

Marina Pump Station Replacement Tulalip Tribes Project No.: 2024-002 Contract Documents

Prepared for
The Tulalip Tribes



August 2024

ParametriX

MARINA PUMP STATION REPLACEMENT

Tulalip Tribes Project No.: 2024-002

Contract Documents

Prepared for

The Tulalip Tribes

6406 Marine Drive
Tulalip, WA 98271

Prepared by

Parametrix

1019 39th Ave SE Suite 100
Puyallup, WA 98374
253-604-6600
www.parametrix.com

August 2024

This Page Intentionally Left Blank

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



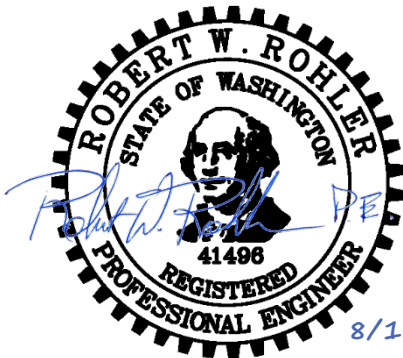
8/14/2024

Prepared by Frank Postlewaite, PE
(WSDOT Division 1; CSI Specifications,
Divisions 9, 14, 22, and 32)



8/14/2024

Prepared by Steve Wagner, PE
(CSI Specifications, Divisions 3, 5, 7, 8, and 13)



8/14/2024

Prepared by Robert W. Rohler, PE
(CSI Specifications, Division 26)



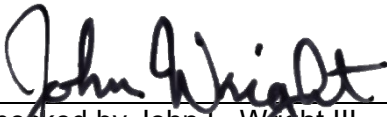
8/14/2024

Prepared by Cameron Bui Carlson, PE
(CSI Specifications, Division 40)

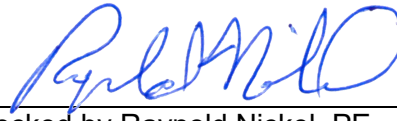
This Page Intentionally Left Blank

CERTIFICATION (CONTINUED)

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



Checked by John L. Wright III,
PE (WSDOT Division 1)



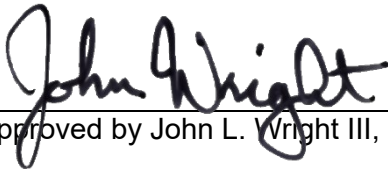
Checked by Raynold Nickel, PE
(CSI Specifications, Divisions 9 14, 22, and 32)



Checked by Jake Linke, PE
(CSI Specifications, Divisions 3, 5, 7, 8, and 13)



Checked by Marvin Casanova, PE
(CSI Specifications, Divisions 26 and 40)



Approved by John L. Wright III, PE

This Page Intentionally Left Blank

TABLE OF CONTENTS

DIVISION 0 – BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF CONTRACT

NOTICE TO BIDDERS	
CONFIDENTIALITY AGREEMENT	
INSTRUCTIONS TO BIDDERS	
BID PROPOSAL FORMS	
BID PROPOSAL FORM	
BID SCHEDULE	
BIDDER'S CERTIFICATION	
NON-COLLUSION DECLARATION	
TERO SUB-CONTRACTORS OR SUPPLIERS	
WSDOT SUBCONTRACTOR LIST	
NAOB WRITTEN CONFIRMATION DOCUMENTATION	
BID GUARANTY AND CONTRACT BOND	
FORM OF BID GUARANTY & CONTRACT BOND	
STATEMENT OF INTENDED SURETY	
BID PROPOSAL BOND	
PAYMENT BOND	
PERFORMANCE BOND	
TRIBAL EMPLOYMENT RIGHTS OFFICE (TERO)	
CONTRACT FORMS	
CONTRACT AGREEMENT	
INTERIM WAIVER AND RELEASE OF CLAIMS	
FINAL WAIVER AND RELEASE OF CLAIMS	
BUYERS' RETAIL SALES TAX EXEMPTION CERTIFICATE	

SPECIAL PROVISIONS

INTRODUCTION TO THE SPECIAL PROVISIONS	SP-1
--	------

DIVISION 1 GENERAL REQUIREMENTS

1-01 DEFINITIONS AND TERMS	SP-3
1-02 BID PROCEDURES AND CONDITIONS	SP-8
1-03 AWARD AND EXECUTION OF CONTRACT	SP-11
1-04 SCOPE OF THE WORK	SP-12
1-05 CONTROL OF WORK.....	SP-13
1-06 CONTROL OF MATERIAL.....	SP-22
1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC	SP-25
1-08 PROSECUTION AND PROGRESS	SP-49
1-09 MEASUREMENT AND PAYMENT	SP-57
1-10 TEMPORARY TRAFFIC CONTROL.....	SP-60

TECHNICAL SPECIFICATIONS

DIVISION 02 EXISTING CONDITIONS

02 41 00	DEMOLITION
----------	------------

TABLE OF CONTENTS (CONTINUED)

DIVISION 03 CONCRETE

03 15 19	ANCHORS, INSERTS, AND EMBEDDED PRODUCTS
03 30 01	CAST-IN-PLACE CONCRETE
03 40 00	PRECAST CONCRETE VAULTS
03 60 00	GROUTING

DIVISION 05 METALS

05 12 20	STRUCTURAL STEEL
05 50 00	METAL FABRICATIONS

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07 41 33	METAL ROOFING PANELS
----------	----------------------

DIVISION 08 OPENINGS

08 34 00	FLOOR DOORS
----------	-------------

DIVISION 09 FINISHES

09 90 00	PAINTING
----------	----------

DIVISION 13 SPECIAL CONSTRUCTION

13 05 41	SEISMIC RESTRAINT REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS
----------	---

DIVISION 14 CONVEYING EQUIPMENT

14 46 00	PORTABLE DAVIT HOIST
----------	----------------------

DIVISION 22 PLUMBING

22 05 00	GENERAL REQUIREMENTS FOR PIPING
22 05 29	PIPE HANGERS AND SUPPORTS
22 06 00	PIPE SCHEDULE
22 13 13	FACILITY SANITARY SEWER PIPING
22 13 18	FACILITY SANITARY SEWERAGE VALVES
22 13 29	SUBMERSIBLE SEWAGE PUMPS

TABLE OF CONTENTS (CONTINUED)

DIVISION 26 ELECTRICAL

26 05 11	BASIC ELECTRICAL METHODS AND MATERIALS
26 05 19	LOW-VOLTAGE WIRE AND CABLE
26 05 23	SIGNAL CABLE
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 05 33	RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 05 73	SHORT CIRCUIT, COORDINATION, AND ARC FLASH REPORT
26 08 00	ELECTRICAL TESTING AND COMMISSIONING
26 24 16	PANELBOARDS
26 27 26	WIRING DEVICES
26 28 00	LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES
26 29 23	VARIABLE FREQUENCY DRIVES (VFD)
26 33 53	UNINTERRUPTABLE POWER SUPPLIES (UPS)
26 36 13	ENGINE GENERATOR
26 50 00	LIGHTING
26 95 92	RELAYS

DIVISION 32 EXTERIOR IMPROVEMENTS

32 31 13	CHAIN LINK FENCE AND GATES
----------	----------------------------

DIVISION 40 PROCESS INTERCONNECTIONS

40 61 13	PROCESS CONTROL SYSTEM GENERAL PROVISIONS
40 61 93	PROCESS CONTROL SYSTEM INPUT/OUTPUT LIST
40 62 63	OPERATOR INTERFACE TERMINALS (OIT)
40 63 43	PROGRAMMABLE LOGIC CONTROLLERS
40 66 00	NETWORK AND COMMUNICATION EQUIPMENT
40 68 13	PROCESS CONTROL SOFTWARE
40 70 00	INSTRUMENTATION AND CONTROLS, GENERAL REQUIREMENTS
40 70 00.01	INSTRUMENTATION SCHEDULE
40 71 10	MAGNETIC FLOW METERS
40 71 20	LEVEL INSTRUMENTS
40 71 30	PRESSURE INSTRUMENTS
40 78 00	PANEL-MOUNTED INSTRUMENTS

APPENDICES

A DAVIS-BACON WAGES

CONSTRUCTION DRAWINGS (under separate cover)

TABLE OF CONTENTS (CONTINUED)

This Page Intentionally Left Blank

Legal Documents

A large, solid red diagonal shape that starts from the bottom-left corner and extends towards the top-right corner, covering approximately the right half of the page.

The Tulalip Tribes of Washington

Notice to Bidders

Sealed bid proposals will be received by the Tulalip Tribes of Washington, at the Public Works Building located at 6729 Totem Beach Road, Tulalip, WA for the following Project:

Tulalip Tribes Project No.: 2024-002

Marina Pump Station Replacement in accordance with the Drawings and Specifications prepared by: Parametrix, 206-604-6759, jwright@parametrix.com. The Project Manager for the Project is Mike Leslie, mikeleslie@tulaliptribes-nsn.gov.

Marina Pump Station Replacement:

The Work includes the demolishing of the existing vacuum prime pump station and associated piping and steel beams and brackets in the wet well, demolishing the existing fencing and portions of the existing concrete block wall, a light pole, an electrical panel, and various electrical devices, raceways, and conductors.

The work also includes isolating the existing wet well and providing temporary bypass pumping, cleaning, sealing, and coating the existing wet well. The work includes two submersible pumps installed in the existing wet well with bases, pump removal rails, and appurtenances and connecting the pumps to the existing force main with ductile iron piping, fittings, isolation valves, check valves, thrust restraint, and providing a combination air/vacuum release valve and bypass pumping port. The work includes factory applied epoxy coating on exposed piping, fittings, and valves within the wet well and vaults.

The work includes a new cast-in-place concrete slab on wet well, installing a valve vault, installing a meter vault with a magnetic meter and an adjacent pressure transmitter and gage assembly, and installing a saddle type bypass manhole. The work includes hatches cast into the top slabs for all the manholes and vaults and drain piping for hatches and the vaults and bypass manhole into the wet well.

The Work also includes site temporary erosion and sediment control, safety shoring, dewatering, and site restoration. The work includes a concrete slab at the electrical panels, asphalt paving for a driveway leading up to the wet well and valve vault, gravel surfacing within the fencing limits. The work includes re-grading the site and furnishing a new fence with an access gate and adjacent vehicle gate. The work includes furnishing a water service and yard hydrant.

The work includes providing a new concrete base for the existing engine generator and relocating the generator on to the new base. The work includes a new pump control panel with variable frequency drives for each pump, disconnects, a programmable logic control, uninterruptible power supply, devices and integration into the existing Supervisory Control and Data Acquisition system, and appurtenances. The work includes lighting, raceways, and conductors for motors, sensors, and lighting, and alarms. The work includes a new termination panel and intrinsically safe relays to isolate the wet well from the control panel.

The project is located on the Tulalip Indian Reservation.

Native American Preference related to contracting, subcontracting, and suppliers in the project is required and must meet The Tulalip Code, Chapter 9.05.

Sealed bids will be received for: Marina Pump Station Replacement until September 12, 2024, at 2:00 PM, at which time all bids will be opened and read aloud at the Public Works Building. All required bid documentation shall be submitted to 6729 Totem Beach Road, Tulalip, WA 98271 by the scheduled bid date and times. ORAL, TELEPHONIC, FAXED, OR TELEGRAPHIC BIDS WILL NOT BE ACCEPTED.

Plans, specifications, addenda, bidders list, and plan holders list for this project are available Free-of-charge access to project bid documents (plans, specifications, addenda, and Bidders List) is provided to Prime Bidders, Subcontractors, and Vendors by going to the Tulalip Site: <https://www.tulaliptribes-nsn.gov/Visitors/RequestsForProposal> or the Builders Exchange Site: www.bxwa.com and clicking on “Posted Projects”, “Public Works”, and “Tribal Agencies – Tulalip Tribes”. This online plan room provides Bidders with fully usable online documents with the ability to: download, view, print, order full/partial plan sets from numerous reprographic sources, and a free online digitizer/take-off tool. It is recommended that Bidders “Register” in order to receive automatic e-mail notification of future addenda and to place themselves on the “Self-Registered Bidders List”. Bidders that do not register will not be automatically notified of addenda and will need to periodically check the on-line plan room for addenda issued on this project. Contact Builders Exchange of Washington at (425) 258-1303 should you require assistance with access or registration. The content available through bxwa.com is our property or the property of our licensors and is protected by copyright and other intellectual property laws. Access to project documents is intended for use by bidders (general contractors/prime bidders, subcontractors and suppliers), agency personnel and agency’s consultants, as well as for personal, noncommercial, use by the public. You may display or print the content available for these uses only. “Harvesting” (downloading, copying, and transmitting) of any project information and/or project documents for purposes of reselling and/or redistributing information by any other party is not allowed by BXWA.

The Tulalip Tribes of Washington

CONFIDENTIALITY AGREEMENT

Upon award of a Contract the successful Bidder shall provide the Tulalip Tribes of Washington with a completed and signed Confidentiality Agreement as set forth herein. Successful Bidder shall also provide the Tulalip Tribes of Washington with a Confidentiality Agreement Completed and signed by all lower tier contractors and/or suppliers whom may perform Work on the Project.

I / we, the undersigned, have been provided certain confidential and proprietary information (“Confidential Information”) regarding the Tulalip Tribes of Washington for the Project identified as Marina Pump Station Replacement Project No.: 2024-002 (“Project”). “Confidential Information” shall include, without limitation, all financial information, data, materials, products, manuals, business plans, marketing plans, Project design documents, or other information disclosed or submitted orally, in writing, or by any other media.

The undersigned acknowledges that this Confidential Information is sensitive and confidential in nature, and that the disclosure of this information to anyone not part of this agreement would be damaging to the Tulalip Tribes of Washington.

In consideration of the premises herein contained, I / we understand and agree that I / we will not disclose any “Confidential Information” regarding this “Project” to any person(s) not privy to this agreement. Furthermore, I / we will not disclose any of this information directly or indirectly to any competitor of the Tulalip Tribes of Washington.

Agreed to and accepted:

Signature: _____

Title: _____

Printed Name: _____

DATE: _____

This Page Is Intentionally Left Blank

The Tulalip Tribes of Washington

INSTRUCTIONS TO BIDDERS

The Tulalip Tribes of Washington hereby invite you to submit a Bid Proposal for this project.

Article 1	Contract Information
Article 2	Bidding Procedures
Article 3	Bid Opening & Consideration of Bids
Article 4	Withdrawal of Bid
Article 5	Bid Estimate
Article 6	Bid Guaranty and Contract Bond
Article 7	Contract Award and Execution
Article 8	Applicable Law and Forum

ARTICLE 1 – CONTRACT INFORMATION

1.1 PROJECT BID REQUIREMENTS

- 1.1.1 The Tulalip Tribes of Washington’s Board of Directors has the authority to require those employers subject to The Tulalip Code, Chapter 9.05 – TERO Code and applicable federal laws and guidelines, to give preference to Indians in hiring promotions, training and all other aspects of employment contracting and subcontracting, and to give preference to Indians in contracting goods and services. Bidders must comply with The Tulalip Code, Chapter 9.05 – TERO Code and the rules, regulations and orders of the TERO Commission.
- 1.1.2 With respect to each Project / Contract of \$10,000 or more, operating within the exterior boundaries of the Tulalip Reservation or on Tribal Projects off the Reservation, the Contractor shall pay a onetime Fee of 1.75% of the total Project / Contract cost, i.e., equipment labor, materials and operations and any increase of the Contract / Project or Subcontract amount. If the Contractor initially enters into a Contract of less the \$10,000, but subsequent changes in the Work increases the total Contract / Project amount to \$10,000 or more, the TERO Fee shall apply to the total amount including increases.
- 1.1.3 The General Contractor shall be responsible for paying all TERO fees, including those attributable to the subcontractors. The fee shall be due in full prior to commencement of any work under the Contract / Project. However, where good cause is shown, the TERO Representative may authorize the General Contractor to pay said fee in installments over the course of the contract, when:
 - 1.1.3.1 The decision whether to authorize an alternative arrangement, which, if allowed, shall be in writing, shall rest solely with the discretion of the TERO Representative.

- 1.1.4 Whenever an employer or union would be required by any provision of The Tulalip Code, Chapter 9.05 – TERO Code to give preference in employment, such preference shall be given to the following persons in the following enumerated order:
- a) Enrolled Tulalip Tribal Members
 - b) Spouses, Parent of a tribal member child, biological child born to an enrolled Tulalip Tribal Member, current legal guardian of a Tribal Member dependent child (with a proper letter of temporary or permanent legal guardianship from a court), or a tribal member in a domestic partner relationship (with documentation).
 - c) Other Natives/Indians shall mean any member of a federally recognized Indian tribe, nation or band, including members of federally recognized Alaskan Native villages or communities.
 - d) Spouse of federally recognized Native American
 - e) Regular current employees of all the Tulalip Tribal entities
 - f) Other

Where prohibited by applicable Federal law or contractual agreements, the above order of preference shall not apply. In such cases, preference shall be given in accordance with the applicable Federal law or contract.

- 1.1.5 The preference requirements contained in The Tulalip Code, Chapter 9.05 – TERO Code shall be binding on all contractors and subcontractors, regardless of tier, and shall be deemed a part of all resulting contract agreements.
- 1.1.6 For more information about The Tulalip Code, Chapter 9.05 – TERO Code, contact the Tulalip Tribes' TERO Department at 6406 Marine Drive, Tulalip, Washington 98271, Office (360) 716-4747 or Facsimile (360) 716-0249. The Tulalip TERO Code is available for review on the Tulalip TERO website: <http://www.tulaliptero.com>.
- 1.1.7 The following requirements apply to the Bid Award Criteria and Procedures for the Project:
- 1.1.7.1 The bidding is open to all contractors meeting the requirements of RCW.
 - 1.1.7.2 The Contract will be awarded based on competitive bidding process detailed in these instructions and the Tulalip Code.
 - 1.1.7.3 Minimum TERO Participation Requirements for Employment:
 - 1.1.7.3.1 A minimum of fifteen percent (15%) of the entire project work force shall be "Preferred Employees" as defined in The Tulalip Code, Chapter 9.05 – TERO Code.
 - 1.1.7.3.2 The total number of "Preferred Employees" employed by the Bidder, and those employed by its subcontractors shall be used to determine if Bidder satisfies the minimum requirement.
 - 1.1.7.3.3 Bidders are encouraged to exceed the minimum requirement for employment.

- 1.1.7.4 Not Used.
- 1.1.7.5 Minimum TERO Participation Requirements in contracting with NAOB Subcontractors and Suppliers:
 - 1.1.7.5.1 Bidders are encouraged to contract with NAOB Subcontractors and Suppliers.
 - 1.1.7.5.2 Bidders shall list their NAOB Subcontractors and Suppliers on the Bid Form in Section IV B, pursuant to paragraph IB 3.5.6.
- 1.1.7.6 Bidder shall be considered nonresponsive if they do not meet the minimum requirements contained in this paragraph IB 1.1.7.

1.2 NOT USED.

1.3 GIVING NOTICE

- 1.3.1 Whenever any provision of the Contract Documents requires the giving of notice, such notice shall be deemed to have been validly given if delivered personally to the individual or to a member of the entity for whom the notice is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address of such individual or entity known to the giver of the notice.
 - 1.3.1.1 All notices provided to the Bidder from the Construction Manager shall be copied to the Engineer.
 - 1.3.1.2 All notices provided to the Bidder from the Engineer shall be copied to the Construction Manager.
 - 1.3.1.3 All notices provided to the Engineer from the Bidder shall be copied to the Construction Manager.
 - 1.3.1.4 All notices provided to the Construction Manager from the Bidder shall be copied to the Engineer.
- 1.3.2 When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first, and include the last, day of such period. If the last day of any such period falls on a Saturday, Sunday, or a legal holiday, such day will be omitted from the computation and such period shall be deemed to end on the next succeeding day which is not a Saturday, Sunday, or legal holiday.
- 1.3.3 The effective date of any and all notices, regardless of the method of delivery, shall be the date of receipt.

1.4 USE OF FACSIMILE TRANSMISSION

- 1.4.1 Any notice required to be given by the Contract Documents may be given by facsimile transmission, provided the original signed notice is delivered pursuant to paragraph IB 1.3.1.
- 1.4.2 Notice of withdrawal of a bid may be given by facsimile transmission provided an original signed document is received within three (3) business days of the facsimile transmission.

ARTICLE 2 - BIDDING PROCEDURES

2.1 EXAMINATION OF CONTRACT DOCUMENTS AND PROJECT SITE

- 2.1.1 The Bidder shall examine all Contract Documents, including without limitation the Drawings and Specifications for all divisions of Work for the Project, noting particularly all requirements which will affect the Bidder's Work in any way. In addition, the Bidder must carefully examine all Contract Documents because laws and rules applicable to other Tribal projects are not necessarily applicable to this Project.
- 2.1.2 Failure of a Bidder to be acquainted with the extent and nature of Work required to complete any applicable portion of the Work, in conformity with all requirements of the Project as a whole wherever set forth in the Contract Documents, will not be considered as a basis for additional compensation.
- 2.1.3 The Bidder shall evaluate the Project site and related Project conditions where the Work will be performed, including without limitation the following:
 - 2.1.3.1 The condition, layout and nature of the Project site and surrounding area;
 - 2.1.3.2 The availability and cost of labor;
 - 2.1.3.3 The availability and cost of materials, supplies and equipment;
 - 2.1.3.4 The cost of temporary utilities required in the bid;
 - 2.1.3.5 The cost of any permit or license required by a local or regional authority having jurisdiction over the Project;
 - 2.1.3.6 The generally prevailing climatic conditions;
 - 2.1.3.7 Conditions bearing upon transportation, disposal, handling, and storage of materials.
- 2.1.4 Unless otherwise specified in the Contract Documents, borings, test excavations and other subsurface information, if any, are provided solely to share information available to the Tulalip Tribes of Washington and any use of, or reliance upon, such items by the Bidder is at the risk of the Bidder. The Bidder shall be afforded access to the Project site to obtain the Bidder's own borings, test excavations and other subsurface information upon request made to the Construction Manager not less than ten (10) days prior to the opening of the bids.

2.2 PRE-BID MEETING

- 2.2.1 No Pre-Bid meeting will be held.

2.3 INTERPRETATION

- 2.3.1 If the Bidder finds any perceived ambiguity, conflict, error, omission or discrepancy on or between any of the Contract Documents, including without limitation the Drawings and Specifications, or between any of the Contract Documents and any applicable provision of law, including without limitation, the current International

Building Code, the Bidder shall submit a written request to the Engineer, through the Construction Manager, for an interpretation or clarification.

2.3.1.1 The Bidder shall be responsible for prompt delivery of such request.

2.3.1.2 In order to prevent an extension of the bid opening, the Bidder is encouraged to make all requests for interpretation or clarification a minimum of seven (7) days before the bid opening.

2.3.2 If the Engineer determines that an interpretation or clarification is warranted, the Engineer shall issue an Addendum and the Construction Manager shall provide a copy to each person of record holding Contract Documents in accordance with paragraph IB 1.3. Any Addendum shall be deemed to have been validly given if it is delivered via facsimile, issued and mailed, or otherwise furnished to each person of record holding the Contract Documents. If any Addendum is issued within 72 hours prior to the published time for the bid opening, excluding Saturdays, Sundays and legal holidays, the bid opening shall automatically be extended one (1) week, with no further advertising required.

2.3.3 Any interpretation or clarification of the Contract Documents made by any person other than the Engineer, or in any manner other than a written Addendum, shall not be binding and the Bidder shall not rely upon any such interpretation or clarification.

2.3.4 The Bidder shall not, at any time after the execution of the Contract, be compensated for a claim alleging insufficient data, incomplete, ambiguous, conflicting or erroneous Contract Documents, any discrepancy on or between Contract Documents, or incorrectly assumed conditions regarding the nature or character of the Work, if no request for interpretation or clarification regarding such matter was made by the Bidder prior to the bid opening.

2.4 STANDARDS

2.4.1 The articles, devices, materials, equipment, forms of construction, fixtures and other items named in the Specifications to denote kind quality or performance requirement shall be known as Standards and all bids shall be based upon those Standards.

2.4.2 Where two or more Standards are named, the Bidder may furnish any one of those Standards.

2.5 NOT USED.

2.6 BID FORM

2.6.1 Each bid shall be submitted on the Bid Form and sealed in an envelope clearly marked as containing a bid, indicating the Project name, the Contractor scope of work, and the date of the bid opening on the envelope.

2.6.1.1 Any change, alteration or addition in the wording of the Bid Form by a Bidder may cause the Bidder to be rejected as not responsible for award of a Contract.

2.6.1.2 Unless the Bidder withdraws the bid as provided in IB Article 4, the Bidder will be required to comply with all requirements of the Contract Documents, regardless of whether the Bidder had actual knowledge of the requirements and regardless of any statement or omission made by the Bidder which might indicate a contrary intention.

- 2.6.2 The Bidder shall fill in all relevant blank spaces in the Bid Form in ink or by typewriting and not in pencil.
- 2.6.2.1 The Bidder shall show bid amounts for the Total Base Bid and any Alternate(s) in both words and figures. In the case of a conflict between the words and figures, the amount shown in words shall govern, where such words are not ambiguous. When the Bidder's intention and the meaning of the words are clear, omissions or misspellings of words will not render the words ambiguous.
- 2.6.2.2 Any alteration or erasure of items filled in on the Bid Form shall be initialed by the Bidder in ink.
- 2.6.3 When an Alternate is listed on the Bid Form, the Bidder shall fill in the applicable blank with an increased or decreased bid amount. The Tulalip Tribes of Washington reserves the right to accept or reject any or all bids on Alternates, in whole or in part, and in any order. Voluntary Alternates submitted by a Bidder are prohibited from becoming the basis of the Contract award.
- 2.6.3.1 If no change in the bid amount is required, indicate "No Change" or "\$0 dollars".
- 2.6.3.2 Failure to make an entry or an entry of "No Bid," "N/A," or similar entry for any Alternate by a Bidder may cause the Bidder to be rejected as nonresponsive only if that Alternate is selected.
- 2.6.3.3 If an Alternate is not selected, an entry by a Bidder as listed in paragraph IB 2.6.3.2 on that Alternate will not, by itself, render a Bidder nonresponsive.
- 2.6.3.4 In a combined bid, a blank entry or an entry of "No Bid," "N/A," or similar entry on an Alternate will cause the bid to be rejected as nonresponsive only if that Alternate applies to the combined bid and that Alternate is selected.
- 2.6.4 Each bid shall contain the name of every person interested therein. If the Bidder is a corporation, partnership, sole proprietorship, or limited liability company, an officer, partner or principal of the Bidder, as applicable, shall print or type the legal name of the Bidder on the line provided and sign the Bid Form. If the Bidder is a joint venture, an officer, partner or principal, as applicable, of each member of the joint venture shall print or type the legal name of the applicable member on the line provided and sign the Bid Form on behalf of that member. All signatures must be original.
- 2.6.5 Subject to the provisions of this paragraph IB 2.6, the completed Bid Form of the Bidder with whom the Tulalip Tribes of Washington executes a Contract Form shall be incorporated into the Contract Form as if fully rewritten therein.

