EJJ DRAWN
JHF CHECKED

REGISTERED PROFESSIONAL ENGINEER 88988 OREGON JANUARY 14, 2014 JUSTIN HENRY FORD
Justin H Ford
RENEWS 12-31-23

murraysmith

WOODBURN OREGON Incorporated 1889

WATER TOWER REPAINTING AND IMPROVEMENTS PROJECT

DETAILS - 2

PROJECT NO.: 19-2574 | SCALE: AS SHOWN | DATE: FEBRUARY 2022

SHEET C-5
7 of 7

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