2.7 REQUIRED SUBMITTALS WITH BID FORM

- 2.7.1 A Bidder shall be rejected as nonresponsive if the Bidder fails to submit the following submittals with the Bid Form in a sealed envelope:
- 2.7.1.1 If the Bid is restricted to certified Tulalip Tribal Member NAOBs or NAOBs, then Bidder shall submit evidence of certification from the Tulalip Tribes TERO office as being a certified NAOB for the identified NAOB category.
- 2.7.1.2 A Bid Guaranty as provided in paragraph IB 6.1.

- 2.7.1.3 A Power of Attorney of the agent signing for a Surety which is licensed in Washington, when a Bid Guaranty and Contract Bond is submitted.
- 2.7.1.4 Native American Owned Business Written Confirmation Documentation for each Tulalip Tribal Member NAOB and NAOB firm listed on the Bidder's Bid Form.

2.8 UNIT PRICES

- 2.8.1 When Unit Prices are requested on the Bid Form, the scheduled quantities listed are to be considered as approximate and are to be used only for the comparison of bids for purposes of award of the Contract and to determine the maximum quantity to be provided without a Change Order. If Unit Prices are stated to be sought only for informational purposes, they shall not be used for comparison of bids.
- 2.8.2 Unless otherwise specified in the Contract Documents, the Unit Prices set forth shall include all materials, equipment, labor, delivery, installation, overhead, profit and any other cost or expense, in connection with or incidental to, the performance of that portion of the Work to which the Unit Prices apply. The Bidder shall submit Unit Prices for all items listed unless other instructions are stated on the Bid Form.
- 2.8.3 Where there is a conflict between a Unit Price and the extension thereof made by the Bidder, the Unit Price shall govern and a corrected extension of such Unit Price shall be made and such corrected extension shall be used for the comparison of the bids and to determine the maximum quantity to be provided without a Change Order.
- 2.8.4 The Bidder agrees that the Tulalip Tribes of Washington may increase, decrease or delete entirely the scheduled quantities of Work to be done and materials to be furnished after execution of the Contract Form.
- 2.8.5 Payments, except for lump sum items in Unit Price Contracts, will be made to the Contractor only for the actual quantities of Work performed or materials furnished in accordance with the Contract Documents.
- 2.8.6 If the cost of an item for which a Unit Price is stated in the Contract changes substantially so that application of the Unit Price to the quantities of Work proposed will create an undue hardship on the Tulalip Tribes of Washington or the Contractor, the applicable Unit Price may be equitably adjusted by Change Order.

2.9 CHANGE IN THE BID AMOUNT

- 2.9.1 Any change to a previously submitted bid shall be made in writing and must be received by the Tulalip Tribes of Washington before the time scheduled for the bid opening, as determined by the employee or agent of the Tulalip Tribes of Washington designated to open the bids.
- 2.9.2 Changes shall provide an amount to be added or subtracted from the bid amount, so that the final bid amount can be determined only after the sealed envelope is opened.
- 2.9.3 If the Bidder's written instruction reveals the bid amount in any way prior to the bid opening, the bid shall not be opened or considered for award of a Contract.

2.10 COPIES OF THE DRAWINGS AND SPECIFICATIONS

- 2.10.1 The Contractor shall maintain at the Project site the permits and one (1) complete set of Drawings and Specifications approved by the Tribes, city, local or state building department having lawful jurisdiction over the project.

- 2.10.2 Unless otherwise specified in the Contract Documents, the Engineer, through the Construction Manager, shall furnish to the Contractor, free of charge, four (4) sets of Drawings and Specifications if the Contract price is \$500,000 or less, and seven (7) sets of Drawings and Specifications if the Contract price is in excess of \$500,000.

ARTICLE 3 – BID OPENING AND CONSIDERATION OF BIDS

3.1 DELIVERY OF BIDS

- 3.1.1 It is the responsibility of the Bidder to submit the bid to the Tulalip Tribes of Washington at the designated location prior to the time scheduled for bid opening.
- 3.1.2 If the bid envelope is enclosed in another envelope for the purpose of delivery, the exterior envelope shall be clearly marked as containing a bid with the Project name, the scope of Work or Contract and the date of the bid opening shown on the envelope.
- 3.1.3 No bid shall be considered if it arrives after the time set for the bid opening as determined by the employee or agent of the Tulalip Tribes of Washington designated to open the bids.

3.2 BID OPENING

- 3.2.1 Sealed bids will be received at the office designated in the Notice to Bidders until the time stated when all bids will be opened, read aloud and the tabulation made public.
- 3.2.2 The public opening and reading of bids is for informational purposes only and is not to be construed as an acceptance or rejection of any bid submitted.
- 3.2.3 The contents of the bid envelope shall be a public record and open for inspection, upon request, at any time after the bid opening.

3.3 BID OPENING EXTENSION

- 3.3.1 If any Addendum is issued within 72 hours prior to the published time for the bid opening, excluding Saturdays, Sundays and legal holidays, the bid opening shall automatically be extended one (1) week, with no further advertising required.

3.4 BID EVALUATION CRITERIA

- 3.4.1 The Tulalip Tribes of Washington reserves the right to accept or reject any bid or bids and to award the Contract to any remaining Bidder the Tulalip Tribes of Washington determines to be the lowest responsive and responsible Bidder pursuant to paragraph IB 3.5.1 or the most responsive and responsible Bidder pursuant to paragraph IB 3.5.2 The Tulalip Tribes of Washington reserves the right to accept or reject any or all Alternates, in whole or in part, and the right to reject any Alternate or Alternates and to accept any remaining Alternate or Alternates. Alternates may be accepted or rejected in any order.
- 3.4.2 The Tulalip Tribes of Washington may reject the bid of any Bidder who has engaged in collusive bidding.
- 3.4.3 The Tulalip Tribes of Washington reserves the right to waive, or to allow any Bidder a reasonable opportunity to cure, a minor irregularity or technical deficiency in a bid, provided the irregularity or deficiency does not affect the bid amount or otherwise give the Bidder a competitive advantage. Noncompliance with any requirement of the Contract Documents may cause a Bidder to be rejected.

- 3.4.4 The Tulalip Tribes of Washington may reject all bids for one or more bid packages, prior to, during or after evaluation of Bidders pursuant to paragraph IB 3.5.8, and may advertise for other bids, using the original estimate or an amended estimate, for such time, in such form and in such newspapers as the Tulalip Tribes of Washington may determine.

3.5 BID EVALUATION PROCEDURE

- 3.5.1 The Contract will be awarded to the lowest responsive and responsible Bidder as determined in the discretion of the Tulalip Tribes of Washington, unless Bidders are advised during the bidding process award will be made pursuant to paragraph IB 3.5.2, or all bids will be rejected in accordance with applicable Tribal Ordinances or Codes.

3.5.1.1 In determining which Bidder is lowest responsive and responsible, the Tulalip Tribes of Washington shall consider the Base Bid, the bids for any Alternate or Alternates and the bids for any Unit Price or Unit Prices which the Tulalip Tribes of Washington determines to accept.

3.5.1.2 If the Request for Bid Proposal is not restricted to certified NAOB firms preference in the Bid Award will be given to the certified NAOB firm with the lowest responsive bid if that bid is within budgetary limits established for the project or activity for which the bids are being taken and no more than "X" higher than the bid prices of the lowest responsive bid from any certified non-NAOB bidder as set forth in The Tulalip Code, Chapter 9.05 – TERO Code paragraph 9.05.340 (3).

3.5.1.3 The total of the bids for accepted Alternate(s) and Unit Price(s) will be added to the Base Bid for the purpose of determining the lowest Bidder.

3.5.1.4 If two or more Bidders submit the same bid amount and are determined to be responsive and responsible, the Tulalip Tribes of Washington reserves the right to select one Bidder in the following manner:

3.5.1.4.1 If the Request for Bid Proposal is restricted to NAOB Firms and a majority of the funds used to pay the contract or subcontract are derived from Tulalip tribal resources preference shall be given to the certified Tulalip Tribal Member NAOB Firms; otherwise, selection shall be by lot in the presence of all such Bidders in such a manner as the Construction Manager shall determine and such selection shall be final.

3.5.1.4.2 If the Request for Bid Proposal is restricted to Tulalip Tribal Member Owned NAOB Firms selection shall be by lot in the presence of all such Bidders in such a manner as the Construction Manager shall determine and such selection shall be final.

3.5.1.4.3 If the Request for Bid Proposal is not restricted to NAOB Firms selection shall be by lot in the presence of all such Bidders in such a manner as the Construction Manager shall determine and such selection shall be final.

- 3.5.2 When listing "Preferred Employees" related to Section I – KEY EMPLOYEES OF BIDDER shall only list KEY "Preferred Employees" committed to be employed by Bidder in the performance of Bidder's self-performed scope of work.

- 3.5.2.1 Key Employees are employees who are in a top supervisory position or performs a critical function such that an employer would risk likely financial damage or loss if that task were assigned to a person unknown to the employer.
- 3.5.2.2 To be eligible for the award of points under this section Preferred Key Employees of Bidder shall be employed by the Bidder on the Project for 100% of the time the Bidder has crews on site performing work. Company owners are not eligible for the award of points under this section.
- 3.5.3 When listing “Preferred Employees” related to Section II – PREFERRED EMPLOYEES Bidder shall only list the number of “Preferred Employees” by each trade committed to be employed by Bidder in the performance of Bidder’s self-performed scope of work.
 - 3.5.3.1 To be eligible for the award of points under this section Preferred Employees shall be employed by the Bidder on the Project for a minimum of 80% of the time the Bidder has crews on site performing work. Company owners are not eligible for the award of points under this section.
- 3.5.4 Bidder shall not list the name of a “Preferred Employee” in more than one section. Should a “Preferred Employee” be listed in more than one section (i.e., Section I or II) the so named “Preferred Employee” will only be considered under Section I – KEY EMPLOYEES as a basis for award of points.
- 3.5.5 When listing lower tiered subcontractors and or suppliers related to Section IV – LIST OF LOWER TIERED SUBCONTRACTOR(S) AND OR SUPPLIER(S) Bidder shall identify the type of enterprise or organization Bidder intends to contract with in the columns titled “Type of Lower-Tier”. If Bidder intends to subcontract a certain portion of the work with a certified NAOB subcontractor, Bidder shall so designate by placing an “X” in the column titled “SUB” (abbreviated for subcontractor). If Bidder intends to purchase a certain portion of the work through a certified NAOB material supplier, Bidder shall so designate by placing an “X” in the column titled “SUP” (abbreviated for supplier). Bidder shall be awarded 100% of the value of the work subcontracted with a certified NAOB and ten-percent (10%) of the value of the work purchased through a certified NAOB material supplier in the determination of awarded points related to Section IV.
 - 3.5.5.1 It is the expressed intent of paragraph IB 3.5.6 to encourage Bidders to contract with certified NAOB Firms in which the Bidder and enterprise or organization have no proprietary relationship (“Unrelated NAOB”). Points will only be awarded for contracting with Unrelated NAOB Firms.
 - 3.5.5.2 In determining the award of points under paragraph IB 3.5.6, Lower tiered NAOB Firms shall have no proprietary relationship with other lower tiered NAOB Firms.
 - 3.5.5.3 In determining the award of points under paragraph IB 3.5.6, equipment (unoperated) and tool rentals shall be considered as a supplier. Trucking (Dump, Low-boy, Long haul, etc.) and Operated Equipment Rental shall be considered as a subcontractor.
 - 3.5.5.4 When Section IV – LIST OF LOWER TIERED SUBCONTRACTOR(S) AND OR SUPPLIER(S) is further defined by paragraph IB 1.1.7, which may include minimum requirements for contracting with Tulalip Tribal Member

NAOB firms and NAOB firms, the provisions of paragraph IB 3.5.6 shall be applied to Tulalip Tribal Member NAOB and NAOB categories as defined by The Tulalip Code, Chapter 9.05 – TERO Code.

- 3.5.6 In determining whether a Bidder is responsible, factors to be considered include, without limitation:
- 3.5.6.1 Whether the Bidder's bid responds to the Contract Documents in all material respects and contains no irregularities or deviations from the Contract Documents which would affect the amount of the bid or otherwise give the Bidder a competitive advantage.
 - 3.5.6.2 Preference to Indians in hiring promotions, training and all other aspects of employment contracting and subcontracting;
 - 3.5.6.3 Preferences required by Tribal Ordinances, Codes, or Laws;
 - 3.5.6.4 The experience of the Bidder;
 - 3.5.6.5 The financial condition of the Bidder;
 - 3.5.6.6 The conduct and performance of the Bidder on previous contracts;
 - 3.5.6.7 The facilities of the Bidder;
 - 3.5.6.8 The management skills of the Bidder;
 - 3.5.6.9 The ability of the Bidder to execute the Contract properly;
 - 3.5.6.10 The evaluation of a bid below the median of other bids pursuant to paragraph IB 5.2.
 - 3.5.6.11 Bidder's commitment to Safety and worker training.
- 3.5.7 The Construction Manager may obtain from the lowest or most responsive and responsible Bidder, as applicable, and such other Bidders as the Construction Manager determines to be appropriate any information appropriate to the consideration of factors showing responsibility, including without limitation the following:
- 3.5.7.1 The two most responsive and responsible bidders will be requested to submit further documentation for both TERO Preferred Employment and the Tulalip Tribal Member NAOB and NAOB Subcontractor and Suppliers utilization commitments listed on the Bidder's Bid Form.
 - 3.5.7.1.1 Supplemental Documentation to be submitted to for each TERO Preferred Employee listed on the Bid Proposal Forms includes, but is not limited to:
 - 3.5.7.1.1.1 Proof of Enrollment issued by a Federally Recognized Indian Tribe or Alaska Native Corporation; or
 - 3.5.7.1.1.2 A signed letter issued by the Tulalip TERO Office certifying that the listed individuals are Preferred Employees.
 - 3.5.7.1.1.3 Bidders shall provide a project staffing plan or a manpowered loaded schedule for the project identifying when the Preferred Employees will be employed on the project and the duration thereof.

- 3.5.7.1.2 Additional information to be submitted to for each NAOB listed on the Bid Form includes, but is not limited to:
 - 3.5.8.1.2.1 Correct business name, federal employee identification number (if available), and mailing address.
 - 3.5.7.1.2.2 List of all bid items assigned to each successful Tulalip Tribal Member NAOB or NAOB firm, including unit prices and extensions (if applicable).
 - 3.5.7.1.2.3 Description of partial items (if any) to be sublet to each successful Tulalip Tribal Member NAOB or NAOB firm specifying the distinct elements of work to be performed by the Tulalip Tribal Member NAOB or NAOB firm and including the dollar value of the Tulalip Tribal Member NAOB or NAOB firm's portion.
 - 3.5.7.1.2.4 Submit evidence of certification for the Tulalip Tribal Member NAOB or NAOB.
- 3.5.7.1.3 Total amounts shown for each Tulalip Tribal Member NAOB or NAOB firm shall not be less than the amount shown on the Bid Form. This submittal, showing the Tulalip Tribal Member NAOB or NAOB firm work item breakdown, when accepted by the Contracting Agency and resulting in contract execution, shall become a part of the contract. A breakdown that does not conform to the Tulalip Tribal Member NAOB or NAOB utilization certified on the Bid Form or that demonstrates a lesser amount of Tulalip Tribal Member NAOB or NAOB participation than that included on the Bid Form will be returned for correction. The contract will not be executed by the Contracting Agency until a satisfactory breakdown has been submitted.
- 3.5.7.2 Overall experience of the Bidder, including number of years in business under present and former business names;
- 3.5.7.3 Complete listing of all ongoing and completed public and private construction projects of the Bidder in the last three years, including the nature and value of each contract and a name/address/phone number for each owner;
- 3.5.7.4 Complete listing of any public or private construction projects for which the Bidder has been declared in default; also, any EPA, OSHA, WISHA or other regulating entity issues or citations in the last ten (10) years;
- 3.5.7.5 Certified financial statement and bank references;
- 3.5.7.6 Description of relevant facilities of the Bidder;
- 3.5.7.7 Description of the management experience of the Bidder's project manager(s) and superintendent(s);
- 3.5.7.8 Complete list of subcontractors which the Bidder proposes to employ on the Project;

- 3.5.7.9 Current Washington Workers' Compensation Certificate or other similar type documentation supporting workers' compensation coverage;
 - 3.5.7.10 Worker's Compensation Rating for current and previous 5 years; and
 - 3.5.7.11 If the Bidder is a foreign corporation, i.e., not incorporated under the laws of Washington, a Certificate of Good Standing from the Secretary of State showing the right of the Bidder to do business in the State; or, if the Bidder is a person or partnership, the Bidder has filed with the Secretary of State a Power of Attorney designating the Secretary of State as the Bidder's agent for the purpose of accepting service of summons in any action brought under this Contract.
- 3.5.8 Each such Bidder's information shall be considered separately and not comparatively. If the lowest or most responsive Bidder, as applicable, is responsible, the Contract shall be awarded to such Bidder or all bids are rejected.
- 3.5.9 If the lowest or most responsive Bidder, as applicable, is not responsible, and all bids are not rejected, the Tulalip Tribes of Washington shall follow the procedure set forth in paragraph IB 3.5.8 with each next lowest or most responsive Bidder, as applicable, until the Contract is awarded, all bids are rejected or all Bidders are determined to be not responsible unless award of the Contract was based upon a "Weight of Award" points system as defined in paragraph 3.5.2.

3.6 REJECTION OF BID BY THE TULALIP TRIBES OF WASHINGTON

- 3.6.1 If the lowest or most responsive Bidder, as applicable, is not responsible, the Tulalip Tribes of Washington shall reject such Bidder and notify the Bidder in writing by certified mail of the finding and the reasons for the finding.
- 3.6.2 A Bidder who is notified in accordance with paragraph IB 3.6.1 may object to such Bidder's rejection by filing a written protest which must be received by the Tulalip Tribes of Washington, through the Construction Manager, within five (5) days of the notification provided pursuant to paragraph IB 3.6.1.
- 3.6.3 Upon receipt of a timely protest, representatives of the Tulalip Tribes of Washington shall meet with the protesting Bidder to hear the Bidder's objections.
- 3.6.3.1 No award of the Contract shall become final until after the representatives of the Tulalip Tribes of Washington have met with all Bidders who have timely filed protests and the award of the Contract is affirmed by the Tulalip Tribes of Washington.
 - 3.6.3.2 If all protests are rejected in the Tulalip Tribes of Washington's discretion the award of the Contract shall be affirmed by the Tulalip Tribes of Washington or all bids shall be rejected.

3.7 NOTICE OF INTENT TO AWARD

- 3.7.1 The Tulalip Tribes of Washington shall notify the apparent successful Bidder that upon satisfactory compliance with all conditions precedent for execution of the Contract Form, within the time specified, the Bidder will be awarded the Contract.
- 3.7.2 The Tulalip Tribes of Washington reserves the right to rescind any Notice of Intent to Award if the Tulalip Tribes of Washington determines the Notice of Intent to Award was issued in error.

ARTICLE 4 – WITHDRAWAL OF BID

4.1 WITHDRAWAL PRIOR TO BID OPENING

4.1.1 A Bidder may withdraw a bid after the bid has been received by the Tulalip Tribes of Washington, provided the Bidder makes a request in writing and the request is received by the Tulalip Tribes of Washington prior to the time of the bid opening, as determined by the employee or agent of the Tulalip Tribes of Washington designated to open bids.

4.2 WITHDRAWAL AFTER BID OPENING

4.2.1 All bids shall remain valid and open for acceptance for a period of, at least, 60 days after the bid opening; provided, however, that within two (2) business days after the bid opening, a Bidder may withdraw a bid from consideration if the bid amount was substantially lower than the amounts of other bids, provided the bid was submitted in good faith, and the reason for the bid amount being substantially lower was a clerical mistake, as opposed to a judgment mistake, and was actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of Work, labor or material made directly in the compilation of the bid amount.

4.2.1.1 Notice of a request to withdraw a bid must be made in writing filed with the Tulalip Tribes of Washington, through the Construction Manager, within two (2) business days after the bid opening.

4.2.1.2 No bid may be withdrawn under paragraph IB 4.2.1 when the result would be the awarding of the Contract on another bid to the same Bidder.

4.2.2 If a bid is withdrawn under paragraph IB 4.2.1, the Tulalip Tribes of Washington may award the Contract to another Bidder the Tulalip Tribes of Washington determines to be the next lowest or most responsive and responsible Bidder, as applicable, or reject all bids and advertise for other bids. If the Tulalip Tribes of Washington advertises for other bids, the withdrawing Bidder shall pay the costs, in connection with the rebidding, of printing new Contract Documents, required advertising and printing and mailing notices to prospective Bidders, if the Tulalip Tribes of Washington finds that such costs would not have been incurred but for such withdrawal.

4.2.3 A Bidder may withdraw the Bidder's bid at any time after the period described in paragraph IB 4.2.1 by written notice to the Tulalip Tribes of Washington.

4.3 REFUSAL BY TULALIP TRIBES OF WASHINGTON TO ACCEPT WITHDRAWAL

4.3.1 If the Tulalip Tribes of Washington intends to contest the right of a Bidder to withdraw a bid pursuant to paragraph IB 4.2.1, a hearing shall be held by one or more representatives of the Tulalip Tribes of Washington within ten (10) days after the bid opening and an order shall be issued by the Tulalip Tribes of Washington allowing or denying the claim of such right within five (5) days after such hearing is concluded. The Tulalip Tribes of Washington, through the Construction Manager, shall give the withdrawing Bidder timely notice of the time and place of any such hearing.

4.3.1.1 The Tulalip Tribes of Washington shall make a stenographic record of all testimony, other evidence, and rulings on the admissibility of evidence presented at the hearing. The Bidder shall pay the costs of the hearing.

4.4 REFUSAL BY BIDDER TO PERFORM

4.4.1 If the Tulalip Tribes of Washington denies the claim for withdrawal and the Bidder elects to appeal or otherwise refuses to perform the Contract, the Tulalip Tribes of Washington may reject all bids or award the Contract to the next lowest or most responsive and responsible Bidder, as applicable.

4.5 EFFECT OF WITHDRAWAL

4.5.1 No Bidder who is permitted, pursuant to paragraph IB 4.2.1, to withdraw a bid, shall for compensation supply any material or labor to, or perform any subcontract or other work agreement for, the person to whom the Contract is awarded or otherwise benefit, directly or indirectly, from the performance of the Project for which the withdrawn bid was submitted, without the written approval of the Tulalip Tribes of Washington.

4.5.2 The person to whom the Contract is awarded and the withdrawing Bidder shall be jointly liable to the Tulalip Tribes of Washington in an amount equal to any compensation paid to or for the benefit of the withdrawing Bidder without such approval.

ARTICLE 5 – BID ESTIMATE

5.1 BID TOTALS

5.1.1 No Contract shall be entered into if the price of the Contract, or if the Project involves multiple Contracts where the total price of all Contracts for the Project, is in excess of ten (10) percent above the entire estimate.

5.2 SUBSTANTIALLY LOW BID

5.2.1 No Bidder shall be responsible if the Bidder's bid is more than twenty (20) percent below the median of all higher bids received for a Contract where the estimate is \$100,000 or more, and no Bidder shall be responsible if the Bidder's bid is more than twenty-five (25) percent below the median of all higher bids received for a Contract where the estimate is less than \$100,000, unless the following procedures are followed.

5.2.1.1 The Construction Manager and the Engineer conduct an interview with the Bidder to determine what, if anything, has been overlooked in the bid, and to analyze the process planned by the Bidder to complete the Work. The Construction Manager and the Engineer shall submit a written summary of the interview to the Tulalip Tribes of Washington.

5.2.1.2 The Tulalip Tribes of Washington reviews and approves the Bidder's responsibility pursuant to paragraph IB 3.5.8.

5.2.1.3 The Construction Manager notifies the Bidder's Surety, if applicable, in writing that the Bidder with whom the Tulalip Tribes of Washington intends to enter a Contract submitted a bid determined to be substantially lower than the median of all higher bids.

ARTICLE 6 – BID GUARANTY AND CONTRACT BOND

6.1 BID GUARANTY

6.1.1 The Bidder must file with the bid a Bid Guaranty, payable to the Tulalip Tribes of Washington, in the form of either:

- 6.1.1.1 The signed Bid Guaranty and Contract Bond contained in the Contract Documents for the amount of the Base Bid plus add Alternates; or
- 6.1.1.2 The signed Bid Proposal Bond contained in the Contract Documents for the amount of the Base Bid plus add Alternates; or
- 6.1.1.3 A cashier's check in the amount of five (5) percent of the Base Bid plus add Alternates.
- 6.1.1.4 If Bidder elects to file with the bid a Bid Guaranty under paragraph IB 6.1.1.3 Bidder shall also file with the bid a signed Statement of Intended Surety contained in the Contract Documents.
- 6.1.2 The Bid Guaranty shall be in form and substance satisfactory to the Tulalip Tribes of Washington and shall serve as an assurance that the Bidder will, upon acceptance of the bid, comply with all conditions precedent for execution of the Contract Form, within the time specified in the Contract Documents. Any Bid Guaranty must be payable to the Tulalip Tribes of Washington.
- 6.1.3 If the blank line on the Bid Guaranty and Contract Bond or Bid Proposal Bond is not filled in, the penal sum will automatically be the full amount of the Base Bid plus add Alternates. If the blank line is filled in, the amount must not be less than the full amount of the Base Bid plus add Alternates, stated in dollars and cents. A percentage is not acceptable.
- 6.1.4 The Bid Guaranty and Contract Bond or Bid Proposal Bond must be signed by an authorized agent, with Power of Attorney, from the Surety. The Bid Guaranty and Contract Bond or Bid Proposal Bond must be issued by a Surety licensed to transact business in the State of Washington.
- 6.1.5 Bid Guaranties will be returned to all unsuccessful Bidders 90 days after the bid opening. If used, the cashier's check will be returned to the successful Bidder upon compliance with all conditions precedent for execution of the Contract Form.

6.2 FORFEITURE

- 6.2.1 If for any reason, other than as authorized by paragraph IB 4.2.1 or paragraph IB 6.3, the Bidder fails to execute the Contract Form, and the Tulalip Tribes of Washington awards the Contract to another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, the Bidder who failed to enter into a Contract shall be liable to the Tulalip Tribes of Washington for the difference between such Bidder's bid and the bid of the next lowest or most responsive Bidder, as applicable, or for a penal sum not to exceed five (5) percent of the bid amount, whichever is less.
- 6.2.2 If the Tulalip Tribes of Washington then awards a Contract to another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, and such Bidder also fails or refuses to execute the Contract Form, the liability of such lowest or most responsive and responsible Bidder, as applicable, shall, except as provided in paragraph IB 6.3, be the amount of the difference between the bid amounts of such lowest or most responsive Bidder, as applicable, and another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, but not in excess of the liability specified in paragraph IB 6.2.1. Liability on account of an award to each succeeding lowest or most responsive and responsible Bidder, as applicable, shall be determined in like manner.

6.2.3 If the Tulalip Tribes of Washington does not award the Contract to another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, but resubmits the Project for bidding, the Bidder failing to execute the Contract Form shall, except as provided in paragraph IB 6.3, be liable to the Tulalip Tribes of Washington for a penal sum not to exceed five (5) percent of such Bidder's bid amount or the costs in connection with the resubmission, of printing new Contract Documents, required advertising and printing and mailing notices to prospective Bidders, whichever is less.

6.3 EXCEPTION TO FORFEITURE

6.3.1 A Bidder for a Contract costing less than \$500,000 may withdraw a bid from consideration if the Bidder's bid for some other Contract costing less than \$500,000 has already been accepted, if the Bidder certifies in good faith that the total price of all such Bidder's current contracts is less than \$500,000, and if the Bidder's Surety, if applicable, certifies in good faith that the Bidder is unable to perform the subsequent contract because to perform such Contract would exceed the Bidder's bonding capacity.

6.3.2 If a bid is withdrawn pursuant to paragraph IB 6.3.1, the Tulalip Tribes of Washington may award the Contract to another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, or reject all bids and resubmit the Project for bidding, and neither the withdrawing Bidder nor such Bidder's Surety, as applicable, shall be liable for the difference between the Bidder's bid and that of another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, for a penal sum, or for the costs of printing new Contract Documents, required advertising and printing and mailing notices to prospective Bidders.

6.4 CONTRACT BOND

6.4.1 If the Bidder executes the Contract Form, the Bidder shall, at the same time, provide a Bond meeting the requirements of the Contract Documents, unless the Bidder provided an acceptable Bid Guaranty and Contract Bond at the time of the bid opening. A "A- VII" or better Best Rated Surety Company shall issue the required bond.

6.4.2 The Bond shall be in the full amount of the Contract to indemnify the Tulalip Tribes of Washington against all direct and consequential damages suffered by failure of the Contractor to perform according to the provisions of the Contract and in accordance with the plans, details, specifications and bills of material therefore and to pay all lawful claims of Subcontractors, Material Suppliers, and laborers for labor performed or materials furnished in carrying forward, performing or completing the Contract.

6.4.3 The Bond shall be supported by a Power of Attorney of the agent signing for a Surety. The Bond shall be supported by a current and signed Certificate of Compliance or Certificate of Authority showing the Surety is licensed to do business in Washington.

6.5 NOT USED

ARTICLE 7 – CONTRACT AWARD AND EXECUTION

7.1 NONCOMPLIANCE WITH CONDITIONS PRECEDENT

- 7.1.1 The award of the Contract and the execution of the Contract Form are based upon the expectation that the lowest or most responsive and responsible Bidder, as applicable, will comply with all conditions precedent for execution of the Contract Form within ten (10) days of the date of the Notice of Intent to Award.
- 7.1.1.1 Noncompliance with the conditions precedent for execution of the Contract Form within ten (10) days of the date of the Notice of Intent to Award shall be cause for the Tulalip Tribes of Washington to cancel the Notice of Intent to Award for the Bidder's lack of responsibility and award the Contract to another Bidder which the Tulalip Tribes of Washington determines is the next lowest or most responsive and responsible Bidder, as applicable, or resubmit the Contract for bidding, at the discretion of the Tulalip Tribes of Washington.
- 7.1.1.2 The Tulalip Tribes of Washington may extend the time for submitting the conditions precedent for execution of the Contract Form for good cause shown. No extension shall operate as a waiver of the conditions precedent for execution of the Contract Form.

7.2 TIME LIMITS

- 7.2.1 The failure to award the Contract and to execute the Contract Form within 60 days of the bid opening invalidates the entire bid process and all bids submitted, unless the time is extended by written consent of the Bidder whose bid is accepted by the Tulalip Tribes of Washington and with respect to whom the Tulalip Tribes of Washington awards and executes a Contract.
- 7.2.1.1 If the Contract is awarded and the Contract Form is executed within 60 days of the bid opening, any increases in material, labor and subcontract costs shall be borne by the Bidder without alteration of the amount of the bid.
- 7.2.1.2 If the cause of the failure to execute the Contract within 60 days of the bid opening is due to matters for which the Tulalip Tribes of Washington is solely responsible, the Contractor shall be entitled to a Change Order authorizing payment of verifiable increased costs in materials, labor or subcontracts.
- 7.2.1.3 If the cause of the failure to execute the Contract within 60 days of the bid opening is due to matters for which the Contractor is responsible, no request for increased costs will be granted.

7.3 CONDITIONS PRECEDENT FOR EXECUTION OF CONTRACT FORM

- 7.3.1 Bond, if required. To support the Bond, a current and signed Certificate of Compliance or Certificate of Authority showing the Surety is licensed to do business in Washington;
- 7.3.2 Current Washington Workers' Compensation Certificate or other similar type documentation supporting workers' compensation coverage;
- 7.3.3 Certificate of Insurance (ISO general liability form CG 2010 11/85 edition or equivalent form is acceptable) and copy of additional insured endorsement. The

certificate shall clearly state The Tulalip Tribes of Washington, and the State of Washington are named as “Additional Insureds” to the General Liability, Automobile Liability, and Excess Liability Policies. Workers Compensation coverage includes a waiver of subrogation against the Tulalip Tribes of Washington. The wording “endeavor to” and “but failure to” under CANCELLATION shall be stricken from the certificate. The Tulalip Tribes of Washington reserves the right to request a certified copy of the Contractor’s insurance policies meeting the requirements of GC Article 12;

- 7.3.4 If the Bidder is a foreign corporation, i.e., not incorporated under the laws of Washington, a Certificate of Good Standing from the Secretary of State showing the right of the Bidder to do business in the State; or, if the Bidder is a person or partnership, the Bidder has filed with the Secretary of State a Power of Attorney designating the Secretary of State as the Bidder’s agent for the purpose of accepting service of summons in any action brought under this Contract;
- 7.3.5 Contractor signed Contract Form;
- 7.3.6 Completed and approved TERO Contracting and Subcontracting Compliance plan;
- 7.3.7 Current Tulalip Tribes Business License; and
- 7.3.8 Completed and signed Confidentiality Agreement.

7.4 NOTICE TO PROCEED AND SUBMITTALS

- 7.4.1 The Tulalip Tribes of Washington shall issue to the Contractor a Notice to Proceed, which shall establish the date for Contract Completion. The Contractor shall, within ten (10) calendar days of the date of the Notice to Proceed, furnish the Construction Manager with the following submittals:
 - 7.4.1.1 Contract Cost Breakdown;
 - 7.4.1.2 Preliminary schedule of Shop Drawings and Submittals;
 - 7.4.1.3 Outline of qualifications of the proposed superintendent; and
 - 7.4.1.4 Acknowledgement by a TERO Representative the Project related TERO fee has been paid or an agreement has been reached to pay the fee in installments over the course of the Contract.

ARTICLE 8 – APPLICABLE LAW AND FORUM

8.1 FORUM FOR EQUITABLE RELIEF

- 8.1.1 The Tribal Court of the Tulalip Tribes of Washington shall have exclusive jurisdiction over any action or proceeding for any injunction or declaratory judgment concerning any agreement or performance under the Contract Documents or in connection with the Project. Any such action or proceeding arising out of or related in any way to the Contract or performance thereunder shall be brought only in the Tribal Court of the Tulalip Tribes of Washington and the Contractor irrevocably consents to such jurisdiction and venue. The Contract shall be governed by the law of the State of Washington.

8.2 FORUM FOR MONEY DAMAGES

- 8.2.1 The Tribal Court of the Tulalip Tribes of Washington shall be the exclusive jurisdiction for any action or proceeding for any injunction or declaratory judgment

concerning any agreement or performance under the Contract Documents or in connection with the Project. The Tribal Court of the Tulalip Tribes of Washington shall be the exclusive jurisdiction for any action or proceeding by the Contractor or the Contractor's Surety, if applicable, for any money damages concerning any agreement or performance under the Contract Documents or in connection with the Project.

The Tulalip Tribes of Washington

BID PROPOSAL FORM

Project Name: Marina Pump Station Replacement

Date of Bid: _____

Location of Project: 7411 Tulalip Bay Drive
Tulalip, WA 98271

COMPANY NAME OF BIDDER: _____

CERTIFIED NATIVE AMERICAN OWNED BUSINESS:

YES _____ If Yes, Percentage (%) of Indian Ownership: _____ **NO** _____

Having read and examined the Contract Documents, including without limitation the Drawings and Specifications, prepared by the Engineer and the Tulalip Tribes of Washington for the above-referenced Project, and the following Addenda:

ADDENDA ACKNOWLEDGED (Enter Addenda Number and Date of Addenda below):

- | | |
|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |

The undersigned Bidder proposes to perform all Work for the applicable Contract, in accordance with the Contract Documents, for the following sums:

Tulalip Tribes Project No.: 2024-002 Marina Pump Station Replacement

Refer to Division 0, TERO Code, and Special Provisions, Section 1-07.2 State Taxes, for application of TERO and Taxes.

(PAGE INTENTIONALLY LEFT BLANK)

BID SCHEDULE

TULALIP TRIBES

MARINA PUMP STATION REPLACEMENT SCHEDULE OF PRICES

(Work Within Tribal Reservation Boundary
Washington State Sales Tax Does Not Apply)

ITEM NO.	ITEM DESCRIPTION	UNIT	APPROX. QTY.	UNIT PRICE DOLLAR CENTS	AMOUNT DOLLAR CENTS
1	MINOR CHANGE	FA	1	\$ 125,000.00	\$ 125,000.00
2	RECORD DRAWINGS (MINIMUM BID \$5,000)	LS	1	\$	\$
3	MOBILIZATION	LS	1	\$	\$
4	EROSION CONTROL AND WATER POLLUTION PREVENTION AND DEWATERING	LS	1	\$	\$
5	CLEARING AND GRUBBING	LS	1	\$	\$
6	DEMOLITION OF FENCING, BLOCK WALL, LIGHT POLE, AND ELECTRICAL	LS	1	\$	\$
7	UNSUITABLE FOUNDATION EXCAVATION	CY	10	\$	\$
8	TEMPORARY EXCAVATION SHORING	LS	1	\$	\$
9	TEMPORARY WASTEWATER BYPASS HAULING, PUMPING, AND WET WELL ISOLATION	LS	1	\$	\$
10	WET WELL CLEANING, SEALING, AND COATING	LS	1	\$	\$
11	VAULTS, CONCRETE SLABS, PADS, HATCHES, AND APPURTENANCES	LS	1	\$	\$
12	VAULT AND HATCH DRAINS	LS	1	\$	\$
13	WASTEWATER PIPING, FITTINGS, AND VALVES	LS	1	\$	\$
14	FLOW, LEVEL, PRESSURE, AND PROXIMITY INSTRUMENTATION	LS	1	\$	\$
15	RELOCATION OF ELECTRIC GENERATOR	LS	1	\$	\$
16	CONTROL PANEL AND TERMINATION PANEL	LS	1	\$	\$
17	ELECTRICAL AND CONTROLS RACEWAYS, WIRING, AND LIGHTING	LS	1	\$	\$
18	SITE GRADING, GRAVEL SURFACING, CONCRETE PAVING, AND SEEDED TOPSOIL	LS	1	\$	\$
19	FENCING AND GATES	LS	1	\$	\$
20	WATER SERVICE AND YARD HYDRANT	LS	1	\$	\$
Subtotal:				\$	
TERO (1.75%):				\$	
TOTAL (Including TERO):				\$	

TRENCH EXCAVATION SAFETY PROVISIONS: If contracted work contains any work that requires trenching exceeding a depth of four (4) feet, all costs for trench safety shall be included in the Base Bid amount for adequate trench safety systems in compliance with Chapter 39.04 RCW and WAC 296-155-650. The purpose of this provision is to ensure that the bidder agrees to comply with all the relevant trench safety requirements of Chapter 49.17 RCW. This bid amount shall be considered as part of the total Base Bid amount set forth above.

The following items shall also be considered in the review and award of this Contact. Bidder shall complete each section as applicable. By submission of this bid proposal, Bidder acknowledges their commitment to employ and or contract work to the parties identified below during the performance of Bidder’s awarded Work.

SECTION I – KEY EMPLOYEES OF BIDDER (if required, attach additional sheets if needed)

NAME	POSITION	PREFERRED EMPLOYEE	
		Yes	No
1.	1.		
2.	2.		
3.	3.		
4.	4.		
5.	5.		

SECTION II – PREFERRED “TRADE” EMPLOYEES (if required, attach additional sheets if needed)

NUMBER OF PREFERRED “TRADE” EMPLOYEES	NUMBER OF PREFERRED “TRADE” EMPLOYEES
1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

SECTION III – PEAK WORK FORCE OF ALL EMPLOYEES ANTICIPATED TO BE EMPLOYED BY BIDDER AT THE PROJECT SITE IN THE PERFORMANCE OF THE WORK:

(Insert Number of Employees)

SECTION IV – LIST OF LOWER TIERED SUBCONTRACTOR(S) AND OR SUPPLIER(S)
 (Total of Sections IV.A and IV.B)

SECTION IV A – LIST OF TULALIP TRIBAL MEMBER NAOB SUBCONTRACTOR(S) AND OR SUPPLIER(S) (if required, attach additional sheets if needed)

NAME OF SUBCONTRACTOR (SUB) OR SUPPLIER (SUP)	TYPE OF WORK TO BE AWARDED	DOLLAR VALUE OF WORK	TYPE OF LOWER-TIER		TULALIP NAOB	
			SUB	SUP	Yes	No
1.	1.	\$				
2.	2.	\$				
3.	3.	\$				
4.	4.	\$				
5.	5.	\$				
6.	6.	\$				
7.	7.	\$				
8.	8.	\$				
9.	9.	\$				
10.	10.	\$				

SECTION IV B – LIST OF NAOB SUBCONTRACTOR(S) AND OR SUPPLIER(S) (if required, attach additional sheets if needed)

NAME OF SUBCONTRACTOR (SUB) OR SUPPLIER (SUP)	TYPE OF WORK TO BE AWARDED	DOLLAR VALUE OF WORK	TYPE OF LOWER-TIER		NAOB	
			SUB	SUP	Yes	No
1.	1.	\$				
2.	2.	\$				
3.	3.	\$				
4.	4.	\$				
5.	5.	\$				
6.	6.	\$				
7.	7.	\$				
8.	8.	\$				
9.	9.	\$				
10.	10.	\$				

Should Contractor fail to comply, to the fullest extent possible, with provisions for employment and or contracting as defined in The Tulalip Code, Chapter 9.05 – TERO Code, Contractor may be found to be in breach of Contract. If it is determined that a breach has occurred, Contractor acknowledges that said breach will be grounds to terminate Contractor’s Contract agreement without claim against The Tulalip Tribes of Washington or the Project for any additional compensation and or consideration.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK)

The Tulalip Tribes of Washington

BIDDER'S CERTIFICATION

The Bidder hereby acknowledges that the following representations in this bid are material and not mere recitals:

1. The Bidder has read and understands the Contract Documents and agrees to comply with all requirements of the Contract Documents, regardless of whether the Bidder has actual knowledge of the requirements and regardless of any statement or omission made by the Bidder which might indicate a contrary intention.
2. The Bidder represents that the bid is based upon the Standards specified by the Contract Documents.
3. The Bidder acknowledges that all Work shall be completed within the time established in the Contract Documents, and that each applicable portion of the Work shall be completed upon the respective milestone completion dates, unless an extension of time is granted in accordance with the Contract Documents. The Bidder understands that the award of separate contracts for the Project will require sequential, coordinated and interrelated operations which may involve interference, disruption, hindrance or delay in the progress of the Bidder's Work. The Bidder agrees that the Contract price, as amended from time to time by Change Order, shall cover all amounts due from the Tulalip Tribes of Washington resulting from interference, disruption, hindrance or delay caused by or between Contractors or their agents and employees.
4. The Bidder has visited the Project site, become familiar with local conditions and has correlated personal observations with the requirements of the Contract Documents. The Bidder has no outstanding questions regarding the interpretation or clarification of the Contract Documents.
5. The Bidder agrees to comply with The Tulalip Code, Chapter 9.05 – TERO Code and give preference to Indians in hiring promotions, training and all other aspects of employment contracting and subcontracting.
6. The Bidder agrees to comply with The Tulalip Code, Chapter 9.05 – TERO Code and give preference to certified Indian-owned enterprises and organizations in the award of contracts and subcontracts.
7. The Bidder and each person signing on behalf of the Bidder certifies, and in the case of a joint or combined bid, each party thereto certifies as to such party's entity, under penalty of perjury, that to the best of the undersigned's knowledge and belief: (a) the Base Bid, any Unit Prices and any Alternate Bid in the bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition as to any matter relating to such Base Bid, Unit Prices or Alternate bid with any other Bidder; (b) unless otherwise required by law, the Base Bid, any Unit Prices and any Alternate bid in the bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to the bid opening, directly or indirectly, to any other Bidder who would have any interest in the Base Bid, Unit Prices or Alternate bid; (c) no attempt has been made or will be made by the Bidder to induce any other individual, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
8. The Bidder will execute the Contract Form with the Tulalip Tribes of Washington, if a Contract is awarded on the basis of this bid, and if the Bidder does not execute the Contract Form for

any reason, other than as authorized by law, the Bidder and the Bidder's Surety are liable to the Tulalip Tribes of Washington as provided in Article 6 of the Instructions to Bidders.

9. Bidder agrees to furnish any information requested by the Tulalip Tribes of Washington to evaluate the responsibility of the Bidder.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK)

The Tulalip Tribes of Washington

NON - COLLUSION DECLARATION

Failure to return this Declaration as part of the bid proposal package will make the bid nonresponsive and ineligible for award.

NON-COLLUSION DECLARATION

I, by signing the proposal, hereby declare, under penalty of perjury under the laws of the United States that the following statements are true and correct:

1. That the undersigned person(s), firm, association or corporation has (have) not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the project for which this proposal is submitted.
2. **That by signing the signature page of this proposal, I am deemed to have signed and to have agreed to the provisions of this declaration.**

NOTICE TO ALL BIDDERS

To report rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (USDOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the USDOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

(PAGE INTENTIONALLY LEFT BLANK)

The Tulalip Tribes of Washington

Any modification made to either the bid form or exception taken to the defined scope of work outlined in this bid package may result in the bid proposal being considered non-responsive.

Each bid shall contain the name of every person interested therein. If the Bidder is a corporation, partnership, sole proprietorship, or limited liability corporation, an officer, partner or principal of the Bidder, as applicable, shall print or type the legal name of the Bidder on the line provided and sign the Bid Form. If the Bidder is a joint venture, an officer, partner or principal, as applicable, of each member of the joint venture shall print or type the legal name of the applicable member on the line provided and signs the Bid Form. An unsigned Bid Form will render the Bid as non-responsive.

BIDDER'S NAME (PRINT): _____

Authorized Signature: _____

Title: _____

Company Name: _____

Mailing Address: _____

Telephone Number: (____) _____ Facsimile Number (____) _____

Where Incorporated: _____

Type of Business (circle one): corporation partnership sole proprietorship limited liability corporation

The Tulalip Tribes Business License Number: _____

State of Washington Contractor's License Number: _____

Federal ID Number: _____

Contact Person for Contract processing: _____

BIDDER'S NAME (PRINT): _____

Authorized Signature: _____

Title: _____

Company Name: _____

Mailing Address: _____

Telephone Number: (____) _____ Facsimile Number (____) _____

Where Incorporated: _____

Type of Business (circle one): corporation partnership sole proprietorship limited liability corporation

The Tulalip Tribes Business License Number: _____

State of Washington Contractor's License Number: _____

Federal ID Number: _____

Contact Person for Contract processing: _____

(PAGE INTENTIONALLY LEFT BLANK)

The Tulalip Tribes of Washington

SUB-CONTRACTORS OR SUPPLIERS

Native American TERO Certified Businesses that are qualified and come within 10% of the low bid, will be provided negotiated preference.

IN DATE ORDER, ALL SUB-CONTRACTORS WILL NEED A COMPLIANCE PLAN

Company	Contact Person	Phone	Native	Sub or Supplier

JOB ORDER

If the TERO jobs skills bank has qualified persons, they are required to receive preference in hiring to comply with the TERO law.

Job Title	Number of Positions	Rate of Pay	Date from / to

Foreman to contact / cell:

I declare that all the answers and statements are true, correct and complete to the best of my knowledge. I understand that untruthful or misleading answers are cause for denial of my application and/or revocation of any certification granted.

Print Name	Signature	Title	Date
------------	-----------	-------	------

----- Office use only -----

				Yes	NO
Recommended by	Date	Managers Signature	Date	Approved	
Notes:					

(PAGE INTENTIONALLY LEFT BLANK)



Subcontractor List

Prepared in compliance with RCW 39.30.060 as amended

To Be Submitted with the Bid Proposal

Project Name _____

Failure to list subcontractors with whom the bidder, if awarded the contract, will directly subcontract for performance of the work of heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106 RCW, and electrical, as described in Chapter 19.28 RCW or naming more than one subcontractor to perform the same work will result in your bid being non-responsive and therefore void.

Subcontractor(s) with whom the bidder will directly subcontract that are proposed to perform the work of heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106 RCW, and electrical as described in Chapter 19.28 RCW **must** be listed below. The work to be performed is to be listed below the subcontractor(s) name.

To the extent the Project includes one or more categories of work referenced in RCW 39.30.060, and no subcontractor is listed below to perform such work, the bidder certifies that the work will either (i) be performed by the bidder itself, or (ii) be performed by a lower tier subcontractor who will not contract directly with the bidder.

Subcontractor Name _____
Work to be performed _____

Subcontractor Name _____
Work to be performed _____

Subcontractor Name _____
Work to be performed _____

Subcontractor Name _____
Work to be performed _____

Subcontractor Name _____
Work to be performed _____

* Bidder's are notified that is the opinion of the enforcement agency that PVC or metal conduit, junction boxes, etc, are considered electrical equipment and therefore considered part of electrical work, even if the installation is for future use and no wiring or electrical current is connected during the project.

SR

DOT Form 271-015 EF
Revised 08/2012

(PAGE INTENTIONALLY LEFT BLANK)

The Tulalip Tribes of Washington

NAOB Written Confirmation

**Native American Owned Business (NAOB)
Written Confirmation Document**

As an authorized representative of the Native American Owned Business (NAOB), I confirm that we have been contacted by the referenced bidder with regard to the referenced project and if the bidder is awarded the contract we will enter into an agreement with the bidder to participate in the project consistent with the information provided on the bidder's Bid Proposal Form, Section IV.

Contract Title: _____

Bidder's Business Name: _____

NAOB's Business Name: _____

NAOB Signature: _____

NAOB's Representative _____

Name and Title: _____

Date: _____

The entries must be consistent with what is shown on the bidder's Bid Proposal Form, Section IV. Failure to do so will result in bid rejection. See Instructions to Bidders Section 1.1.7; *Minimum TERO Participation for Subcontractors*.

Description of Work: _____

Amount to be Awarded to NAOB: _____

This Page Intentionally Left Blank

The Tulalip Tribes of Washington

FORM OF BID GUARANTY & CONTRACT BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned _____ as Principal at _____, (Address) _____ and _____ as Surety, are hereby held and firmly bound unto the Tulalip Tribes of Washington, herein referred to as Tulalip Tribes, in the penal sum of the dollar amount of the bid submitted by the Principal to the Tulalip Tribes on (date) _____, ____ to undertake the Project known as: _____.

The penal sum, referred to herein, shall be the dollar amount of the Principal's bid to the Tulalip Tribes, incorporating any additive or deductive alternate bids or any additive or deductive allowance bids made by the Principal on the date referred to above to the Tulalip Tribes, which are accepted by the Tulalip Tribes. In no case shall the penal sum exceed the amount of dollars (\$_____). (If the above line is left blank, the penal sum will be the full amount of the Principal's bid, including alternates and unit prices. Alternatively, if completed, the amount stated must not be less than the full amount of the bid, including alternates and allowances, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above-named Principal has submitted a bid on the above-referred to project;

NOW, THEREFORE, if the Tulalip Tribes accept the bid of the Principal, and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications and bills of material; and in the event the Principal pays to the Tulalip Tribes the difference not to exceed five percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Tulalip Tribes may in good faith contract with the next lowest bidder to perform the work covered by the bid; or resubmits the project for bidding, the Principal will pay the Tulalip Tribes the difference not to exceed five percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Tulalip Tribes accept the bid of the Principal, and the Principal, within ten days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

IF THE SAID Principal shall well and faithfully perform each and every condition of such contract; and indemnify the Tulalip Tribes against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications and bills of material therefore; and shall pay all lawful claims of subcontractors, material suppliers and laborers for labor performed and materials furnished in the carrying forward, performing or completing of said contract; we, agreeing and assenting to, at this undertaking shall be for the benefit of any material supplier or laborer having a just claim, as well as for the Tulalip Tribes herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for

any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

THE SAID Surety hereby stipulates and agrees that no modifications, omissions or additions, in or to the terms of said contract or in or to the plans and specifications, therefore, shall in any wise affect the obligations of said Surety on its bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

SIGNED this _____ day of _____, _____

PRINCIPAL:

By: _____

Title: _____

SURETY:

Address: _____

Phone: (____) _____

By: _____

Attorney-in-Fact

SURETY AGENT:

Address: _____

Phone: (____) _____

The Tulalip Tribes of Washington

STATEMENT OF INTENDED SURETY

(Required if Bid Deposit is NOT a Surety Bond)

FURNISH WITH BIDDER'S SEALED BID a written statement prepared and signed by Bidder's intended sureties or surety company, to the effect that: _____ (Name of Surety), who meets the requirements of Chapter 48.28 RCW, will promptly provide a surety bond in the amount of 100% of the base bid in the event _____ (Bidder's Name) is awarded a Contract for _____ (Project Description) and that the proposed Construction Contract is acceptable to the Surety.

Surety:

Signature of Authorized Representative

Printed Name / Title of Authorized Representative

This statement, if required, must be included in Bidder's sealed bid for Bidder's Bid to be considered.

By: _____

Title: _____

SURETY:

Address: _____

Phone: (____) _____

By: _____

Attorney-in-Fact

SURETY AGENT:

Address: _____
Phone: (____) _____

This Page Is Intentionally Left Blank

The Tulalip Tribes of Washington

BID PROPOSAL BOND

KNOW ALL BY THESE PRESENTS, that (Name of Bidder) _____ a corporation, partnership, or individual) duly organized under the laws of the State of _____ as principal, and (Name of Surety) _____ a corporation duly organized under the laws of the State of _____ and authorized to do business in the State of Washington, as surety, are held and firmly bound unto The Tulalip Tribes of Washington in the full and penal sum of five (5) percent of the total amount of the bid proposal of said principal for the work hereinafter described for the payment of which, well and truly to be made, we bind our heirs, executors, administrators and assigns, and successors and assigns, firmly by these presents.

Said bid and proposal, by reference hereto, being made a part hereof.

NOW, THEREFORE, if the said proposal bid by said principal be accepted, and the contract be awarded to said principal, and if said principal shall duly make and enter into and execute said contract and shall furnish a performance, payment and warranty bond as required by The Tulalip Tribes of Washington within a period of ten (10) days from and after said award, exclusive of the day of such award, then this obligation shall be null and void, otherwise it shall remain and be in full force and effect.

IN TESTIMONY WHEREOF, the principal and surety have caused these presents to be signed and sealed this _____ day of _____, 20_____.

Principal _____
(Name) _____
(Address) _____

By _____
(Signature of Authorized Rep)

(Typed Name of Authorized Rep)
Title _____

SURETY
Name _____
By _____
(Attorney-in-fact for Surety)

(Name & Address of local Office or Agent)

*This bond must be accompanied by a fully executed Power of Attorney appointing the attorney-in-fact.

This Page Is Intentionally Left Blank

DRAFT AIA® Document A312™ - 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

« »« »
« »

SURETY:

(Name, legal status and principal place of business)

« »« »
« »

OWNER:

(Name, legal status and address)

« »« »
« »

CONSTRUCTION CONTRACT

Date: « »

Amount: \$ « »

Description:
(Name and location)

« »
« »

BOND

Date:

(Not earlier than Construction Contract Date)

« »

Amount: \$ « »

Modifications to this Bond: None See Section 18

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature:

Name and « »« »

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature:

Name and « »« »

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

« »
« »
« »

OWNER'S REPRESENTATIVE:

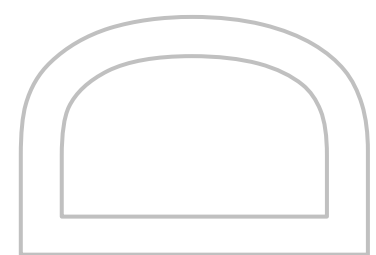
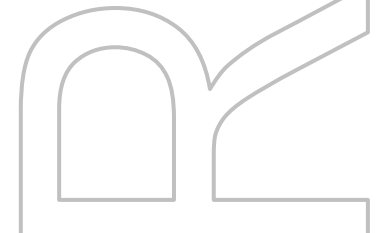
(Architect, Engineer or other party:)

« »
« »
« »
« »
« »
« »

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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



ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

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

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, including all TERO obligations, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 The Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, including any TERO liabilities, and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 Upon notice as set forth in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after completion of the Work under the Construction Contract; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within thirty (30) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees and costs the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

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

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

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of two years from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on Substantial Completion of the Work under the Construction Contract, whichever of (1) or (2) first occurs. Notwithstanding the foregoing, any proceeding, legal or equitable, under this Bond and involving the Owner shall be governed by the choice of law and venue provisions set forth in the Construction Contract and Surety agrees to be bound thereto and consents to jurisdiction as set forth therein

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract, including any TERO obligations. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The term Claimant also includes the Tulalip Tribal Employment Rights Office (TERO). The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, TERO obligations, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

«Surety agrees that electronic signatures (whether digital or encrypted) and/or scanned copies of original signatures on this document is intended to authenticate this bond and shall have the same force and effect as manual signatures and original copies. Such electronically signed or scanned/PDF versions of this AIA Document A312, Performance Bond shall be fully enforceable against the Surety »

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

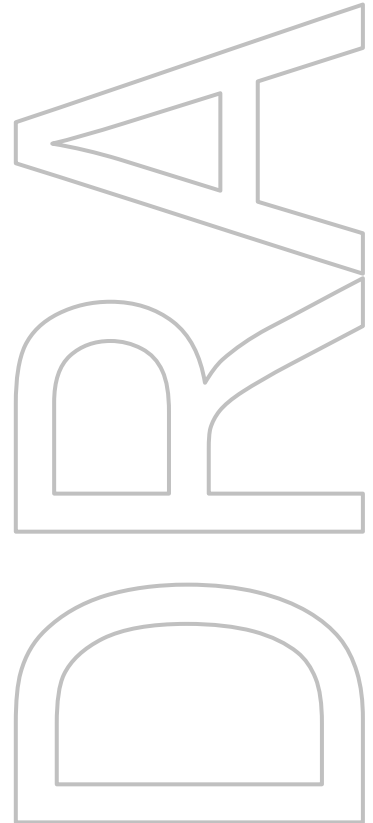
Company: _____
(Corporate Seal)

Signature: _____
Name and Title: << >><< >>
Address: << >>

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: << >><< >>
Address: << >>



DRAFT AIA® Document A312™ - 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

« »
« »

SURETY:

(Name, legal status and principal place of business)

« »
« »

OWNER:

(Name, legal status and address)

« »
« »

CONSTRUCTION CONTRACT

Date: « »

Amount: \$ « »

Description:

(Name and location)

« »
« »

BOND

Date:

(Not earlier than Construction Contract Date)

« »

Amount: \$ « »

Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature:

Name and « »

Title:

(Any additional signatures appear on the last page of this Performance Bond.)

SURETY

Company: (Corporate Seal)

Signature:

Name and « »

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

« »
« »
« »

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

« »
« »
« »
« »
« »
« »

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, including all warranty obligations, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 The Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed complete the performance of the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; or
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety and the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Upon notice of default under Section 3.2 above, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 4.1 Undertake to perform and complete the Construction Contract itself, including all warranty obligations, through its agents or independent contractors, which shall not include the Contractor without prior written consent of the Owner;

§ 4.2 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 6 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 4.3 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances, but in no less than thirty (30) days from receipt of Owner's notice in Section 3:

- .1 Determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 5 If the Surety does not proceed as provided in Section 4 within the time period set forth in Section 4.3, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 4.3, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 6 If the Surety elects to act under Section 4.1 or 4.2, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price in accordance with the Construction Contract, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract, including all warranty work;

- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 4; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 7.1 If the Surety elects to act under Section 4.3.1, the Surety's liability is limited to the amount of this Bond. In such instance, the Owner shall inform the Surety of the estimate of its actual costs to complete the Project, including the additional legal, design professional and delay costs resulting from the Contractor's Default, and liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance, which shall be remitted to the Owner within fourteen (14) days. At the completion of the Construction Contract, including the warranty period, the Owner shall return, without interest, any overpayment made by the Surety and the Surety shall pay to the Owner any actual costs which exceed the Owner's estimate, limited to the bond amount.

§ 7.2 If the Surety elects to act under Section 4.3.2, the Surety's liability is limited to the amount of this Bond, but Surety shall also be responsible for the attorneys' fees and costs incurred by the Owner related to any dispute over the Surety's obligations. If the Surety denies liability in whole or in part, the parties shall promptly proceed to the dispute resolution process as set forth in the Construction Contract.

§ 8 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations, except as allowed under applicable law. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 9 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 10 Any proceeding, legal or equitable, under this Bond may shall be governed by the choice of law and venue provisions set forth in the Construction Contract and Surety agrees to be bound thereto and consents to jurisdiction as set forth therein. Such proceeding shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 11 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

§ 13 Surety agrees that electronic signatures (whether digital or encrypted) and/or scanned copies of original signatures on this document is intended to authenticate this bond and shall have the same force and effect as manual signatures and original copies. Such electronically signed or scanned/PDF versions of this AIA Document A312, Performance Bond shall be fully enforceable against the Surety.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied in accordance with the Construction Contract, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

« »

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: (Corporate Seal)

Company: (Corporate Seal)

Signature:
Name and Title: « »
Address: « »

Signature:
Name and Title: « »
Address: « »



The Tulalip Tribes of Washington

TRIBAL EMPLOYMENT RIGHTS OFFICE (TERO)

TULALIP TERO MISSION STATEMENT

The Tulalip TERO has a mission to help improve the quality of life for Tulalip Tribal members and other Native American families through opportunities that can assist them in pursuing quality jobs or careers with decent wages and by protecting their rights of preferential employment, training, business and economic opportunities on and near the Tulalip Reservation. Also, to assist business in achieving compliance with hiring Native American qualified workers.

Information

6404 Marine Drive, Tulalip, WA 98271

Office: (360) 716-4747

Fax: (360) 716-0612

Alternate Fax: (360) 716-0249

Driving Direction From Seattle:

Go North on highway I-5. At exit 199, turn RIGHT onto Ramp and turn LEFT (West) onto SR-528 [4th St]. Road name changes to Marine Dr. NE. Turn RIGHT (North-East) onto 64th Street NW.

Driving Direction From Mount Vernon:

Go South on highway I-5. At exit 199, turn RIGHT onto Ramp and bear RIGHT (West) onto Marine Dr. NE. Turn RIGHT (North-East) onto 64th Street NW.

On June 20, 2012, the Tulalip Tribes board of Directors enacted the Tribal Employment Rights Office Code which is the preferential employment and contracting laws of the land within the boundaries of the Tulalip Reservation.

Tulalip TERO office requires businesses to:

- Hire TERO qualified and certified workers;
- Give Native owned businesses the opportunity to bid;
- Fill out and negotiate a compliance plan prior to commencing work; and
- Pay 1.75% TERO fee on all construction projects over \$10,000

FREQUENTLY ASKED QUESTIONS

The following presents a list of the most frequently asked questions and inquiries about Native American Preference and Tribal Employment Rights Office (TERO).

1. WHAT IS THE PURPOSE OF TERO?

To access more employment & training opportunities for Native Americans and their families. To provide more business & economic opportunities for businesses owned by Native Americans.

2. WHY IS THERE A NEED FOR TERO?

Since unemployment rate in Native communities remains high, Tribes must take strong actions to protect the employment rights of Native American people.

3. *WHAT ARE THE BASIC REQUIREMENTS OF TERO?*

All employers operating within tribal jurisdiction are required to provide Indian preference in employment, training, contracting, and subcontracting. Following are the major provisions and requirements found in most TERO Codes that employers must adhere too:

- A. To ensure Native preference, employers need to submit and negotiate a detailed compliance plan of employer workforce needs with a TERO Compliance Officer.
- B. To utilize the TERO skills banks for all referrals and consider Native applicants before interviewing or hiring any Non-Native worker.
- C. To negotiate with the TERO Compliance Officer(s) the specific number of Natives in each job classification and to cooperate with tribal training programs to hire a certain number of trainees.
- D. To eliminate all extraneous job qualification criteria or personnel requirements which may act as a barrier to Native employment. TEROs are guided by EEOC guidelines for verifying legitimate Bona-fide Occupational Qualifications (BFOQ's).
- E. To keep in contact with the TERO office in order to resolve any employee problems and issues.
- F. To acknowledge and respect tribal religious beliefs and cultural difference and to cooperate with TERO to provide reasonable accommodations.
- G. All employers who have collective bargaining agreements with one or more unions must secure a written agreement from their unions indicating that they will comply with TERO.
- H. The TERO certified worker shall be treated the same as the other employees. There will be a Zero tolerance to discrimination within the boundaries of the Tulalip Reservation.

The success of TERO programs can be directly attributed to the fact that these programs embody all of the critical elements listed above.

4. *WHAT IS A COMPLIANCE PLAN?*

A Compliance Plan is a written document that provides detailed descriptions of a construction project with all the pertinent information. This is where you list your key personnel and your work force needs. A Key employee is a permanent employee who is in a supervisory or specialized position and without this person an employer would face a financial loss. This document is then negotiated with a TERO Compliance Officer for approval.

5. *WHAT TERO REQUIREMENTS ARE THERE IN CONTRACTING BIDS?*

The TERO Office has a Native American Owned Business Registry (NAOB) in which TERO certifies that the companies are owned by Native Americans. The TERO Code requires that Contractors and or Subcontractors provide opportunities to every NAOB that is qualified to do the work.

6. *IS THERE A DIFFERENCE BETWEEN TRIBAL AND NATIVE AMERICAN PREFERENCE?*

Yes, on Tribally funded projects TERO can require Tribal member preference. This is permissible under Federal law because tribes are exempt from Title VII of the Civil Rights

Act, Executive Order 11246 and most other employment rights legislation. Native American preference is permissible under some federal laws i.e., Indian Self Determination Act, Buy Indian Act and under most federal laws.

7. WHAT IS THE EXTENT OF TERO JURISDICTION?

A Tribe has the authority to enact and enforce any Indian employment preference law that is grounded in its inherent sovereign powers of self-government. This legal doctrine is the most basic principle of Indian law and is supported by a host of Supreme Court decisions. The jurisdiction is legally described or defined by treaty or legislation. The exterior boundaries of the reservation including cede territories and lands where jurisdiction has not been extinguished. TERO has a political preference, not a racial preference and does not violate Title VII or any other Federal Employment Law.

8. ARE THERE ANY EXEMPTIONS TO TERO REQUIREMENTS?

Yes, there are several exemptions. Direct employment by Federal / State governments, schools, churches and some non-profits are not covered by TERO. Some Tribes also exempt themselves from TERO coverage. It is important to note however, that any contract or sub-contract let by any of these entities is covered by TERO.

9. WILL TERO INTERRUPT MY DAILY BUSINESS OPERATIONS?

No. Since TERO is pro-active, the compliance plans are signed by TERO and the employer prior to the commencement of work prevents disputes. The Compliance Officers will monitor the TERO requirements by doing onsite compliance visits that would not be detrimental to business operations. TERO can sanction employers for violations which may shut down operations but only in severe disputes and in accordance with the applicable law.

10. DOESN'T TERO DO AWAY WITH THE COMPETITIVE BIDDING PROCESS AND FAIR COMPETITION?

No. It provides preference to certified and qualified Native American businesses on projects on or near the Tulalip Reservation. As with employment contracting preference is permissible or required under Federal, Tribal, State or other Local laws. Preference is not provided to the exclusion of other businesses. Price and quality are still primary considerations.

11. ARE EMPLOYERS PROTECTED AGAINST UNFAIR TERO VIOLATION CHARGES?

Yes. The first level of protection comes from the TERO Compliance Officer who handles the charge. These officers are trained to deal with facts and merits of the case before making determinations. Beyond the TERO Commission, grievant can seek relief in the Tribal and Federal Courts.

12. WHAT SANCTIONS DO EMPLOYERS FACE FOR VIOLATIONS OF TERO?

Violation of TERO requirements may result in severe sanctions. If the TERO office determines that employers willfully and intentionally breached TERO requirements. TERO may:

- A. Deny such party the right to commence business on the reservation;
- B. Impose a civil fine on such party ranging on most reservations anywhere from \$500.00 to \$5,000.00 per violation;
- C. Terminate or suspend party's operation and deny them the rights to conduct further business on the reservation; and or
- D. Order any party to dismiss any illegally hired Non-Natives, take action to ensure future compliance and to make back payment of any lost wages be paid to the TERO certified Native Americans.

13. CAN SANCTIONS IMPOSED BY THE TERO COMMISSION BE APPEALED?

Yes. Sanctions imposed by the TERO Commission can be appealed in tribal court. Appeals of tribal court decisions can be made to the federal court system.

It is important to note that only one appeal to a TERO commission and tribal court decision has ever been appealed to the federal court. The case ended at the Ninth

Circuit Court of Appeals and Appellate that upheld the TERO complaint and the Tribal Courts decisions.

14. ARE TERO FEES LEGAL?

Yes. Tribal authority to access a fee is equal to that of any government. Taxation, licenses and fees are a valuable source for financing Tribal governmental operations. Tribes therefore consider their social and economic needs and priorities and set the TERO requirements to suit them just as National, State, and other units of government do.

Many contractors without complaint pay taxes and comply with the governmental requirements of states, counties, etc., but openly oppose doing so with Tribes. This "cultural discrimination" is indicative of the lack of knowledge and acceptance of the sovereign authority of the Tribes. Employers can realize a substantial savings since Tribal taxes or fees pre-empt state or other local taxation on the reservation projects often to the benefit of the employer.

The Tulalip Tribes' TERO fee is 1.75% of total cost on any project over \$10,000.

TERO has the responsibility to ensure due process of the employer under the Tribal code and that only qualified and screened referrals are made to the employer.

15. HOW HAVE VARIOUS FEDERAL, STATE AND OTHER AGENCIES VIEWED TERO IN THEIR OPERATION?

When TERO first appeared in the late seventies there was opposition from some and difference from others. Over the past twenty years a great deal of progress has been made, some by direct legal action but most through pro-active, non-adversarial, synergistic effort. The results are Native American preference and TERO provisions, policies and procedures figure prominently in the following:

- A. The Civil Rights Handbook.
- B. The Job Training and Partnership Act.
- C. The Small Business Administration 8(a) Program.
- D. Public Law 93-638, The Indian Education Assistance and Self-Determination Act of 1974.
- E. HUD Regulations.
- F. BIA Acquisition Assistance Agreement 84-1.
- G. EEOC / TERO Contracts.
- H. OFCCP Indian Employment Initiative.
- I. FHWA ISTEA "Indians in Highway Construction Initiative".
- J. Indian Health Service Alaska Native Hiring Agreement.
- K. US DOL/BAT Notice 84-1.
- L. Indian Education Impact and Programs Under PL 81-815 (Construction) and PL 81-874 (OPS/Admin).

CONTRACTORS

The following outlines the TERO expectations and responsibilities placed on all contractors and subcontractors doing work on or near the Tulalip Reservation. This document should be read carefully, along with the TERO Code. If you have any questions or concerns contact a TERO Compliance Officer.

TERO ACKNOWLEDGMENT:

Requirement: The contractor / employer must comply with all rules and regulations as set forth in the TERO Code. This agreement will be affirmed in writing and will be signed and dated by the TERO Manager. Furthermore, if a project is expected to be of one month duration or more, the contractor must arrange a pre-construction meeting with the TERO Manager or TERO Compliance Officers prior to submitting a Compliance Plan to the TERO department.

TERO LIAISON:

Requirement: All contractors and employers must designate a responsible company official to coordinate all employment, training and contracting related activities with the TERO department to ensure that the company is in compliance with the TERO Code during all phases of the project.

NATIVE AMERICAN OWNED BUSINESS REGISTRY:

Requirement: The TERO Office maintains a certified Native American Owned Business Registry. All the businesses on the registry need to be given the opportunity to bid on any projects that they are qualified for. If they are within ten-percent (10%) of the lowest bid, you need to negotiate to see if they can reduce their price. But the fact remains that the bid will be awarded on: price, quality and capability unless other requirements are set forth in the bid documents.

TERO COMPLIANCE PLAN:

Requirement: All contractors, sub-contractors and or employers must have an approved written compliance agreement filed, negotiated and approved by the TERO Office prior to commencement of any construction activities on the Tulalip Reservation. There is a 1.75% TERO fee on any projects over \$10,000 to be paid in full or negotiated with the TERO Compliance Officers.

COMPLIANCE PLAN WORKFORCE/ KEY EMPLOYEE:

Requirement: Contractors and or Employers shall be required to hire and maintain as many TERO / Native American preference employees as apply for and are qualified for each craft or skill.

Exception: Prior to commencing work on the Tulalip Reservation the prospective employer, contractor and subcontractors shall identify key and permanent employees.

Key employee: One who is in a top supervisory position or performs a critical function such that an employer would risk likely financial damage or loss if that task were assigned to a person unknown to the employer. An employee who is hired on a project by project basis may be considered a key employee so long as they are in a top supervisory position or perform a critical function.

Permanent employee: One who is and had been on the employers' or contractors' annual pay roll for a period of one year continuously, working in a regular position for the employer, or is an owner of the firm. An employee who is hired on a project by project basis shall not be considered a permanent employee.

Non-preferred Permanent and Key Employee(s) shall not exceed 20% of the workforce. Permanent and Key employees are subject to TERO approval and TERO may require a position to be opened up to all preference workers.

TERO HIRING HALL & RECRUITMENT EFFORTS:

Requirement: Contractor or employer is required to contact the TERO Office for recruiting and placement services on all non-key positions. The TERO Office shall be given a minimum of seventy-two (72) hours to furnish a qualified referral. Furthermore contractors and employers are required to provide TERO with a written list of their projected workforce needs, job classifications, openings, hiring policies, rate of pay, experience / skill requirements, employment screening procedures and anticipated duration of employment.

NATIVE PREFERENCE:

Requirement: All contractors, businesses and employers operating within the boundaries of the Reservation, or on Tribal projects off the reservation shall give preference in hiring, promotion, training, layoffs, recall, and all other aspects of employment, unless other contractual agreements or federal requirements restrict the preference specified below. The order of preference shall be given to the following persons in the following enumerated order:

- 1) Enrolled Tulalip Tribal Members
- 2) Spouses, Parent of a tribal member child, biological child born to an enrolled Tulalip Tribal Member, current legal guardian of a Tribal Member dependent child (with a proper letter of temporary or permanent legal guardianship from a court), or a tribal member in a domestic partner relationship (with documentation).
- 3) Other Natives/Indians shall mean any member of a federally recognized Indian tribe, nation or band, including members of federally recognized Alaskan Native villages or communities.
- 4) Spouse of federally recognized Native American
- 5) Regular current employees of the all Tulalip Tribal entities
- 6) Other

Exception: Where prohibited by contractual agreements or federal requirements, the above order of preference set out in subsection 1.8, shall not apply. In such cases preference shall be given in accordance with the applicable contractual agreement, federal requirement, or Federal Law.

Requirement: If the TERO Office is unable to refer an adequate number of qualified, preferred employees for a Contractor, TERO will notify the Contractor who may fill the remaining positions with non-TERO workers. When this occurs, TERO work permits may be valid for one month from the date of issuance and may be renewed. Work permits are non-transferable.

Requirement: When work permits are issued, the contractor is still required to notify the TERO Office of all future job openings on the project so that qualified, preferred employees have an opportunity to be dispatched.

JOB QUALIFICATIONS, PERSONNEL REQUIREMENTS & RELIGIOUS ACCOMMODATIONS:

Requirement: An employer may not use any job qualification criteria or personnel requirements which serve as barriers to the employment of Natives which are not required by business necessity. The TERO department will review the job duties and may require the employer to eliminate the personnel requirements at issue. Employers shall also make reasonable accommodation to the religious beliefs and cultural traditions of Native workers.

TRAINING:

Requirement: Contractors and or Employers may be required to develop on the job training opportunities and or participate in Tribal or local training programs, including upgrading programs, and apprenticeship or other trainee programs relevant to the employer's needs.

LAY-OFFS:

Requirement: TERO preference employees shall not be laid off where non-TERO preference employees are still working. If the employer lays-off employees by crews, classifications or other categories, qualified TERO preference employees shall be transferred to crews or positions that will be retained. This section does not apply to key or permanent employees.

NOTE: The TERO Office is here to help in any way we can. Communication with the TERO Compliance Officers is very important in that it will help ensure the job to run smoothly.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK)

This Page Is Intentionally Left Blank

**THE TULALIP TRIBES
CONSTRUCTION CONTRACT**

**Contractor –
Project No. 2024-002**

This agreement entered into this ___ day of _____ 202___, between “Owner” the Tulalip Tribes 6406 Marine Drive., Tulalip, WA 98271 and _____, hereinafter referred to as “Contractor”.

**SECTION ONE
DESCRIPTION OF WORK**

This Contract consists of this written agreement and all appurtenant “Contract documents” described in Section Eight of this agreement. Contractor shall perform the following work in accordance with this Contract and Contract documents: All work necessary to build Marina Pump Station Replacement.

**SECTION TWO
CONTRACT PRICE**

The Tulalip Tribes agrees to pay Contractor for the work described a total Contract price not to exceed the amount of _____. Payment of this amount is subject to additions or deductions in accordance with provisions of this Contract and of any other documents to which this contract is subject. Contractor shall be entitled to request “Progress Payments” during the course of his/her work. Progress payments shall be made to the Contractor under terms and conditions described under Section Four of this Contract.

**SECTION THREE
SUBCONTRACTING REQUIREMENTS**

The Contractor will be required to self-perform no less than thirty percent (30%) of the project’s total contracted labor. In the subcontracting of the work, the Contractor will be responsible to provide the Owner a copy of all subcontract agreement templates in the performance of this contract.

**SECTION FOUR
PROGRESS PAYMENTS**

(A) The Owner shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the Contract, as approved by the Contracting Officer, Project Coordinator and Construction Manager. Payments shall be processed for each draw request within 30 days of final approval once all requested and required documents are received.

(B) The documents required to submit for payment will be a draw form, invoice, certified payroll, conditional waiver, release of claim and anything else deemed necessary by the Contracting Officer.

(C) Before the first progress payment is made under this Contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total Contract price showing the amount included therein for each principle category of the work, which shall substantiate the payment amount requested in order to provide a basis for determining progress payments. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deduction from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the Contract.

(D) The Contracting Officer must approve the draw request with the concurrence of the project coordinator before payment. *Along with each request for progress payments and the required invoice, the Contractor shall furnish the following certification, or payment shall not be made:* I hereby verify, to the best of my knowledge and belief, that:

(1) The amounts requested are only for performance in accordance with the specifications, terms and conditions of the Contract:

(2) Payments due to Sub-contractors and the Contractors material suppliers have been made from previous payments received under the Contract, and timely payments will be made from the proceeds of the payment covered by this certification in accordance with Subcontract agreements; and

(3) The request for progress payments does not include any amounts, which the Contractor intends to withhold or retain from a subcontractor or their supplier in accordance with the terms and conditions of the Subcontract.

NAME: _____

TITLE: _____

DATE: _____

(E) The Owner shall retain 5% of the amount of progress payments until completion and acceptance of all work under the Contract-

(F) The Contracting Officer may authorize material delivered on site and preparatory work taken into consideration when computing progress payments. Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract, before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation and the Contracting Officer may require to assure the protection of the Owners interest in such material. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the Owner.

(G) All Material and work covered by progress payments made shall at the time of payment become the sole property of Owner, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving any right of the Owner to require the fulfillment of all of the terms per the Contract, in the event the work of the Contractor has been damaged by other Contractors or persons other than employees of the Owner in the course of their employment. The Contractors shall restore such damaged work without cost to the Owner and seek redress for its damage only from those who directly caused it.

SECTION FIVE FINAL PAYMENT

(A) The Owner shall make the final payment due to the Contractor under this Contract within thirty (30) days after:

(1) Completion and final acceptance of all work; and

(2) Presentation of release of all claims against the Owner arising by virtue of this Contract, other than claims, in stated amounts, that the Contractor has specially made an exception from the operation of the release. Each such exception shall embrace no more than one claim; the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the subcontractors claim to amount payable under this Contract has been assigned.

(3) One set of electronic As-built drawings on a USB Flash drive are submitted to the Contracting Officer, as described in section 22 of this Contract.

(B) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or their evidence of payment from all others performing work and/or supplying material to Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claim costs.

(C) Failure of Contractor to comply with any special guarantees required by the contract documents shall result in the withholding of final payment. Contractor, by accepting final payment, waives all claims except those, which he has previously made in writing, and which remain unsettled at the time of acceptance.

SECTION SIX STARTING AND COMPLETION DATES

Work shall commence on the date of this agreement unless a different date is made for the date to be fixed in a notice to proceed issued by the Tulalip Tribes and be physically completed in 60 working days. All construction must be completed in accordance with the approved Construction Schedule. Failure to complete shall result in imposition of liquidated damages as provided in Section Seven.

SECTION SEVEN LIQUIDATED DAMAGES

Upon failure by the Contractor to submit an acceptable Construction Schedule within the time required by Section 18, or achieve substantial completion of each phase of construction in accordance with the Construction Schedule, the Contractor shall pay to the Owner, as liquidated damages and not as a penalty, the sum of *one thousand five hundred and no dollars* (\$1,500.00) per day of delay or until such time as Substantial Completion of the Work as required by the 60 working day Construction Schedule is achieved. The Contractor and Owner agree that the liquidated damages amount is a reasonable forecast of just compensation for the harm caused the Owner by the Contractor's breach for failure to meet construction schedule timelines.

SECTION EIGHT CONTRACT DOCUMENTS

The Contract documents on which the agreement between Owner and Contractor are based in accordance with which the work is to be done are as follows:

- a. This Instrument
- b. Notice to Bidders attached as EXHIBIT A
- c. Contract Documents - Project Plans and Specifications (Scope of Work) attached as EXHIBIT B
- d. Contractor's Submitted Bid Documents

These Contract documents together form the Contract for the work herein described. The parties intend that the documents include provisions for all labor, equipment, tools, materials and other items necessary for the execution and completion of the work and all terms and conditions of payment. The documents also include all work and procedures not expressly indicated therein which are necessary for the proper execution of the project.

SECTION NINE AUTHORITY OF OWNER CONTRACTING COORDINATOR/OFFICER

Mike Leslie is hereby designated Contracting Officer for purposes of this agreement. The duties and authority of the Contracting Officer shall be as follows:

- (A) General Administration of Contract. The primary function of the Owner's Contracting Officer is to provide general administration of the contract as representative during the entire period of construction.
- (B) Inspection, Opinions and Progress Reports. The Owner's Contracting Officer shall keep familiar with the progress and quality of the work being performed by Contractors and their subcontractors. The Contracting Officer will make general determinations as to whether the work is proceeding in accordance with the Contract. Neither Owner nor the Contracting Officer will be responsible for the means of construction or for Contractor failure to perform the work properly and in accordance with The Contract document.

- (C) Access to worksite for inspections. The Contracting Officer shall have free access to the work at all times during the Contract period provided that person first signs-in at the Contractor's Field Office and adheres to all safety practices and policies of the Contractor while on the jobsite. However, the Contracting Officer is not required to make exhaustive or continuous on-site inspections to perform the duty of checking and reporting on work progress.
- (D) Interpretation of Contract documents. The Contracting Officer will be the interpreter of the Contract documents requirements and will make decisions on claims and disputes between the Contractor and the Owner.
- (E) Rejection and stoppage of work. The Contracting Officer shall have authority to reject work, which in the officer's opinion does not conform to the Contract documents and, in this connection, to stop the work or a portion thereof when necessary to insure Contractor's performance is in accordance with the terms of this agreement.
- (F) Progress payment certification. The Contracting Officer will determine the amount owing to the Contractor as the work progresses, based on Contractor's application for payment as per Section Four and upon the Contracting Officer's inspections and observation, and will issue certificates for progress payments and final payment in accordance with the terms of the Contract.

SECTION TEN RESPONSIBILITY OF CONTRACTOR

Contractor's duties and rights in connection with the project herein are as follows:

- (A) Responsibility for and supervision of construction. Contractor represents that he has inspected and is familiar with the work site and the local conditions under which the work is to be performed. Contractor shall be solely responsible for all construction under this Contract, including the techniques, sequences, procedures, and means for coordination of all Work. Contractor shall properly supervise and direct the work of the employees and subcontractors, and shall give all attention necessary for such proper direction
- (B) Contractor's Representative. Contractor's representative for this contract will be _____. Contractor's representative shall be the point of contact regarding contract compliance issues and shall have the authority to obligate the company in resolving contract compliance and performance issues. Contractor's Representative, or designated Contractor construction superintendent, must be on-site at all times while any work under this Contract is being performed, unless Contractor's representative or construction superintendent receives prior authorization from the Owner to be offsite.
- (C) Discipline and employment. Contractor shall maintain at all times strict discipline among his/hers workers and agrees not to employ for work on the project any persons unfit or without sufficient skill to perform the job for which he was employed.
- (D) Furnishing of labor, materials, etc. Contractor shall provide and pay for all labor, and or materials and equipment, including but not limited to tools, construction equipment, machinery, utilities including water, transportation, and all other facilities and services necessary for the proper completion of the work on the project in accordance with the Contract documents.
- (E) Manufacturer's instructions. Contractor shall comply with manufacture's installation instructions and recommendations to the extent that those instruction and recommendations are more explicit or stringent than requirements contained within Contract documents.
- (F) Payment of taxes, procurement of license and permits. Contractor shall pay any taxes required by law in connection with work on the project and shall secure all licenses and permits necessary for proper completion of the work, paying the fees therefore. The Tulalip Tribes of Washington is a federally recognized Indian Tribal Government with a constitution and bylaws approved by the United States Secretary of the Interior. See: 65 Federal Register 13298, 13301 (March 13, 2000). As a recognized tribal government, the Tulalip Tribes of Washington and all of its governmental agencies, is a tax exempt entity. See: 26 USC §7871, and Washington Administrative Code Excise Tax Rule 192 (WAC 458-20-192). All or portions of this project are Tax Exempt from all Sales and/or Use Taxes for all materials and supplies incorporated in construction of the work that become a permanent part of the Project. Upon request a Tax Exemption form may be obtained from the Tulalip

Tribes. WAC 458-20-192(5)(a)(ii) states that retail sales tax is not imposed if the retailer service (e.g. construction services) is performed for the member or tribe in Indian country.

(G) Compliance with laws and regulations. Contractor shall comply with all applicable laws and ordinances, and rules, regulations, or orders of all tribal and or public authorities relating to the performance of the work herein. If any of the Contract documents are at variance there with, he shall notify the Contracting Officer promptly on discovery of such variance.

(H) Responsibility for negligence of employees and subcontractors. Contractor assumes full responsibility for acts, negligence, or omission of his/her employees and all other persons doing work under a subcontract with him/her.

(I) Warranty of fitness of equipment and materials. Contractor represents and warrants to the Owner that all equipment and materials used in the work and made a part of any structure thereon, or placed permanently in connection therewith, will be new unless otherwise specified in the Contract documents, of good quality, free of defects, and in conformity with the Contract documents. It is understood between the parties that all the equipment and materials that are not so in conformity are defective.

(J) Cleaning and protection. Contractor shall during handling and installation, clean and protect construction in progress and adjoining materials in place. Contractor shall apply protective covering where required ensuring protection from damage or deterioration.

(K) Furnishing of design and engineering plans as identified in the Contract Documents. Contractor shall furnish the Contracting Officer, upon request, all design and engineering plans for consideration and approval as to conformance with the specifications of the Contract documents.

(L) Clean up. Contractor agrees to keep the work premises and adjoining way free of waste materials and rubbish caused by his/her work or that of his subcontractors, and further shall remove all such waste materials and rubbish on termination of the project, together with all his/her tools, equipment and machinery.

(M) Indemnity and hold harmless agreement. Contractor shall indemnify, defend and hold harmless the Tulalip Tribes its elected and appointed officials, officers, employees, agents and representatives from all claims, losses, suits, actions, legal or administrative proceedings, costs, attorney's fees (including attorney's fees in establishing indemnification of whatsoever nature), litigation costs, expenses, damages, penalties, fines judgment, or decrees by reason of any death, injury or disability to or any person or party, including employees, and/or damage to any property or business, including loss of use, caused in whole or part by any negligent act, error or omission of the Contractor, Contractors employees, agents or subcontractors arising out of or suffered, directly or indirectly, by reason of or in connection with the performance of this Contract.

The Contractors obligation shall include, but not be limited to, investigation, adjusting, and defending all claims alleging loss from any action, error or omission or breach of any common law, statutory or other delegated duty by the Contractor, Contractors, employees, agents or subcontractors. The Contractors obligations to indemnify, defend and hold harmless shall apply even if the injuries, death or damages, directly or indirectly, result from, arise out of relate to, one or more concurrent negligent acts or omissions of the Tulalip Tribes or its elected and appointed officials, officers, employees, agents, representatives, of the Tulalip Tribes, its agents and its employees acting within the scope of their employment.

If the claim, suit, or action for injuries, death or damages as provided for in the preceding paragraphs of this agreement is caused by or results from the concurrent negligence of (a) the Tulalip Tribes, its elected and appointed officials, officers, employees, agents and representatives and (b) the Contractor, Contractors employees, agents or subcontractors, the indemnity provision provided for in the preceding paragraph of these specifications shall not apply to damages caused by the Tribes' negligence.

It is specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under the State Industrial Insurance Law, Title 51 RCW, solely for the purpose of this indemnification. The contractor expressly agrees that he has provided for this waiver of immunity in the bid price for the Contract. In addition to any remedy authorized by law, the Owner may retain so much of the money due the Contractor's as deemed necessary by the Contracting Officer to assure indemnification until disposition has been made of any suits or claims. Contractor agrees to pay all royalties and license fees necessary for the work and to defend all actions and settle all claims for infringement of copyright or patent rights, and to save Owner harmless therefrom.

(N) Contractor's liability insurance. The Contractor shall purchase and maintain such liability and other insurance as will protect the Tulalip Tribes and the Contractor from claims or losses which may arise out of or result from the Contractor's performance or obligations under the Contract Documents, whether due to action or inaction by the Contractor or any person for whom the Contractor is responsible.

(O) Prior to commencing work, the contractor shall procure and have in effect Commercial General Liability insurance policy and Business Automobile Liability insurance policy to provide insurance coverage and limits as indicated below. Automobile liability insurance coverage shall include owned, non-owned and hired automobiles. An Umbrella or Excess Liability policy may be used to reach such limits.

Policy Limits – Commercial General Liability

\$2,000,000	General Aggregate
\$2,000,000	Products/Completed Operations Aggregate
\$1,000,000	Occurrence Limit
\$1,000,000	Personal and Advertising Injury Limit
\$ 100,000	Fire Legal Liability Limit
\$ 2,500.00	Medical Payments
\$1,000,000	Employer's Liability
\$10,000,000	Umbrella Liability

Policy Limits – Business Automobile Liability

\$1,000,000	Combined Single Limit
-------------	-----------------------

There shall be no subsidence coverage exclusions or other coverage limitations without specific disclosure and approval of the Tulalip Tribes.

(P) Contractor's Workers Compensation.

1.1 All employees of Contractor and subcontractor are to be insured, including qualified self-insured plans, under Washington State Industrial Insurance as well as in compliance with any Federal workers compensation regulations including USL&H and Jones Act Coverage as applicable. Employees not subject the State Act are to be insured under Employer's Contingent Liability (Stop Gap) \$1,000,000 on accident and aggregate.

1.2 Such evidence of insurance shall be in the form of an Insurance Certificate issued by the State of Washington Department of Labor and Industries or an insurer satisfactory to the Tulalip Tribes and shall provide for not less than 30 days prior written notice to the Tulalip Tribes of cancellation or reduction in coverage.

(Q) Builder's Risk.

The Tulalip Tribes shall provide and maintain, during the progress of the Work and until the execution of the certificate of Contract Completion, a Builder's Risk Insurance policy to cover all on-site Work in the course of construction including false work, temporary buildings and structures and materials used in the construction process. The amount of coverage is based upon the total completed value of the project (including the value of permanent fixtures and decorations.) Such insurance shall be on a special cause of loss form and may include such other coverage extension, as the Tulalip Tribes deem appropriate. Unless otherwise provided for through agreement, the Contractor experiencing any loss claimed under the Builder's Risk policy shall be responsible for up to \$10,000 of that loss. Contractor may provide its own builder's risk or installation insurance coverage for amounts up to the \$10,000 deductible. Contractor is responsible for insuring their property in transit, in temporary storage away from the site as well as their own tools, equipment and any employee tools.

1.1 Incidents related to pollution and contamination are specifically excluded from the Builders Risk Insurance policy.

- 1.2 To be eligible to make a claim under the Tulalip Tribes' Builders Risk Insurance policy, Contractor shall be responsible to secure all materials and or equipment stored on the project site in a secured fenced area.

(R) Insurance Policy Requirements.

Each policy of insurance required to be purchased and maintained by the Contractor shall name the Tulalip Tribes and its members as primary and non-contributory additional insured's using the ISO general liability form CG 2010 11/85 edition or equivalent to include products and completed operations for all Contractors and Subcontractors work. Each policy and respective Certificate of Insurance shall expressly provide a provision wherein no less than 30 days or (10 days in the event of cancellation for non-payment) prior written notice shall be given to the Tulalip Tribes in the event of cancellation, non-renewal, expiration or material alteration of the coverage contained in such policy or evidenced by such Certificate of Insurance.

1.1 At least five (5) days prior to commencement of the Work or any portion thereof, and prior to the performance of any services hereunder, Contractor shall, for the purposes of protecting Owner against any claims, damages or expenses as a consequence of any acts and omissions on the part of Contractor and any of its Subcontractors of any tier in performing the Work, procure or cause or cause to be procured the required insurance coverage with insurance carriers (with and A.M. Best rating of A-VII or better) in form acceptable to Owner and shall maintain all such coverage in full force and effect through the terms of this Agreement.

1.2 The Contractor, if requested, shall furnish the Tulalip Tribes a certified copy of any insurance policy or additional insured endorsement required to be purchased or maintained by the Contract Documents. In no event shall any failure to demand a certified copy of any required insurance or insured endorsement be construed as a waiver of the obligation of the Contractor to obtain insurance required to be purchased or maintained by the Contract Documents.

1.3 The Contractor shall maintain all insurance in the required amounts, without interruption, from the date of the execution of the Contract until three (3) years after the date of approval of the certificates of Contract Completion by the Tulalip Tribes. Failure to maintain the required insurance during the time specified shall be cause for termination of the Contract.

1.4 Insurance policies required to be purchased and maintained by the Contractor may include a reasonable loss deductible, which shall be the responsibility of the Contractor to pay in the event of loss.

1.5 The prompt repair or reconstruction of the Work as a result of an insured loss or damage shall be the Contractor's responsibility and shall be accomplished at no additional cost to the Tulalip Tribes.

(S) Waivers of Subrogation. The Tulalip Tribes and the Contractor waive all rights against each other for damages caused by fire or other perils to the extent of actual recovery of any insurance proceeds under any property insurance obtained pursuant to this Article or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Tulalip Tribes as fiduciary.

(T) Other Provisions.

1.1 Neither the Tulalip Tribes nor Contractor shall be liable to the other party or to any insurance company (by way of subrogation or otherwise) insuring the other party for any loss or damage to any building, structure or tangible personal property of the other occurring in or about the Work, if such loss or damage is covered by insurance benefiting the party suffering such loss or damage or was required to be covered by insurance under terms of the Agreement. Each party shall cause each insurance policy obtained by it to contain the waiver of subrogation clause.

1.2 Contractor shall indemnify, defend and hold the Tulalip Tribes harmless from all losses, damages, liabilities, fines penalties, cost (including clean-up cost) and expenses (including attorney's fees) arising from hazardous, toxic or harmful wastes, materials or substances, as defined by applicable law, deposited on or about the Project site by Contractor, Subcontractors, suppliers or materialmen or its or their agents or employees. Should any material that exhibits hazardous or toxic characteristics as defined in applicable law be brought onto the Project site by Contractor, Subcontractors, suppliers or materialmen or its or their agents or employees, that material will be handled, stored, transported and disposed of by Contractor in accordance with respective regulations and the best available technology. Should any such material be found on the Project site that was not brought onto the Project site by Contractor, Subcontractor, suppliers or materialmen or its or their

agents or employees, Contractor shall immediately notify the Tulalip Tribes through the Contracting Officer. Contractor is not responsible for losses, damages, liabilities, fines, penalties, costs including cleanup and expenses arising from hazardous, toxic or harmful wastes, materials or substances existing at the site prior to Contractor mobilization.

1.3 In the event Contractor fails to maintain any and all insurance required by this Contract during the entire life of this Contract, the Tulalip Tribes may at its option, and without waiver of other available remedies, purchase such insurance in the name of Contractor and deduct the cost of same from payments due Contractor

(U) Inspection and Testing Laboratory Services.

1. Owner will appoint, employ, and pay for services of an independent firm to perform inspection and testing as identified in the Contract documents.
2. Site visits and retesting that is required because of the scheduling problems caused by the Contractor and/or non-conformance to specified requirements shall be performed by the same independent firm. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Price.

(V) Drug free Workplace. Contractor will be responsible to pre-screen & enforce a drug free workplace program to their employees and any subcontractors that they employ or subcontract within the performance of this contract to insure that they are drug free during the execution of this contract. Contractor agree that they and their subcontractors will maintain a drug free workplace and will be responsible for conducting pre-screen drug testing on their employees who will be working at the jobsite per the Contractor's company policies.

Contractor acknowledges and agrees to advise its employees, agents, and subcontractors that it is the policy of the Tribe (1) to prohibit the use, possession, sale, and distribution of alcohol, illegal drugs, or other controlled substances on its premises; and (2) to prohibit the presence on Tribe's property of employees of a contractor, subcontractor, or agent who has such substances in his/her body for nonmedical reasons. Entry onto Tribe's property constitutes consent to an inspection of the employees of the Contractor, subcontractor, or agent, including vehicles and personal effects when entering, while on, or upon leaving Tribe's jobsite property. Any Contractor employee, subcontractor, or agent who is found in violation of this policy will be removed and barred from Tribe's jobsite property.

Contractor further agrees that when one of its employees, agents, or an employee of a subcontractor, while on Tribe's jobsite property, has a documented performance deviation, abnormal incident, or unusual behavior which is suspected to be the result of drug or alcohol abuse, this employee will be asked to leave the premises upon the arrival of his immediate supervisor who will accompany the employee from Tribe's jobsite property. An employee or agent of Contractor or subcontractor suspected to be under the influence of alcohol or drugs will not be readmitted to Tribe's jobsite until a negative urinalysis for drug screen for that employee is certified by an approved laboratory, at Contractor's expense, and transmitted to Tribes' designated representative.

Contractor employees, subcontractors, and agents who test positive for alcohol or other drugs in a test administered by a qualified laboratory suitable to Tribe, on samples taken after leaving Tribe's jobsite, will not be permitted reentry to Tribe's jobsite property, unless, at Tribes discretion it allows employee to re-enter jobsite after receiving notice of compliance with a treatment plan and release by a health care provider that employee is fit to work.

All of Contractor's employees, agents, and subcontractors presently working on Tribes' property are to be immediately notified of this policy. Any agents or subcontractors under contract to Contractor must also be notified of Tribe's policy. Contractor agrees that disciplinary actions or other employment decisions affecting Contractor's employees, subcontractor, agents, and applicants that arise in any way out of matters related to this Section are the sole responsibility of Contractor. The Tribe agrees to maintain the confidentiality of test results and to use test results solely in connection with its decisions as to whether to permit a contractor employee, subcontractor, or agent to enter or remain on the Tribe's jobsite property. Contractor agrees to maintain the confidentiality of any information gained or exchanged from or during the implementation of this policy.

The unit or structure that the Contractor was constructing or rehabilitating will also be tested for the presence of drugs that pose a health hazard and if found to test positive for drugs, the Contractor will be financially responsible to fully decontaminate the structure or unit before acceptance of the work or any further payment are made under the Contract.

- (W) Archaeological and Historical Objects. Archaeological or historical objects, which may be encountered by the Contractor, shall be protected and not further disturbed. The Contractor shall immediately notify the Contracting Officer of any such finds. The Contracting Officer will contact the Tribal Natural Resource and Cultural Department who will determine the nature of the object(s) to be surveyed. The Tribal Representative may require the Contractor to stop work in the vicinity of the discovery until the survey is accomplished, and further instructions are provided. The Contractor will be entitled to additional days of performance related to stop work notices issued by the Contracting Officer of Tribe.
- (X) Excess Material. All excess material left on site shall become the property of the Owner after seven (7) calendar days.
- (Y) Performance and Payment Bond. Contractor **is required** to provide to the Owner a 100% percent Performance and Payment Bond issued by a company located in the United States (no later than ten (10) days after the contract has been awarded) issued by an approved surety duly licensed and authorized to transact business in the State using Performance Bond and Payment Bond published by The American Institute of Architects (AIA) Form A312. Liability under each bond shall be 100% percent of the applicable contract sum, for the base bid and alternates. Performance Bond shall cover the correction of work as required during the warranty period of one (1) year. The Contractor shall provide additional bonds or riders when subsequent project changes increase the Contract Sum by 15% or more. This bond will include a warranty guarantee of 5% of the contract price to cover any work defects found in the original construction, during the warranty period.

SECTION ELEVEN EXAMINATION AND AUDIT

- (A) Examination. The Tulalip Tribes shall have the right to examine all books, records, documents and other data of the Contractor and of the Contractor's Subcontractors and Material Suppliers related to the bidding, pricing or performance of the Work, including without limitation, related to any Proposals and request for equitable adjustment of the Contract.
- (B) Inspection. The right of inspection, audit and reproduction shall extend to all documents necessary to permit intelligent evaluation of the cost of pricing data submitted along with the computations and projections used therein.
- (C) Availability. The above referenced materials shall be made available at the office of the Contractor, Subcontractor or Material Supplier, as applicable, at all reasonable times for inspection, audit and reproduction until the expiration of seven (7) years after the date of acceptance of the Project by the Tulalip Tribes of Washington.
- (D) Confidentiality. To the extent that the Contractor, Subcontractor or Material Supplier, as applicable, informs the Tulalip Tribes of Washington in writing that any documents copied by the Tulalip Tribes of Washington are trade secrets, the Tulalip Tribes shall treat such documents as trade secrets of the Contractor, Subcontractor or Materials Supplier, as applicable. In the event any dispute arises with any other person about whether such other persons should be given access to the documents, the Contractor, Subcontractor or Material Supplier, as applicable, agrees to indemnify the Tulalip Tribes of Washington against all costs, expenses, and damages, including without limitation attorney fees, incurred by reason of that dispute.

SECTION TWELVE TIME OF ESSENCE – EXTENTION OF TIME

All times stated herein or in the Contract documents are of the essence hereof. Contract times may be extended by a contract modification from the Contracting Officer for such reasonable times as the Contracting Officer may determine when in his/her opinion the Contractor is delayed in work progress by changes ordered, labor disputes, fire, prolonged transportation delays, injuries, or other caused beyond the Contractor's control or which justify delay.

SECTION THIRTEEN CORRECTING WORK

When it appears to the Owner or Contractor during the course of construction that any work does not conform to the provision of the contract documents, he shall make necessary corrections so that such work will so conform, and in addition will correct any defects caused by him or by his/her subcontractor, appearing within one year from the date of issuance of a certificate of substantial completion by the Architect and Contracting Officer, or within such longer period as may be prescribed by law or as may be provided for by applicable special guarantees in the Contract documents.

SECTION FOURTEEN WORK MODIFICATIONS

Owner reserves the right to order work modifications in the nature of additions or deletions, without invalidating the Contract, and agrees to make corresponding adjustments in the Contract price and time for completion. Any such modifications will be authorized by a written **Field Directive** or **Contract Modification** signed by the Contracting Officer. The work shall be modified, and the contract price and completion time shall be modified only as set out in the written Field Directive / Contract Modification. Any adjustment in the Contract price resulting in a credit or a charge to Owner shall be determined by the mutual written agreement of the parties to this Contract.

SECTION FIFTEEN TERMINATION

This Contract may be terminated as follows:

(A) Termination by Owner. Owner may on seven (7) days' written notice to the Contractor terminate this Contract before the completion date hereof, and without prejudice to any other remedy Owner may have, when the Contractor defaults in performance of any provision herein, or fails to carry out the construction in accordance with the provision of the Contract documents. On such termination, Owner may take possession of the work site and all materials, equipment, tools, and machinery thereon it has paid or will pay for, and finish the work in whatever way Owner deems expedient. If the unpaid balance on the Contract price at the time of such termination exceeds the expenses of finishing the work, Owner will pay such excess to the Contractor. If the expense of finishing the work exceeds the unpaid balance at the time of termination, the Contractor agrees to pay the difference to Owner. On such default by the Contractor, Owner may elect not to terminate the Contract and in such event Owner may make good the deficiency of which the default consists and deduct the costs from the progress payments then or to become due to the Contractor.

(B) Owner's Termination for Convenience. The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the Owner. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective. If the performance of the work is terminated, either in whole or in part, the Owner shall pay the Contractor for reasonable and proper cost resulting from such termination upon the receipt by the Owner of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the Owner to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and the protecting the work already performed until the Owner or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of administrative services reasonably necessary to prepare and present the termination claim to the Owner; (5) and amount constituting reasonable profit on the value of the work performed by the Contractor.

(C) Records. If the Contract has been terminated, in whole or in part, the records relating to the Work terminated shall be made available to the Tulalip Tribes for a period of seven (7) years from the date of any applicable final settlement. Records which relate to any dispute, litigation, or claim arising out of the performance of the Work shall be made available until such dispute, litigation or claim have been finally decided or settled. The Contracting Officer will act on the Contractor's claim. Any disputes with regard to this clause are expressly made subject to the provisions of the **Disputes** clause of this contract.

SECTION SIXTEEN ARCHITECT/ENGINEERS DUTIES, RESPONSIBILITIES, AND AUTHORITY

(A) Any Architect/Engineer engaged by the Owner for this contract and any successor shall be designated in writing by the Contracting Officer.

(B) Any Architects/Engineer shall serve as the technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. Such Architect/Engineer may provide direction with approval of the construction manager on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the contract; (2) constitutes a change as defined in the work change clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction progress schedule; or (5) changes any of the other express terms or conditions of the contract.

(C) The duties and responsibilities of any Architect/Engineer engaged by the Owner for this contract may include the following: (1) Make periodic visits to the work site and on the basis of such on-site inspections, issues written reports to the Contracting Officer which shall include all observed deficiencies. Such Architect/Engineer shall file a copy of the report with the Contractor's designated representative at the site; (2) Making modifications in the drawings and technical specifications and assisting the Contracting Officer; (3) reviewing and making recommendation with respect to (i) the drawings; (ii) the Contractors shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor , and, (iv) the Contractors price breakdown; (4) Assisting in inspections, signing Certificates of completion, and making recommendations with respect to acceptance of work completed under the contract; and, (5) such other duties and responsibility as are designated in writing by the Contracting Officer.

SECTION SEVENTEEN SUBCONTRACTORS OTHER CONTRACTS

(A) OTHER CONTRACTORS: The Owner may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other Contractors and with Owner's employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any directions that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other Contractor or by Owners' employees.

(B) SUBCONTRACTS DEFINITIONS

1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

(C) AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

1.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Contracting Officer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Contracting Officer will promptly reply to the Contractor in writing stating whether or not the Owner, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner to reply within five (5) working days shall constitute notice of no reasonable objection.

1.2 The Contractor shall not contract with a proposed person or entity to whom the Contracting Officer has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

1.3 If the Contracting Officer has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Contracting Officer has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

1.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Contracting Officer makes reasonable objection to such substitute.

(D) SUBCONTRACTUAL RELATIONS

1.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

(E) CONTINGENT ASSIGNMENT OF SUBCONTRACTORS

1.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

1. Assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 15 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and
2. Assignment is subject to the prior rights of the Contractor and surety, if any, obligated under bond relating to the Contract.

1.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

**SECTION EIGHTEEN
CONSTRUCTION SCHEDULE**

(A) The Contractor shall prepare and submit to the Contracting Officer for approval a practicable written schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the salient features of work (including acquiring a TERO compliant labor force, materials and equipment) and the final completion date. Contractor shall commence work within ten (10) days of receipt of a Notice to Proceed issued by the Contracting Officer. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may impose Liquidated Damages under Section Seven or invoke other remedies under the contract until the Contractor submits the required schedule.

(B) After receipt of the Construction Schedule, the Owner may make adjustments as needed, upon mutual agreement with the Contractor, and shall issue a final approved Construction Schedule. The Contractor shall be bound by the mutually approved Construction Schedule and shall be subject to Section Seven liquidated damages and other remedies for failure to complete the project by the required date or otherwise perform the work in accordance with the Construction Schedule. The approved Construction Schedule shall be incorporated and made a part of this Contract.

(C) If the Contracting Officer determines that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress without additional cost to the Owner.

(D) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Termination clause of this contract.

SECTION NINETEEN

SITE INVESTIGATIONS AND CONDITIONS AFFECTING THE WORK

- (A) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric, power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for performing the work without additional expense to the Owner.
- (B) The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Owner. Nor does the Owner assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this Contract, unless that understanding or representation is expressly stated in this Contract.

SECTION TWENTY

DIFFERING SITE CONDITIONS

- (A) The Contractor shall within ten (10) days, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.
- (B) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as result of the conditions, the Contractor shall file a claim in writing to the Owner within ten (10) days after receipt of such instructions and, in any event, before proceeding with the work unless otherwise authorized in writing by the Contracting Officer. An equitable adjustment in the contract price, the delivery schedule, shall be made under this clause and the contract modified in writing accordingly.
- (C) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above giving written notice may be extended by the Contracting Officer.
- (D) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

SECTION TWENTY-ONE

SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION

- (A) The Contractor shall keep on the work site a copy of the drawings and specifications, addenda and modification orders and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications or in case of discrepancy in the figures in the drawings, or in the specifications, the Contractor shall promptly submit the matter in writing to the Contracting Officer for resolution. The Contracting Officer shall promptly make a determination in writing. Any work completed or action undertaken by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary.

(B) “Shop drawings” means drawings, submitted to the Contracting Officer by the Contractor, or any lower tier Contractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work as required by the Contract. The Owner may duplicate, use or disclose in any manner and for any purpose shop drawings delivered under this Contract unless the Contractor identifies the shop drawing as proprietary upon which the Contracting Officer will not share or disseminate without Contractor approval.

(C) If this Contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other Contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor’s approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the Owner’s reasons therefore. Any work done before such approval shall be at the Contractor’s risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (D) below.

(D) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Contracting Officer, upon consultation with any Architect engaged by the Owner for this contract, approves any such variation, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(E) It shall be the responsibility of the Contractor to make timely requests of the Owner for such large scale and full size drawings, color schemes, and other additional information, not already in the possession of the Contractor, which shall be required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

(F) The Contractor shall submit to the Contracting Officer for approval all shop drawings as called for under the various headings of the specifications. One set consisting of (1 electronic flash drive) of all shop drawings, will be retained by the Owner and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this Contract, shall furnish a complete set of all shop drawings as finally approved. The drawings shall show all changes and revisions made up to the time the work is completed and accepted.

(G) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by lower tier contractors are submitted to the Contracting Officer.

(H) The Contractor shall promptly give written notice to the Contracting Officer of any errors or omissions in the design of the work.

SECTION TWENTY-TWO AS – BUILT DRAWINGS

(A) “As-built drawings,” as used in this clause, means drawings submitted by the Contractor or lower tier Contractor at any tier to show the construction of a particular structure of work as actually completed under the Contract. “As-built drawings” shall be synonymous with “Record drawings.”

(B) As required by the Contracting Officer, the Contractor shall provide to the Owner within ten (10) working days of acceptance of the work accurate information to be used in the preparation of permanent set of as-built drawings. The Contractor shall record on one set of contract drawings all changes from the installations originally indicated. This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by lower tier contractors are the responsibility of the Contractor.

**SECTION TWENTY-THREE
PUNCH LIST & INSPECTION**

- (A) Contractors Punch List. When the work, or designated portion thereof, is near completion, the Contractor shall prepare a list of all deficient items remaining of the work or the designated portion thereof (the "Contractor's Punch List")
- a. The Contractor shall proceed to correct all items listed on the Contractor's Punch List and verify that the deficient items have been corrected by signing said Punch List.
 - b. The Contractor shall submit the signed Contractor's Punch List to the Contracting Officer.
- (B) Architect/Engineer's Punch List. Within (7) days of receipt of the request for Final Inspection the Contracting Officer shall work with the Project Coordinator, Construction Manager and Architect/Engineer to notify the Contractor acceptance or rejection of the request for Final Inspection, stating reasons for any rejections
- a. Upon acceptance of the Contractor's request, the Architect/Engineer, Contracting Officer, Project Coordinator, and Construction Manager shall conduct the Final Inspection to determine whether the work, or designated portion thereof, is in conformity with the Contract Documents. The Contracting
 - b. Officer shall notify the Contractor, the Architect/Engineer, Project Coordinator and the Construction Manager of the scheduled time of the Final Inspection.
 - c. Within three (3) days of the Final Inspection, the Contracting Officer shall notify the Contractor of any items remaining in a deficient or unacceptable condition. The list if such items shall be known as the Architect/Engineer's Punch List.
- (C) Correction of Punch List Items. Within 30 days of written notice the Contractor shall complete and correct all items remaining on the Contracting Officer's Punch List.
- a. If the Work on the Punch List cannot be completed within 30 days of receipt of the written notice, the Contractor shall justify, to the Contracting Officer the reasons the items cannot be so completed, and the Contractor shall propose to the Contracting Officer a time when such items will be completed.
 - b. Failure of the Architect/Engineer or Project Coordinator and Construction Manager to include any items in the Architect/Engineer's Punch List shall not alter the responsibility of the Contractor to complete all the work in accordance with the Contract Documents.
 - c. If multiple inspections of items on the Architect/Engineer's Punch List are required due to the Contractor's failure to properly and timely complete them, the Contractor shall be responsible for any additional costs incurred by other Contractors and Tulalip Tribes of Washington resulting from any attendant delay.
- (D) Deferred Items. With the approval of the Contracting Officer, when Final Inspection, items of work cannot be completed because of seasonal condition, such as bituminous paving or landscaping, or if the Contracting Officer agrees that a particular item not be completed until a subsequent date, the Tulalip Tribes of Washington may release payment to the Contractor less the cost of completing the remaining work as determined in the sole discretion of the Tulalip Tribes of Washington.
- (E) Guarantee Period of Inspection. The Contractor will attend a walk-through of the Project scheduled by the Contracting Officer to occur one month prior to the expiration of the one (1) year warranty period provided by the Contractor. The walk-through will be attended by the Contracting Officer.
- a. The Construction Manager, with the assistance of the Architect/Engineer, shall notify the Tulalip Tribes of Washington of any defects in workmanship, materials and equipment

**SECTION TWENTY-FOUR
HEALTH, SAFETY, AND ACCIDENT PREVENTION**

(A) In performing this Contract, the Contractor shall be responsible for: (1) Ensuring that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to the health and/or safety of such laborer or mechanic as determined under construction safety and health standards promulgated by any tribal entity or agency having jurisdiction over such matters or any other entity or agency having authority over such matters; (2) Protecting the lives, health, and safety of other persons; (3) Preventing damage to property, materials, supplies, and equipment; and (4) Avoiding work interruptions.

(B) For these purpose, the Contractor shall: (1) Comply with such regulations and standards as may be issued by any tribal entity or agency having jurisdiction over such matters and as issued by the Secretary of labor at 29 agency having jurisdiction over such matters and as issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions under applicable tribal law; and (2) include the terms of this clause in every subcontract so that such terms will be binding on each lower tier subcontractor.

(C) The Contractor shall maintain and accurate record of exposure data on all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment and shall report this data in the manner prescribed by applicable tribal law an in the manner prescribed by 29 CFR Part 1904.

(D) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop work order issued under these circumstances. Failure to receive notice from the Contracting Officer under this section shall not relieve Contractor of any of its responsibilities under this section.

(E) The Contractor shall be responsible for its lower tier subcontractor's compliance with the provisions of this clause. The Contractor shall take such action with respect to any lower tier subcontractor as the Owner, or the Tribal entity or agency have jurisdiction over such matters or any other entity or agency having authority over such matters shall direct as a means of enforcing such provisions.

(F) The Contractor shall immediately notify the Contracting Officer in writing if any hazardous material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site or believed to be encountered on the site. The Contractor shall immediately stop work in the affected area until the nature of the material or substance has been ascertained and until such remedial or corrective measures, if any are required, has been taken. A compensable time extension shall be issued to the Contractor if jobsite progress is slowed, stalled, suspended, or the Contract terminated as a result of such discovery.

(G) The Contractor will submit to the Contracting Officer prior to the commencement of any work a detailed company safety plan that will be used during the execution of the contract. The plan shall name the on-site company safety officer that will be responsible to conduct on site safety meetings, modify safety plan and make notification to the Contracting Officer in the event of any on-site accidents by an employee of the company. Contractor is responsible to provide the minutes of the safety meetings held by the Company on a weekly basis.

**SECTION TWENTY-FIVE
PROTECTION OF EXISTING VEGETATION, STRUCTURES,
EQUIPMENT, UTILITIES, AND IMPROVEMENTS**

(A) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract.

(B) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this Contract, or by the operation

of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

(C) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site; and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.

(D) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.

(E) Any equipment temporarily removed as a result of work under this Contract shall be protected, cleared, and replaced in the same condition as at the time of award of this Contract.

(F) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.

(G) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the specifications or other contract documents.

(H) If the removal of the existing work exposes discolored or unfinished surfaces or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the specifications or other contract documents.

(I) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.

(J) The Contractor shall be responsible for any damages on account of settlement or the loss of lateral support of the adjoined property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for injury or damage to adjoining and adjacent structures and their premises and shall indemnify and save harmless the Owner there from.

(K) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

SECTION TWENTY-SIX

TEMPORARY BUILDING AND TRANSPORTATION OF MATERIALS

(A) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Owner. The temporary buildings shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings may be abandoned and need not be removed.

(B) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in performing the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any applicable tribal, federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

**SECTION TWENTY-SEVEN
INSPECTIONS AND ACCEPTANCE OF CONSTRUCTION**

- (A) Definitions. As used in this clause –
- (1) “Acceptance” means the act by which the Contracting Officer approves the work performed under this contract. Acceptance may be partial or complete. (2) “Inspection” means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies during the normal course of construction as identified in the approved Construction Schedule) to determine whether it conforms to contract requirements. (3) “Testing” means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.
- (B) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements, including applicable tribal laws, ordinances, codes, rules and regulations. All work is subject to Owner inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.
- (C) Owner inspections and tests are for the sole benefit of the Owner and do not: (1) Relieve the Contractor of responsibility for providing adequate quality control measures; (2) Relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) Constitute or imply acceptance; or, (4) Affect the continuing rights of the Owner after acceptance of the completed work under paragraph (K) below.
- (D) The presence or absence of an Owner inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer’s written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.
- (E) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The Owner may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, when prior rejection makes re-inspection or retest necessary. The Owner shall perform all inspections and test in a manner that will not delay the work. Special, full size and performance tests shall be performed as described in the contract.
- (F) The Contracting Officer may conduct routine inspections of the construction site on a daily basis.
- (G) The Contractor shall, without charge, replace or correct work found by the Contracting Officer not to conform to Contract requirements, unless the Contracting Officer decides that it is in the Owner’s interest to accept the work with an appropriate adjustment in Contract price. The Contractor shall promptly segregate and remove rejected material from the premises.
- (H) If the Contractor does not promptly replace or correct rejected work, the Contracting Officer may (1) By contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) Terminate for default the Contractor’s right to proceed.
- (I) If any work requiring inspection is covered up without approval of the Contracting Officer, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. Following inspection and correction of the defective work, if any, the uncovered work must be covered up at the expense of the Contractor.
- (J) If at any time before final acceptance of the entire work, the Contracting Officer considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and materials. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or Subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction, and the Contractor shall not be entitled to any adjustment in the time for completion of the work. If however, such work is found to meet the requirements of the Contract, the Contracting Officer shall make an equitable

adjustment to cover the cost of the examination and reconstruction related to conforming work, including, if completion of the work was thereby delayed, a compensable extension of time to the Contract.

(K) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Contracting Officer determines that the state of preparedness is as represented, the Contracting Officer will conduct the inspection. Unless otherwise specified in the Contract, the Owner shall accept, as soon as practicable after completion and inspection by the Contracting Officer, all work required by the Contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes, or the right under any warranty or guarantee.

(L) Nothing in this clause shall impose any duty on the Owner to conduct any inspection and inspections conducted by the Owner shall be for its sole benefit and use.

SECTION TWENTY-EIGHT WARRANTY OF TITLE

The Contractor warrants good title to all materials, supplies, and equipment, unless purchased by Owner that is incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charge, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien or purported lien upon the premises or anything appurtenant thereto.

SECTION TWENTY-NINE WARRANTY OF CONSTRUCTION

In addition to any other warranties in this contract, the Contractor warrants that work performed under this Contract conforms to the Contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of one year (unless otherwise indicated) from the date that the Owner take possession.

(A) The Contractor shall remedy at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damages to real or personal property of the Owner or of any other person or entity when the damages is the result of; (1) The Contractor's failure to conform to Contract requirements; or (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.

(B) The Contractor shall remedy at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damages to real or personal property of the Owner or of any other person or entity when the damages is the result of; (1) The Contractor's failure to conform to Contract requirements; or (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.

(C) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.

(D) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Owner shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractors expense.

(E) With respect to all warranties, express or implied, from lower tier subcontractors, manufacturers, or suppliers for work performed and materials furnished under this Contract, the Contractor shall: (1) Obtain all warranties that it would give in normal commercial practice; (2) Require all warranties to be executed in writing and assigned to the Owner, for the benefit of the Owner and its successors and assigns; and (3) Enforce all warranties for the benefit of the Owner and its successors and assigns.

(F) Before final acceptance of the work by the Contracting Officer, the Contractor shall provide to the Contracting Officer all special warranties required to be provided in the specifications or other Contract documents. Any such warranties

to be provided by subcontractors, manufacturers, or suppliers shall comply with the provisions of subparagraph (E) (2) and (E) (3).

(G) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the Owner nor for the repair of any damage that results from any defect in Owner furnished material or design.

(H) Notwithstanding any provisions herein to the contrary, the time limitations established under this clause relate only to the scope of the obligation of the Contractor to correct the work, and has no relationship to the time within which any obligation of the Contractor under this contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to any obligation under this contract. .

(I) These warranties set forth in this clause and elsewhere in the Contract documents shall not limit the Owner's rights with respect to latent defects, gross mistakes or fraud.

SECTION THIRTY PROHIBITIONS AGAINST LIENS

The Contractor is prohibited from placing a lien or purporting to place a lien on the Owner's property. This prohibition shall apply to all subcontractors at any tier and all material suppliers.

SECTION THIRTY-ONE CONFLICTS

- (A) In the event of a conflict or discrepancy within, between or among any of the Contract documents, the Contractor shall promptly submit the matter in writing to the Contracting Officer for resolution. The Contracting Officer shall promptly make a determination in writing. Any work completed or action undertaken by the Contractor without such a determination shall be at its own risk and expense.
- (B) In the event of a conflict between the terms of this instrument and the contract exhibits, the terms of this instrument shall take precedence.
- (C) In the event of a conflict between the Contract and applicable tribal law or regulations, the tribal law or regulations shall prevail.

SECTION THIRTY-TWO CLAIMS AND DISPUTES

- (A) "Claim" as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the Contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- (B) All disputes arising under or relating to this Contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall first be resolved under this clause.
- (C) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. Contractor shall give written initial notice to the Contracting Officer of any claim within fourteen (14) days of when Contractor knew, or reasonably should have known, of the event or condition giving rise to an apparent claim. Any claim by Owner against the Contractor shall be submitted to the Contractor in writing. The Contractor shall respond to claims of the Owner within 14 days of receipt of the Owner's claim. The Contractor's response will be reviewed by the Contracting Officer and the Architect and the Contracting Officer shall issue a written determination.

- (D) For claims initiated by Contractor, within 14 days of providing initial written notice of claim as required by 31(C), Contractor shall give supplemental notice of claim to the Contracting Officer describing the claim in reasonable detail including at a minimum: (1) the date and time and description of the event giving rise to the request for adjustment or interpretation of Contract terms, a payment of money, an extension of time or other relief with respect to the terms of the Contract; (2) a statement to the nature of the impacts to the Contractor, its subcontractors or consultants, if any; (3) the amount of the adjustment or an estimate thereof in Contract sum and or Contract time, if any, sought by the Contractor; and (4) the contractual term on which the claim is based. Failure of the Contractor to give an initial notice of claim or supplement the initial notice strictly in compliance with the timeframes set forth in sections 32(C) & (D) shall constitute an absolute and complete waiver, bar and release of such claim.
- (E) The Contracting Officer shall, within 30 days after receipt of the request, provide a written determination of the Contractor's Claim.
- (F) If the Contractor disagrees with the Contracting Officer's decision, it may invoke the dispute resolution procedures in Section 33.
- (G) Compliance with written claim procedures in this Section shall be a required condition precedent to the Contractor invoking the Dispute Resolution procedures in Section 33.
- (H) The Contractor shall proceed diligently with performance of this Contract, pending final resolution of any request for relief, claim, or action arising under or relating to the Contract, and comply with any decision of the Contracting Officer.

SECTION THIRTY-THREE DISPUTE RESOLUTION

Claims, disputes, or other matters in controversy arising out of or related to the Contract, for which the requisites for invoking dispute resolution have been satisfied, shall be subject to mediation as a condition precedent to litigation.

The parties shall endeavor to resolve their Claims by mediation, which, unless the parties mutually agree otherwise, shall be in accordance with the Judicial Arbitration and mediation Services' (JAMS) Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation.

The Parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction.

This Agreement shall be governed by the law of the Tulalip Tribes and any applicable federal laws and regulations. The Owner does not hereby consent to jurisdiction under any tribal, state or federal law that would not otherwise apply to the Owner as a Tulalip Tribes governmental entity or activity occurring within Indian Country.

SECTION THIRTY-FOUR POSSESSION UPON SUBSTANTIAL COMPLETION

Owner reserves the right to take over and utilize areas of the work site upon which the Contractor's work has been substantially completed, although other portions of the contracted work remain to be finished. In such an instance, all the Contractor's obligations under this Contract shall remain in force and the Contractor will remain responsible for the entire project covered by this Contract until the Contracting Officer has issued a certificate of completion.

SECTION THIRTY-FIVE CONTRACT COMPLETION

(A) The Contractor, as a condition precedent to execution of the certificate of Contract Completion, release of retainage and final payment, shall provide all Project record documents to the Contracting Officer for review for conformity with the requirements of the Contract Documents, then at the Construction Managers approval may send transmittal to the Architect/Engineer for approval, which may include, without limitation:

- a. Certificate of Occupancy issued by the local building department;

- b. Inspection Certificates required and issued by the authority having jurisdiction, such as Plumbing, Piping Purification, Pressure Piping, Elevator, Boiler, Electrical, etc.;
- c. Letter of Approval from the Fire Marshal for fire suppression system;
- d. Operating and Maintenance Manuals, which shall be organized into suitable sets of manageable size. Indexed data shall be bound in individual binders, with pocket folders for folded sheet information and appropriate identification shall be marked on the front and the spine of each binder;
- e. Neatly and accurately marked sets of As-Built Drawings and other Contract Documents reflecting the actual construction of the Project;
- f. Reproducible detailed Drawings reflecting the exact location of any concealed utilities, mechanical or electrical systems and components;
- g. An electronic copy of all Operating and Maintenance manual documentation, As-Built drawings, Warranties and Guarantees and other Contract Documents in a pdf format;
- h. Assignment to the Tulalip Tribes of Washington of all Warranties and Guarantees, including the most recent address and telephone number of any Subcontractors, Material Suppliers, or manufacturers;
- i. Final waiver and release of claims from all subcontractors that they are paid in full.
- j. A final waiver and release of claims affidavit to certify that the Contractor has paid all Subcontractors, Material Suppliers and laborers in full for all Work performed or materials furnished for the Project.

**SECTION THIRTY-SIX
NOTICES TO THE CONTRACTOR**

Whenever notice is required to be delivered to Owner or Contractor, the same shall be effective when mailed via first class US Mail, postage prepaid, to the following persons of the following addresses:

CONTRACTOR

OWNER Tulalip Tribes (Transportation Department)
The Tulalip Tribes
6406 Marine Drive
Tulalip, WA 98271

Contractor shall notify Owner of any Change of Address.

**SECTION THIRTY-SEVEN
T.E.R.O.**

Contractor agrees that Contract is subject to the Tulalip Tribal Employment Rights Ordinance, TTC 9.05.

IN WITNESS WHEREOF, the parties have executed this agreement at the Tulalip Indian Reservation as of the day and year first above written.

Attest:

Contractor:

Signature

Title

Date

Tulalip Tribes (BOD):

Signature

BOD Chairwoman

Title

Date

SAMPLE

This Page Intentionally Left Blank

SAMPLE

The Tulalip Tribes of Washington
Marina Pump Station Replacement

INTERIM WAIVER AND RELEASE OF CLAIMS

TO THE TULALIP TRIBES OF WASHINGTON ("OWNER"):

_____ (the "Releasing Party") has furnished labor or services, or supplied materials or equipment (collectively, the "Work") for construction on the Marina Pump Station Replacement (the "Project"), located at _____, Tulalip, WA 98271.

Upon receipt of payment by the Releasing Party of \$ _____, whether in cash, by check or by joint check, the Releasing Party represents and certifies to Owner that: (i) Releasing Party and all of its subcontractors are in compliance with the terms of their respective contracts; (ii) all due and payable bills with respect to the Work have been paid to date or are included in the amount requested in the current Application for Payment and there is no known basis for the filing of any claim in respect of the Work except for (a) any claim that the Releasing Party has previously provided written notice to Owner about such claim, and (b) amounts owed to Releasing Party and/or any subcontractor or supplier that are considered Cost of the Work but have been withheld by the Owner; and (iii) waivers and releases from all Subcontractors and/or Suppliers being billed under a Releasing Party Subcontract Agreement or Purchase Agreement have been obtained in form substantially similar hereto as to constitute an effective waiver and release of all known claims. Notwithstanding the foregoing, this Interim Waiver and Release of Claims shall not apply to any amounts owed for Work which has been provided to the Project during a billing period prior to the date hereof where Releasing Party and/or any subcontractor or supplier has not yet requested reimbursement for the cost of the Work provided to the Project.

If any claim covered by this Interim Waiver and Release of Claims is made or filed by the Releasing Party or any of its lower tier consultants, subcontractors, suppliers, vendors or materialmen at any tier against or with respect to Owner or the Project then the Releasing Party (1) shall immediately release and discharge, or secure the release or discharge of, such claim and (2) shall indemnify, defend and hold harmless Owner and the Project from and against any and all costs, damages, expenses, court costs and attorney fees arising from such claim or any litigation resulting from such claim.

(the Releasing Party)

DATED: _____

By: _____

Printed Name: _____

Its: _____

[Notary Seal]

State of: _____ County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

This Page Is Intentionally Left Blank

The Tulalip Tribes of Washington
Marina Pump Station Replacement

FINAL WAIVER AND RELEASE OF CLAIMS

TO THE TULALIP TRIBES OF WASHINGTON (“OWNER”):

Upon receipt of payment of \$ _____, whether in cash, by check or by joint check, _____ (the “Releasing Party”) has furnished labor or services, or supplied materials or equipment for construction on the Marina Pump Station Replacement Project (the “Project”), located at located at _____, Tulalip, WA 98271.

The Releasing Party hereby unconditionally waives and releases any and all claims, stop notices, rights to submit stop notices, suits, demands, protests, damages, losses and expenses of any nature whatsoever (whether under statute, in equity or otherwise and whether received through assignment or otherwise) (each, individually, a “Claim”) against or with respect to The Tulalip Tribes of Washington, which is referred to as the Owner in the Contract Documents, or any other party holding an interest in the Property (collectively, the “Released Parties”), or against or with respect to the Project, the Property, improvements to the Property and materials, fixtures, apparatus and machinery furnished for the Property (collectively, the “Released Properties”).

Upon the receipt of the aforesaid amount, the Releasing Party expressly acknowledges that it has been paid all amounts due and owing to it for work, services, material or equipment in connection with the Work and the Releasing Party represents and warrants that all amounts due and owing to consultants, subcontractors and suppliers below the Releasing Party in connection with this Project have been paid, unless noted herewith as approved by Owner.

If any Claim is made or filed by the Releasing Party or any of its lower tier consultants, subcontractors, suppliers or laborers at any tier against or with respect to any of the Released Parties or any of the Released Properties, then the Releasing Party (1) shall immediately release and discharge, or secure the release or discharge of such Claim and (2) shall indemnify, defend and hold harmless the Released Parties from and against any and all costs, damages, expenses, court costs and attorney fees arising from such Claim or any litigation resulting from such Claim.

(the Releasing Party)

DATED: _____

By: _____

Printed Name: _____

Its: _____

[Notary Seal]

State of: _____ County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

This Page Is Intentionally Left Blank

Buyer's Retail Sales Tax Exemption Certificate

Do not use this form for resale purchases

This certificate is for:

Single use

You need to show this certificate each time you buy an exempt item.

Blanket certificate

You can use this certificate anytime, as long as you and the seller/marketplace facilitator have a recurring business relationship. A recurring business relationship means you have at least one sale transaction within 12 months (RCW 82.08.050(7)(c)).

Vendor/seller's name:

Date:

Mailing address:

City:

State:

Zip:

**I, the undersigned buyer, certify I am making an exempt purchase for the following reason:
(Enter information and/or check applicable box(es)).**

1 Nonresident vessel purchases:

Place of residence:

Type of proof of residence accepted (driver's license, State Issued ID Card, etc) _____,

including any identification numbers _____, and expiration date _____.

Watercraft (make, model and serial number of vessel):

Registered or documented with the US Coast Guard or state of principal use and will leave
Washington waters within 45 days; or

Buyer is a resident of a foreign country. Purchase is for use outside Washington and will
leave Washington water within 45 days.

Seller's signature:

2 Electric vehicles/vessels:

- a. Batteries or fuel cells for electric vehicles and services for installing, repairing, or improving electric vehicle batteries and fuel cells.
- b. Tangible personal property that will become a component of a battery or fuel cell electric vehicle infrastructure and labor and services for installing, constructing, repairing, or improving battery or fuel cell electric vehicle infrastructure, including hydrogen fueling stations.
- c. Zero emissions buses.
- d. Vessels equipped with battery-powered electric marine propulsion systems or the systems themselves with continuous power greater than 15kW.
- e. Batteries and battery packs or shoreside battery infrastructure used to exclusively power electric marine propulsion systems operating at a continuous power greater than 15kW.

3 Intrastate air transport:

Airplanes for use in providing intrastate air transportation by a commuter air carrier and the sale of repair and related services for these airplanes.

4 Interstate or foreign commerce or commercial deep sea fishing business:

- a. Motor vehicle, trailers and component parts thereof used to transport persons or property for hire in interstate or foreign commerce.
- b. Airplanes, locomotives, railroad cars or watercraft and component parts thereof used in transporting persons or property for hire.
- c. Labor and services rendered to construct, repair, clean, alter or improve for hire carrier property.
- d. Items for use connected with private or common carriers engaged in air, rail or water in interstate or foreign commerce. (Note: Items consumed in the state are subject to use tax.)
- e. Watercraft, component parts, labor and services, and/or diesel fuel used in a qualifying commercial deep sea fishing operation.

Registered vessel name:

Vessel number:

- f. Purchases of liquefied natural gas (LNG) by private or common waterborne carriers in interstate or foreign commerce. The exemption applies to ninety percent of LNG transported and consumed outside this State by the buyer.

5 Other:

Prescription items: You must use the Sales Tax Exemption Certificate for Health Care Providers to claim exemptions for items prescribed for human use and other medical purchases.

- a. Waste vegetable oil used to produce biodiesel fuel for personal use.
- b. Equipment rental and purchase of services for use in motion picture and video production.
- c. Objects of art or cultural value purchased by an artistic or cultural organization.
- d. Adaptive automobile equipment purchased by disabled veterans.
- e. Animal pharmaceuticals purchased by veterinarians. This exemption does not apply to pharmaceuticals for pets (describe):
- f. Computer hardware, peripherals, software and related installation, used by the aerospace industry.
Note: User must report their tax savings on their online excise tax return using the Buyers Sales and Use Preference Addendum.
- g. Labor, services and tangible personal property related to the constructing of new buildings by a manufacturer of commercial airplanes, fuselages, or wings of a commercial airplane, or by a port district, political subdivision, or municipal corporation to be leased to such a manufacturer.
Note: User must report their tax savings on their online excise tax return using the Buyers Sales and Use Preference Addendum.
- h. Computer hardware, peripherals, software and related installation, purchased by publishers and printers.
- i. City, County, Tribal, or Inter-Tribal Housing Authorities.
- j. Tangible personal property for use in a noncontiguous state delivered to the usual receiving terminal of the shipper.
 Types of goods purchased:
 Point of delivery: _____ Carrier/agent: _____
- k. Gases and chemicals used by a manufacturer or processor for hire in the production of semiconductor materials.
- l. Hog fuel used to produce electricity, steam, heat, or biofuel.
- m. Tangible personal property under the weatherization assistance program.
- n. Trail grooming services.
- o. Honey bees, honey bee feed purchased by an eligible apiarist. Apiarist ID #:
- p. Federal credit union purchases.
- q. Wax, ceramic materials, and labor used to create molds consumed during the process of creating investment castings.
- r. Sales of ferry vessels to the state or local governmental units, components thereof, and labor and service charges.
- s. Joint Municipal Utilities Services Authority.
- t. Paratransit vehicles purchased by paratransit service providers.
- u. Large/private airplanes purchased by nonresidents.
- v. Standard financial information purchased by qualifying international investment management companies and their affiliates.

- w. Material and supplies directly used in the packing of fresh perishable horticultural products by persons who receive, wash, sort, and pack fresh perishable horticultural products for farmers.
- x. Vessel deconstruction services.
- y. Only for delivered bottled water No source of potable water Prescribed water
Purchased with food stamps (SNAP)
- z. Anaerobic digesters and repair services.
- aa. Purchases of solar energy machinery and equipment that generates at least 1 kilowatt (kW) and no more than 100 kW of electricity and labor and services rendered in regard to installation of such equipment.
- bb. Ride-sharing vehicles to be used in certain rideshare programs.
- cc. Mobility enhancing equipment for complex needs patients.

Items purchased:

Certification:

I, the undersigned buyer, understand that by completing and signing this certificate I am certifying that I qualify for the tax exempt purchase(s) indicated above. I understand that I will be required to pay sales or use tax on purchases that do not qualify for an exemption. In addition, I understand that false or erroneous use of this certificate will result in liability for unpaid tax with interest and may result in additional penalties.

Type of entity: Individual Corporation Sole Proprietor Partnership
Other (explain)

Type of business: Account ID:

Buyer name: Title:

Street address:

City, State, Zip:

Buyer signature:

**Seller must retain the original of this certificate for their records.
Do not send a copy of this certificate to the Department of Revenue.**

Instructions

Buyer's must ensure entitlement to the exemption before using this certificate.

For information regarding exemptions, contact Washington State Department of Revenue Taxpayer Information Center at 360-705-6705 or visit our website at dor.wa.gov.

Line 1 applies to watercraft purchased by a nonresident for use outside Washington when delivery take place in Washington. The buyer must provide proof of residency (picture ID) and check the applicable box. By checking the box, the buyer certifies that the vessel will leave Washington State waters within forty-five days. Sellers must examine and document the proof of residency provided by the buyer. **Seller must sign the form.** By signing the form, the seller certifies that the seller has examined and listed the buyer's proof of residency. See WAC 458-20-238 for acceptable proof of residency for corporations, partnerships and limited liability companies. Reference: RCW 82.08.0266, RCW 82.08.02665 and WAC 458-20-238.

Line 2a applies to the purchase of batteries or fuel cells for electric vehicles and services for installing, repairing, or improving electric vehicle batteries and fuel cells. Reference: RCW 82.08.816.

Line 2b applies to the purchase of tangible personal property that will become a component of an electric vehicle infrastructure or to labor and services rendered in respect to installing, constructing, repairing, or improving electric vehicle infrastructure, including hydrogen fueling stations. Reference: RCW 82.08.816.

Line 2c applies to the purchase of zero emissions buses. Reference: RCW 82.08.816.

Line 2d applies to the purchases of vessels with battery- powered electric marine propulsion systems or the systems themselves with continuous power greater than 15 kW. Reference: RCW 82.08.996.

Line 2e applies to the purchase of marine batteries, shoreside infrastructure, and related labor and installation charges used with electric vessel marine propulsion systems. Reference: 82.08.996.

Line 3 applies to the purchase of airplanes for use in providing intrastate air transportation by a commuter air carrier and the sale of repair and related services for these airplanes. Commuter air carriers are air carriers holding authority under Title 14, part 298 of the code of federal regulations that carries passengers on at least five round trips per week on at least one route between two or more points. Reference: RCW 82.08.0262 and 82.12.0254.

Line 4a applies to the purchase of motor vehicles, or trailers by a business operating or contracting to operate for the holder of a carrier permit issued by the Interstate Commerce Commission. The exemption also applies to component parts and repairs of such carrier property including labor and services rendered in the course of constructing, repairing, cleaning, altering or improving the same. The buyer must attach a list stating make, model, year, serial number, motor number and ICC permit number. Reference: RCW 82.08.0263 and WAC 458-20-174.

Line 4b applies to the purchase of airplanes, locomotives, railroad cars, or watercraft for use in conducting interstate or foreign commerce by transporting therein or there with persons or property for hire. The exemption also applies to component parts of such carrier property. Reference: RCW 82.08.0262 and WAC 458-20-175.

Line 4c applies to charges for labor and services rendered in the course of constructing, repairing, cleaning, altering or improving carrier property when carrier property is used for hire. Reference: RCW 82.08.0262 and WAC 458-20-175.

Line 4d applies to the purchase of durable goods or consumables, other than those mentioned in line 4b, for use in connection with interstate or foreign commerce by such businesses. The goods must be for exclusive use while engaged in transporting persons or property in interstate or foreign commerce. The exemption does not apply to charges for labor or services in regard to the installing, repairing, cleaning or altering of such property. Although exempt from retail sales tax, materials are subject to use tax if consumed in Washington. Unregistered businesses must attach a list stating the description and quantity of items that will be consumed in Washington and pay use tax to the seller. Reference: RCW 82.08.0261 and WAC 458-20-175.

Line 4e applies to the purchase of vessels, component parts, or repairs by persons engaged in commercial deep sea fishing operations outside the territorial waters of the state of Washington. The exemption also applies to the purchase of diesel fuel used in commercial deep or commercial passenger fishing operations when annual gross receipts from the operations are at least five thousand dollars. Reference: RCW 82.08.0262, RCW 82.08.0298, and WAC 458-20-176.

Line 4f applies to the purchase of LNG by carriers that are registered with the Department of Revenue. Carriers not registered with the Department must pay sales tax on all LNG at the time of purchase, and may later apply for a partial refund directly from the Department.

Line 5a applies to the purchase of waste vegetable oil from restaurants and food processors to produce biodiesel fuel for personal use. The exemption does not apply to persons that are engaged in selling biodiesel fuel at wholesale or retail. Reference: RCW 82.08.0205.

Line 5b applies to the rental of production equipment and purchases of production services by motion picture and video production companies. Reference: RCW 82.08.0315 and Motion Picture-Video Production Special Notice.

Line 5c applies to the purchase of objects of art or cultural value, and items used in the creation of a work of art (other than tools), or in displaying art objects or presenting artistic or cultural exhibitions or performances by artistic or cultural organizations. Reference: RCW 82.08.031 and WAC 458-20-249.

Line 5d applies to the purchases of add-on adaptive automotive equipment purchased by disabled veterans and disabled members of the armed forces currently on active duty. To qualify the equipment must be prescribed by a physician and the purchaser must be reimbursed by the Department of Veterans Affairs and the reimbursement must be paid directly to the seller. Reference: RCW 82.08.875.

Line 5e applies to the purchase of animal pharmaceuticals by veterinarians or farmers for the purpose of administering to an animal raised for sale by a farmer. Animal pharmaceuticals must be approved by the United States Food and Drug Administration or the United States Department of Agriculture. This exemption does not extend to or include pet animals. Reference: RCW 82.08.880.

Line 5f applies to the purchase of computer hardware, peripherals, and software, and related installation, not otherwise eligible for the M&E exemption, used primarily in development, design, and engineering of aerospace products or in providing aerospace services. Reference: RCW 82.08.975.

Line 5g applies to charges for labor and services rendered in respect to the constructing of new buildings used primarily to manufacture commercial airplanes, fuselages of commercial airplanes, or wings of commercial airplanes. The exemption is available to manufacturers engaged in manufacturing commercial airplanes, fuselages of commercial

airplanes, or wings of commercial airplanes. It is also available to port districts, political subdivisions, or municipal corporations who lease an eligible facility to a manufacturer engaged in eligible manufacturing activities. The exemption also applies to sales of tangible personal property that will become a component of such buildings during the course of the constructing, and to labor and services rendered in respect to installing, during the course of constructing, building fixtures not otherwise eligible for the exemption under RCW 82.08.02565(2)(b). Reference: RCW 82.08.980 and RCW 82.32.850.

Line 5h applies to the purchase of computer hardware, peripherals, digital cameras, software, and related installation not otherwise eligible for the M&E exemption that is used primarily in the printing or publishing of printed materials. The exemption includes repairs and replacement parts. Reference: RCW 82.08.806.

Line 5i applies to all retail purchases of goods and services by City, County, Tribal, or Inter-Tribal Housing Authorities. Reference: RCW 35.82.210.

Line 5j applies to the purchase of goods for use in a state, territory or possession of the United States which is not contiguous to any other state such as Alaska, Hawaii, Guam, and American Samoa. For the exemption to apply, the seller must deliver the goods to the usual receiving terminal of the for-hire carrier selected to transport the goods. Reference: RCW 82.08.0269.

Line 5k applies to the purchase of gases and chemicals by a manufacturer or processor for hire in the production of semiconductor materials. Limited to gases and chemicals used to grow the product, deposit or grow permanent or sacrificial layers on the product, to etch or remove material from the product, to anneal the product, to immerse the product, to clean the product, and other uses where the gases and chemicals come into direct contact with the product during the production process, or gases and chemicals used to clean the chambers and other like equipment in which processing takes place. Reference: RCW 82.08.9651.

Line 5l applies to the purchase of hog fuel to produce electricity, steam, heat, or biofuel. Hog fuel is defined as wood waste and other wood residuals including forest derived biomass. Hog fuel does not include firewood or wood pellets. Reference: RCW 82.08.956.

Line 5m applies to the purchase of tangible personal property used in the weatherization of residences under the weatherization assistance program. The tangible personal property must become a component part of the residence. Reference: RCW 82.08.998.

Line 5n applies to the purchase of trail grooming services by the state of Washington and nonprofit corporations organized under chapter 24.03 RCW. Trail grooming activities include snow compacting, snow redistribution, or snow removal on state or privately-owned trails. Reference: RCW 82.08.0203.

Line 5o applies to all honey bees and honey bee feed (e.g. sugar) purchased by an eligible apiarist. An eligible apiarist is a person who: owns or keeps one or more bee colonies; grows, raises, or produces honey bee products for sale at wholesale; and registers their hives/colonies with the WA State Department of Agriculture as required by RCW 15.60.021. References: RCW 82.08.0204 and RCW 82.08.200.

Line 5p applies to the purchase of goods and retail services by federally chartered credit unions. Federal credit unions are exempt from state and local consumer taxes under federal law, such as sales tax, lodging taxes and rental car tax. To be exempt, the federal credit union must pay for goods and services directly, such as by a check written on the federal credit union or a credit card issued to the federal credit union. Sellers should keep a copy of the check or credit card used for payment to substantiate the exempt nature of the sale. Reference: WAC 458-20-190.

Line 5q applies to the purchase of wax and ceramic materials used to create molds consumed during the process of creating ferrous and nonferrous investment castings used in industrial applications. Also applies to labor or services used to create wax patterns and ceramic shells used as molds in this process. Reference: RCW 82.08.983.

Line 5r applies to sales of ferry vessels to the state of Washington or to a local governmental unit in the state of Washington for use in transporting pedestrians, vehicles, and goods within or outside the territorial waters of the state. The exemption also applies to sales of tangible personal property which becomes a component part of such ferry vessels and sales of or charges made for labor and services rendered in respect to constructing or improving such ferry vessels. Reference RCW 82.08.0285.

Line 5s applies to cities, counties, and other municipalities that create a Joint Municipal Services Authority. Reference: RCW 82.08.999.

Line 5t applies to purchases of small buses, cutaways, and modified vans not more than 28 feet long by a public social service agency (transit authority) or a private, nonprofit transportation provider. Reference: RCW 82.08.0287.

Line 5u applies to purchases of private airplanes by nonresidents weighing over 41,000 pounds. It also provides an exemption for charges for repairing, cleaning, altering or improving such airplanes owned by nonresidents. A nonresident qualifies for these exemptions when they are not required to register the airplane with the Department of Transportation. Reference: RCW 82.08.215.

Line 5v applies to the purchase and use of standard financial information by a qualifying international investment management companies and their qualifying affiliates to \$15 million dollars in a calendar year. The standard financial information may be provided in a tangible format (e.g. paper documents), on a tangible media (e.g. DVD, USB drive, etc.) or as a digital product transferred electronically. Reference: RCW 82.08.207.

Line 5w applies to purchases of materials and supplies used in packing horticultural products. The exemption applies only to persons who receive, wash, sort, and pack fresh perishable horticultural products for farmers as defined in RCW 82.04.330 and that are entitled to a deduction under RCW 82.04.4287 either as an agent or an independent contractor. Reference: RCW 82.08.0311.

Line 5x applies to deconstruction of vessels. "Vessel deconstruction" means permanently dismantling a vessel, including: Abatement and removal of hazardous materials; the removal of mechanical, hydraulic, or electronic components or other vessel machinery and equipment; and either the cutting apart or disposal, or both, of vessel infrastructure. For the purposes of this subsection, "hazardous materials" includes fuel, lead, asbestos, polychlorinated biphenyls, and oils. "Vessel deconstruction" does not include vessel modification or repair. In order to qualify for this exemption the vessel deconstruction must be performed at either a qualified vessel deconstruction facility; or an area over water that has been permitted under section 402 of the clean water act of 1972 (33 U.S.C. Sec. 1342) for vessel deconstruction. Reference RCW 82.08.9996.

Line 5y this sales tax exemption only applies to bottled water delivered to the buyer in a re-usable container not sold with the water under one of the following three conditions:

1. No Source of Potable Water – Retail sales and use taxes do not apply to sales of bottled water for human use to persons who do not have a readily available source of potable water. Potable water is water that is safe for human consumption.

2. Water dispensed to patients pursuant to a prescription – Retail sales and use taxes do not apply to sales of bottled water for human use dispensed or to be dispensed to patients, pursuant to a prescription for use in the cure, mitigation, treatment, or prevention of disease or medical condition.

“Prescription” means an order, formula, or recipe issued in any form of oral, written, electronic, or other means of transmission by a duly licensed practitioner authorized by the laws of this state to prescribe.

3. Purchased under the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program.

Line 5z applies to the purchases by owners and operators of anaerobic digesters of services to install, construct, repair, clean, alter, or improve an anaerobic digester. Also applies to purchases of tangible personal property that becomes an ingredient or component of the anaerobic digester. As of July 1, 2018 this includes equipment necessary to process biogas and digestate from an anaerobic and biogas from a landfill into marketable coproducts. See RCW 82.08.900.

Line 5aa applies to the purchases of solar energy machinery and equipment that generates at least 1 kilowatt and no more than 100kW of electricity. This exemption also applies to the labor and services purchased to install such machinery and equipment. Reference: RCW 82.08.962.

Line 5bb applies to purchases of vehicles by a public transportation agency, a major employer, or employees of major employers, to be primarily used for ride sharing or ride sharing for persons with special transportation needs. The vehicle and use of vehicle must meet the criteria in RCW 82.08.0287.

Line 5cc applies to the purchase of mobility enhancing equipment used by a complex needs patient to meet the user's specific and unique medical, physical, and functional needs and capacities for basic activities when medically necessary to prevent hospitalization or institutionalization.

“Complex needs patient” means an individual with a diagnosis or medical condition that results in significant physical or functional needs and capacities.

“Mobility enhancing equipment” means equipment, including repair and replacement parts for mobility enhancing equipment that:

- Is primarily and customarily used to provide or increase the ability to move from one place to another and that is appropriate for use either in a home or a motor vehicle;
- Is not generally used by persons with normal mobility; and
- Does not include any motor vehicle or equipment on a motor vehicle normally provided by a motor vehicle manufacturer. Reference SSB 5218, Chapter 319 Laws of 2023.

Special Provisions



1 INTRODUCTION TO THE SPECIAL PROVISIONS

2
3 (*****)

4 The work on this project shall be accomplished in accordance with the *Standard*
5 *Specifications for Road, Bridge and Municipal Construction*, 2024 edition, as issued by
6 the Washington State Department of Transportation (WSDOT) and the American Public
7 Works Association (APWA), Washington State Chapter (hereafter “Standard
8 Specifications”). The Standard Specifications, as modified or supplemented by the
9 Amendments to the Standard Specifications and these Special Provisions, all of which
10 are made a part of the Contract Documents, shall govern all of the Work.

11
12 These Special Provisions are made up of both General Special Provisions (GSPs) from
13 various sources, which may have project-specific fill-ins; and project-specific Special
14 Provisions. Each Provision either supplements, modifies, or replaces the comparable
15 Standard Specification, or is a new Provision. The deletion, amendment, alteration, or
16 addition to any subsection or portion of the Standard Specifications is meant to pertain
17 only to that particular portion of the section, and in no way should it be interpreted that
18 the balance of the section does not apply.

19
20 The project-specific Special Provisions are designated by “(*****)”. The GSPs are
21 labeled under the headers of each GSP, with the effective date of the GSP and its source.
22 For example:

- 23
24 (March 8, 2013 APWA GSP)
25 (April 1, 2013 WSDOT GSP)
26

27 Also incorporated into the Contract Documents by reference are the following documents,
28 regulations and/or requirements, which shall supersede any conflicting provisions of the
29 Standard Specifications and are made a part of this contract; provided, however, that if
30 any of the following documents, regulations and/or requirements are less restrictive than
31 Washington State law, then the Washington State law shall prevail. Contractor shall obtain
32 copies of these publications at Contractor’s own expense.

- 33 • *Manual on Uniform Traffic Control Devices for Streets and Highways*, currently
34 adopted edition, with Washington State modifications, if any
35 • *Standard Plans for Road, Bridge and Municipal Construction*, WSDOT/APWA,
36 current edition
37 • *Engineering Design and Development Standards*, Snohomish County Public
38 Works, current edition
39

SPECIAL PROVISIONS - Continued

1

2

This Page Intentionally Left Blank

1 **DIVISION 1**

2 **GENERAL REQUIREMENTS**

3 **DESCRIPTION OF WORK**

4 (*****)

5
6 Marina Pump Station Replacement.

7
8 See work description in Section – Notice to Bidders.

9 **1-01 DEFINITIONS AND TERMS**

10
11 **1-01.3 Definitions**

12
13 The tenth, eleventh, and twelfth paragraphs of Section 1-01.3 are deleted.

14
15 The following new terms and definitions are inserted after the twentieth paragraph of
16 Section 1-01.3:

17
18 (*****)

19 **Dates**

20
21 ***Bid Opening Date***

22 The date on which the Contracting Agency publicly opens and reads the bids.

23
24 ***Award Date***

25 The date of the formal decision of the Contracting Agency to accept the
26 lowest responsible and responsive bidder for the Work.

27
28 ***Contract Execution Date***

29 The date the Contracting Agency officially binds the Agency to the Contract.

30
31 ***Notice to Proceed Date***

32 The date stated in the Notice to Proceed on which the Contract time begins.

33
34 ***Substantial Completion Date***

35 The day the Engineer determines the Contracting Agency has full and
36 unrestricted use and benefit of the facilities, both from the operational and
37 safety standpoint, any remaining traffic disruptions will be rare and brief, and
38 only minor incidental work, replacement of temporary substitute facilities,
39 plant establishment periods or correction or repair remains for the Physical
40 Completion of the total Contract.

SPECIAL PROVISIONS - Continued

Physical Completion Date

The day all of the Work is physically completed on the project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.

Completion Date

The day all the Work specified in the Contract is completed and all the obligations of the Contractor under the Contract are fulfilled by the Contractor. All documentation required by the Contract and required by law must be furnished by the Contractor before establishment of this date.

Final Acceptance Date

The date on which the Contracting Agency accepts the Work as complete.

The following definitions in Section 1-01.3 are replaced and revised to read:

(*****)

Award

The formal decision of the Contracting Agency to accept the most responsible and responsive Bidder for the Work.

Contracting Agency

Agency of Government that is responsible for the execution and administration of the Contract. "Contracting Agency" refers to the Tulalip Tribes of Washington.

Engineer

The Contracting Agency's representative who administers the construction program for the Contracting Agency.

Inspector

The Contracting Agency's representative who inspects Contract performance in detail.

Laboratory

The laboratories of the Contracting Agency, or other laboratories the Contracting Agency authorizes to test Work, soils, and materials.

Project Engineer

The Engineer's representative who directly supervises the engineering and administration of a construction project.

Section 1-01.3 is supplemented with the following:

(*****)

All references to "final contract voucher certification" shall be interpreted to mean the final payment form established by the Contracting Agency.

SPECIAL PROVISIONS - Continued

1 The venue of all causes of action arising from the advertisement, award, execution,
2 and performance of the contract shall be specified by the Contracting Agency.

Additive

4 A supplemental unit of work or group of bid items, identified separately in the Bid
5 Proposal, which may, at the discretion of the Contracting Agency, be awarded in
6 addition to the base bid.

Alternate

8 One of two or more units of work or groups of bid items, identified separately in the
9 Bid Proposal, from which the Contracting Agency may make a choice between
10 different methods or material of construction for performing the same work.

Alternative Dispute Resolution

12 A method of resolving disputes other than arbitration or litigation.

Business Day

14 A business day is any day from Monday through Friday, except holidays as listed
15 in Section 1-08.5.

Construction Manager

17 The individual or firm responsible for providing administration, management and
18 related services as required to coordinate the Project, coordinate the Contractors
19 and provide other services identified in the Contract Documents.

Contract Time

21 The period of time established by the terms and conditions of the contract within
22 which the work must be completed.

Indian/Native American

23 The term "Indian or Native American" shall mean any person who is a member of
24 a federally recognized Indian tribe, and recognized as an Indian by the United
25 States, pursuant to its trust responsibility to American Indians.

Liquidated Damages

27 The sum established in the Contract Documents as the predetermined measure of
28 damages to be paid to the Tulalip Tribes of Washington due to the Contractor's
29 failure to complete the Work, or portions thereof, within stipulated times.

NAOB or NAOB's

31 Native American Owned Business that has been certified by Tulalip TERO.

Notice of Intent to Award

33 The notice provided to the apparently successful Bidder stating that upon
34 satisfactory compliance with all conditions precedent for execution of the Contract

SPECIAL PROVISIONS - Continued

1 Form, within the time specified, the Tulalip Tribes of Washington intends to execute
2 a Contract Form with the Bidder.

Notice to Proceed

4 A notice provided by the Tulalip Tribes of Washington to the Contractor authorizing
5 the Contractor to proceed with the Work and establishing the date for completion
6 of the Work.
7

Preference/Preferred Employee/Hiring

8
9 The term "Preferred Employee" shall mean a person entitled to a preference in
10 employment under Ordinance No. 60, who must be hired in tier preference order
11 before a non-Indian person, whenever an opening is available.
12

Regulations/Ordinance

13
14 Shall mean the regulations implementing any Ordinance adopted by the Tulalip
15 Tribal Employment Rights Commission and the Tulalip Board of Directors, which
16 is a law within the boundaries of the reservation.
17

Request for Information (RFI)

18
19 Written request from the Contractor to the Engineer, through the Construction
20 Manager, seeking an interpretation or clarification of the Contract Documents.
21

Reservation

22
23 Shall mean all lands and waters within the exterior boundaries of the Tulalip Indian
24 Reservation or within the jurisdiction of the Tulalip Tribes.
25

Samples

26
27 Physical examples furnished by the Contractor to illustrate materials, equipment
28 or workmanship and establish Standards by which the Work will be judged.
29

Surety

30
31 A person or entity providing a Bid Guaranty or a Bond to a Bidder or a Contractor,
32 as applicable, to indemnify the Tulalip Tribes of Washington against all direct and
33 consequential damages suffered by failure of the Bidder to enter into the Contract,
34 or by failure of the Contractor to perform the Contract and to pay all lawful claims
35 of Subcontractors, Material Suppliers and laborers, as applicable.
36

TERO

37
38 Means the "Tulalip Tribal Employment Rights Office".
39

Traffic

40
41 Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists,
42 wheelchairs, and equestrian traffic.
43

Tribal Court

44
45 Shall mean the tribal court of the Tulalip Tribes of Washington.
46

SPECIAL PROVISIONS - Continued

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

Tribal Entity

Means all subsidiary entities of the Tulalip Tribes and is intended to be as broad and encompassing as possible to ensure the Ordinance's coverage over all employment and contract activities within the Nation's jurisdiction and the term shall be so interpreted by the Commission and the Courts.

Tribal Preference

Is the process of hiring applicants which gives tribal members a higher preference in employment on tribally funded projects or tribal entities.

Tribal Member

The term "Tribal Member" and the term "Member" shall mean any person who is an enrolled member of the Tulalip Tribes.

Tribe

The term "Tribe" or "Tribes" shall mean the Tulalip Tribes of Washington, unless the context clearly indicates otherwise.

Tulalip TERO Code

The Tulalip "Tribal Employment Rights Office" (TERO) Code is the Tribal law which establishes the methods and procedures to give preference to Indians in hiring promotions, training and all other aspects of employment contracting and subcontracting and specifies the methods and procedures for providing preference to certified NAOB's when contracting and subcontracting for goods or services on the Reservation.

Tulalip Tribes

See Tulalip Tribes of Washington.

Tulalip Tribes of Washington

The Owner or entity for whom the Project is being constructed.

Tulalip Tribes' Project Manager

The Tulalip Tribes' representative who provides management and oversight for the project.

Unit Price

An amount stated in the bid as the price per unit of measurement for materials or services described in the Contract Documents, which cost shall include overhead, profit and any other expense for the Work.

Veteran

Shall mean a person who has been honorably discharged from the active, reserve, or National Guard armed forces of the United States including Army, Navy, Marines, Air Force, and Coast Guard.

SPECIAL PROVISIONS - Continued

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44

Warranty

Legally enforceable assurance of the quality and performance of materials and equipment.

Waters of the Tribes

"Waters of the Tribes" means all streams, lakes, ponds, wetlands, salt waters, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon:

The lands, wetlands, and tidelands within the boundaries of the Tulalip Tribes Reservation; or

All lands, wetlands or tidelands outside the exterior boundaries of the Reservation which are held in fee by the Tulalip Tribes or held in trust by the United States government for the benefit of the Tulalip Tribes or its individual members; and

All lands, wetlands, or tidelands deemed Tulalip "Indian Country" as defined in 18 U.S.C. 1151.

Work

The construction and services required by the Contract Documents, to include all labor, materials, equipment and services performed or provided by the Contractor for the Project.

1-02 BID PROCEDURES AND CONDITIONS

1-02.1 Prequalification of Bidders

(*****)

Delete this Section. See Instructions to Bidders.

1-02.2 Plans and Specifications

(*****)

Delete this Section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed is contained in the Call for Bids (Advertisement for Bids) for the work.

After award of the Contract, plans and specifications will be issued to the Contractor at no cost as detailed below:

SPECIAL PROVISIONS - Continued

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39

To Prime Contractor	No. of Sets	Basis of Distribution
Plans (11" x 17")	7	Furnished automatically upon award.
Contract Provisions	7	Furnished automatically upon award.

Additional plans and Contract Provisions may be obtained by the Contractor from the source stated in the Call for Bids, at the Contractor's own expense.

1-02.4 Examination of Plans, Specifications, and Site of Work

1-02.4(1) General

(December 30, 2022 APWA GSP Option B)

The first sentence of the ninth paragraph, beginning with "Prospective Bidder desiring...", is revised to read:

Prospective Bidders desiring an explanation or interpretation of the Bid Documents, shall request the explanation or interpretation in writing by close of business *** 5 *** business days preceding the bid opening to allow a written reply to reach all prospective Bidders before the submission of their Bids.

This Section is supplemented with the following:

(*****)

Contractor shall review the entire Contract to ensure that the completeness of their Proposal includes all items of Work regardless of where shown in the Contract. Bidders are cautioned that alternate sources of information (copies of the Contract obtained from third parties) are not necessarily an accurate or complete representation of the Contract. Bidders shall use such information at their own risk.

1-02.5 Proposal Forms

(*****)

Section 1-02.5 is deleted in its entirety.

1-02.6 Preparation of Proposal

The first paragraph of Section 1-02.6 is revised to read:

(*****)

The Contracting Agency will accept only those Proposals properly executed on the forms it provides.

SPECIAL PROVISIONS - Continued

1
2 The third paragraph of Section 1-02.6 is revised to read:

3
4 (*****)

5 In the space provided on the Bid Proposal Form, the Bidder shall confirm that all
6 Addenda have been received.

7
8 (*****)

9 The fourth paragraph of Section 1-02.6 is deleted in its entirety.

10
11 **1-02.7 Bid Deposit**

12 (*****)

13
14 Section 1-02.7 is deleted in its entirety.

15
16 **1-02.9 Delivery of Proposal**

17 (*****)

18
19 Section 1-02.9 is deleted in its entirety.

20
21 **1-02.10 Withdrawing, Revising, or Supplementing Proposal**

22 (*****)

23
24 Section 1-02.10 is deleted in its entirety.

25
26 **1-02.11 Combination and Multiple Proposals**

27 (*****)

28
29 Section 1-02.11 is deleted in its entirety.

30
31 **1-02.12 Public Opening of Proposals**

32 (*****)

33
34 Section 1-02.12 is deleted in its entirety.

35
36 **1-02.15 Pre-Award Information**

37 (December 30, 2022 APWA GSP)

38
39 Revise this section to read:

40
41 Before awarding any contract, the Contracting Agency may require one or more of
42 these items or actions of the apparent lowest responsible bidder:

- 43
44 1. A complete statement of the origin, composition, and manufacture of any or all
45 materials to be used,
46
47 2. Samples of these materials for quality and fitness tests,

SPECIAL PROVISIONS - Continued

- 1
2 3. A progress schedule (in a form the Contracting Agency requires) showing the
3 order of and time required for the various phases of the work,
4
5 4. A breakdown of costs assigned to any bid item,
6
7 5. Attendance at a conference with the Engineer or representatives of the
8 Engineer,
9
10 6. Obtain, and furnish a copy of, a business license to do business in the city or
11 county where the work is located.
12
13 7. Any other information or action taken that is deemed necessary to ensure that
14 the bidder is the lowest responsible bidder.

15 **1-03 AWARD AND EXECUTION OF CONTRACT**

16
17 **1-03.1 Consideration of Bids**
18 **(*****)**

19
20 Section 1-03.1 is deleted in its entirety.

21
22 **1-03.2 Award of Contract**
23 **(*****)**

24
25 Section 1-03.2 is deleted in its entirety.

26
27 **1-03.3 Execution of Contract**
28 **(*****)**

29
30 Section 1-03.3 is deleted in its entirety.

31
32 **1-03.4 Contract Bond**
33 **(*****)**

34
35 Section 1-03.4 is deleted in its entirety.

36
37 **1-03.5 Failure to Execute Contract**
38 **(*****)**

39
40 Section 1-03.5 is deleted in its entirety.

41

SPECIAL PROVISIONS - Continued

1 **1-03.6 Return of Bid Deposit**

2 (*****)

3
4 Section 1-03.6 is deleted in its entirety.

5
6 **1-03.7 Judicial Review**

7 (*****)

8
9 Section 1-03.7 is deleted in its entirety.

10 **1-04 SCOPE OF THE WORK**

11
12 **1-04.2 Coordination of Contract Documents, Plans, Special Provisions,**
13 **Specifications, and Addenda**

14
15 The second paragraph of Section 1-04.2 is revised as follows:

16
17 (*****)

18 Any inconsistency in the parts of the contract shall be resolved by following this
19 order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

- 20
21 1. Addenda.
22 2. Proposal Form.
23 3. Special Provisions and APWA General Special Provisions.
24 4. General Provisions.
25 5. Contract Plans.
26 6. Snohomish County Engineering Design and Development Standards.
27 7. WSDOT Standard Specifications for Road, Bridge and Municipal Construction.
28 8. WSDOT Standard Plans for Road, Bridge, and Municipal Construction.

29
30 **1-04.4 Changes**

31
32 **1-04.4(1) Minor Changes**

33
34 Revise the first paragraph to read:

35
36 (*****)

37 Payments or credits for changes amounting to \$50,000 or less for any one item
38 may be made under the Bid Item "Minor Change". At the discretion of the
39 Contracting Agency, this procedure for Minor Changes may be used in lieu of the
40 more formal procedure as outlined in Section 1-04.4, Changes.

41

SPECIAL PROVISIONS - Continued

1 **1-04.6 Variation in Estimated Quantities**

2 (December 30, 2022 APWA GSP, Option B)

3
4 Revise the first paragraph to read:

5
6 Payment to the Contractor will be made only for the actual quantities of Work
7 performed and accepted in conformance with the Contract. When the accepted
8 quantity of Work performed under a unit item varies from the original Proposal
9 quantity, payment will be at the unit Contract price for all Work unless the total
10 accepted quantity of the Contract item, adjusted to exclude added or deleted
11 amounts included in change orders accepted by both parties, increases or
12 decreases by more than 25 percent from the original Proposal quantity, and if the
13 total extended bid price for that item at time of award is equal to or greater than
14 10 percent of the total contract price at time of award. In that case, payment for
15 contract work may be adjusted as described herein:

16 17 **1-04.11 Final Cleanup**

18
19 Section 1-04.11 is supplemented with the following:

20
21 (*****)

22 The Contractor shall not leave open excavation outside of working hours unless
23 the area of excavation is secured within fencing.

24 **1-05 CONTROL OF WORK**

25 26 **1-05.4 Conformity With and Deviations from Plans and Stakes**

27
28 (*****)

29 ***Contractor Surveying – Utilities***

30 Copies of the Contracting Agency provided primary survey control data are
31 available for the bidder's inspection at the office of the Engineer.

32
33 The Contractor shall be responsible for setting, maintaining, and resetting all
34 alignment stakes and grades necessary for the construction of the utilities,
35 including water mains, gravity sanitary sewers, and all related appurtenances.
36 Except for the survey control data to be furnished by the Contracting Agency,
37 calculations, surveying, and measuring required for setting and maintaining the
38 necessary lines and grades shall be the Contractor's responsibility.

39
40 The Contractor shall inform the Engineer when monuments are discovered that
41 were not identified in the Plans and construction activity may disturb or damage
42 the monuments. All monuments noted on the plans "DO NOT DISTURB" shall be
43 protected throughout the length of the project or be replaced at the Contractor's
44 expense.

SPECIAL PROVISIONS - Continued

1
2 Detailed survey records shall be maintained, including a description of the work
3 performed on each shift, the methods utilized, and the control points used. The
4 record shall be adequate to allow the survey to be reproduced. A copy of each
5 day's record shall be provided to the Engineer within 3 working days after the end
6 of the shift.

7
8 The meaning of words and terms used in this provision shall be as listed in
9 *Definitions of Surveying and Associated Terms* current edition, published by the
10 American Congress on Surveying and Mapping and the American Society of Civil
11 Engineers.

12
13 The survey work shall include but not be limited to the following:

- 14 1. Verify the primary horizontal and vertical control furnished by the
15 Contracting Agency, and expand into secondary control by adding stakes
16 and hubs as well as additional survey control needed for the project. Provide
17 descriptions of secondary control to the Contracting Agency. The
18 description shall include coordinates and elevations of all secondary control
19 points.
- 20 2. Establish water main by placing hubs, stakes, or marks on offsets to
21 centerline at all fittings, valves, and at points on the alignments spaced no
22 further than 50 feet. Place hubs, stakes, or marks on offsets as necessary
23 to adequately locate and construct all fire hydrants, meter boxes/vaults,
24 air/vacuum relief valves, casings, and other appurtenances shown on the
25 Plans.
- 26 3. Establish the horizontal and vertical location of all gravity sanitary sewer
27 features, placing offset stakes to all manhole structures, service laterals,
28 pipes, and casings at a horizontal interval not greater than 25 feet.
- 29 4. Establish intermediate elevation benchmarks as needed to check work
30 throughout the project.
- 31 5. For all other types of water and sanitary sewer construction included in this
32 provision, provide staking and layout as necessary to adequately locate,
33 construct, and check the specific construction activity.

34
35 The Contractor shall provide the Contracting Agency copies of any calculations
36 and staking data when requested by the Engineer.

37
38 To facilitate the establishment of these lines and elevations, the Contracting
39 Agency will provide the Contractor with primary survey control information
40 consisting of descriptions of two primary control points used for the horizontal and

SPECIAL PROVISIONS - Continued

1 vertical control. Primary control points will be described by reference to the project
2 alignment and the coordinate system and elevation datum utilized by the project.

3
4 The Contractor shall ensure a surveying accuracy within the following tolerances:

5
6

	<u>Vertical</u>	<u>Horizontal</u>
7 Water Main		
8 and Appurtenances	±0.10 feet	±0.10 feet
9 Gravity Sewer		
10 and Appurtenances	±0.01 feet	±0.10 feet

11

12 The Contracting Agency may spot check the Contractor's surveying. These spot
13 checks will not change the requirements for normal checking by the Contractor.

14
15 When staking gravity sewer alignment and grade, the Contractor shall perform
16 independent checks from different secondary control to ensure that the points
17 staked are within the specified survey accuracy tolerances.

18
19 The Contractor shall calculate coordinates for the alignment. The Contracting
20 Agency will verify these coordinates prior to issuing approval to the Contractor for
21 commencing with the work. The Contracting Agency will require up to 7 calendar
22 days from the date the data is received.

23
24 Contract work to be performed using Contractor-provided stakes shall not begin
25 until the stakes are approved by the Contracting Agency. Such approval shall not
26 relieve the Contractor of responsibility for the accuracy of the stakes.

27
28 Stakes shall be marked in accordance with Standard Plan A10.10. When stakes
29 are needed that are not described in the Plans, those stakes shall be marked at
30 no additional cost to the Contracting Agency as ordered by the Engineer.

31
32 Where Utility Surveying is included in a specific schedule of work in the Bid
33 Proposal and Roadway Surveying is required for restoration of trenching or other
34 disturbed areas as a result of the utility work, then the Contractor shall provide
35 stakes and markings as needed to complete the work to the tolerances and as
36 described above under Roadway Surveying.

37
38 **Payment**

39 All costs of any work under Section 1-05.4 shall be incidental to and included in
40 the unit contract prices for the various items in the Proposal, unless designated
41 otherwise in these Special Provisions.

SPECIAL PROVISIONS - Continued

1 **1-05.7 Removal of Defective and Unauthorized Work**
2 (October 1, 2005 APWA GSP)

3 Supplement this section with the following:

4 If the Contractor fails to remedy defective or unauthorized work within the time
5 specified in a written notice from the Engineer, or fails to perform any part of the
6 work required by the Contract Documents, the Engineer may correct and remedy
7 such work as may be identified in the written notice, with Contracting Agency
8 forces or by such other means as the Contracting Agency may deem necessary.

9 If the Contractor fails to comply with a written order to remedy what the Engineer
10 determines to be an emergency situation, the Engineer may have the defective
11 and unauthorized work corrected immediately, have the rejected work removed
12 and replaced, or have work the Contractor refuses to perform completed by using
13 Contracting Agency or other forces. An emergency situation is any situation when,
14 in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or
15 might cause serious risk of loss or damage to the public.

16 Direct or indirect costs incurred by the Contracting Agency attributable to
17 correcting and remedying defective or unauthorized work, or work the Contractor
18 failed or refused to perform, shall be paid by the Contractor. Payment will be
19 deducted by the Engineer from monies due, or to become due, the Contractor.
20 Such direct and indirect costs shall include in particular, but without limitation,
21 compensation for additional professional services required, and costs for repair
22 and replacement of work of others destroyed or damaged by correction, removal,
23 or replacement of the Contractor's unauthorized work.

24 No adjustment in contract time or compensation will be allowed because of the
25 delay in the performance of the work attributable to the exercise of the Contracting
26 Agency's rights provided by this Section.

27 The rights exercised under the provisions of this section shall not diminish the
28 Contracting Agency's right to pursue any other avenue for additional remedy or
29 damages with respect to the Contractor's failure to perform the work as required.
30

SPECIAL PROVISIONS - Continued

1 **1-05.11 Final Inspection**

2 Delete this section and replace it with the following:

3 **1-05.11 Final Inspections and Operational Testing** 4 **(*****)**

5 **1-05.11(1) Substantial Completion Date**

6 When the Contractor considers the work to be substantially complete, the
7 Contractor shall so notify the Engineer and request the Engineer establish the
8 Substantial Completion Date. The Contractor's request shall list the specific items
9 of work that remain to be completed in order to reach physical completion. The
10 Engineer will schedule an inspection of the work with the Contractor to determine
11 the status of completion. The Engineer may also establish the Substantial
12 Completion Date unilaterally.

13 If, after this inspection, the Engineer concurs with the Contractor that the work is
14 substantially complete and ready for its intended use, the Engineer, by written
15 notice to the Contractor, will set the Substantial Completion Date. If, after this
16 inspection the Engineer does not consider the work substantially complete and
17 ready for its intended use, the Engineer will, by written notice, so notify the
18 Contractor giving the reasons therefor.

19 Upon receipt of written notice concurring in or denying substantial completion,
20 whichever is applicable, the Contractor shall pursue vigorously, diligently and
21 without unauthorized interruption, the work necessary to reach Substantial and
22 Physical Completion. The Contractor shall provide the Engineer with a revised
23 schedule indicating when the Contractor expects to reach substantial and physical
24 completion of the work.

25 The above process shall be repeated until the Engineer establishes the Substantial
26 Completion Date and the Contractor considers the work physically complete and
27 ready for final inspection.

28 **1-05.11(2) Final Inspection and Physical Completion Date**

29 When the Contractor considers the work physically complete and ready for final
30 inspection, the Contractor by written notice, shall request the Engineer to schedule
31 a final inspection. The Engineer will set a date for final inspection. The Engineer
32 and the Contractor will then make a final inspection and the Engineer will notify the
33 Contractor in writing of all particulars in which the final inspection reveals the work
34 incomplete or unacceptable. The Contractor shall immediately take such corrective
35 measures as are necessary to remedy the listed deficiencies. Corrective work shall
36 be pursued vigorously, diligently, and without interruption until physical completion
37 of the listed deficiencies. This process will continue until the Engineer is satisfied
38 the listed deficiencies have been corrected.

SPECIAL PROVISIONS - Continued

1 If action to correct the listed deficiencies is not initiated within 7 days after receipt
2 of the written notice listing the deficiencies, the Engineer may, upon written notice
3 to the Contractor, take whatever steps are necessary to correct those deficiencies
4 pursuant to Section 1-05.7.

5 The Contractor will not be allowed an extension of contract time because of a delay
6 in the performance of the work attributable to the exercise of the Engineer's right
7 hereunder.

8 Upon correction of all deficiencies, the Engineer will notify the Contractor and the
9 Contracting Agency, in writing, of the date upon which the work was considered
10 physically complete. That date shall constitute the Physical Completion Date of the
11 contract, but shall not imply acceptance of the work or that all the obligations of the
12 Contractor under the contract have been fulfilled.

13 **1-05.11(3) Operational Testing**

14 It is the intent of the Contracting Agency to have at the Physical Completion Date
15 a complete and operable system. Therefore when the work involves the installation
16 of machinery or other mechanical equipment; lighting, electrical distribution and
17 control systems; irrigation systems; buildings; or other similar work it may be
18 desirable for the Engineer to have the Contractor operate and test the work for a
19 period of time after final inspection but prior to the physical completion date.
20 Whenever items of work are listed in the Contract Provisions for operational testing
21 they shall be fully tested under operating conditions for the time period specified
22 to ensure their acceptability prior to the Physical Completion Date. During and
23 following the test period, the Contractor shall correct any items of workmanship,
24 materials, or equipment which prove faulty, or that are not in first class operating
25 condition. Equipment, control instrumentation, electrical controls, meters, or other
26 devices and equipment to be tested during this period shall be tested under the
27 observation of the Engineer, so that the Engineer may determine their suitability
28 for the purpose for which they were installed. The Physical Completion Date
29 cannot be established until testing and corrections have been completed to the
30 satisfaction of the Engineer.

31 The costs for power, gas, labor, material, supplies, and everything else needed to
32 successfully complete operational testing, shall be included in the unit contract
33 prices related to the system being tested, unless specifically set forth otherwise in
34 the proposal.

35 Operational and test periods, when required by the Engineer, shall not affect a
36 manufacturer's guaranties or warranties furnished under the terms of the contract.

SPECIAL PROVISIONS - Continued

1 **1-05.12 Final Acceptance**

2

3 Add the following new section:

4

5 **1-05.12(1) One-Year Guarantee Period**

New Section

6 (March 8, 2013 APWA GSP)

7

8 The Contractor shall return to the project and repair or replace all defects in
9 workmanship and material discovered within one year after Final Acceptance of
10 the Work. The Contractor shall start work to remedy any such defects within 7
11 calendar days of receiving Contracting Agency's written notice of a defect, and
12 shall complete such work within the time stated in the Contracting Agency's notice.
13 In case of an emergency, where damage may result from delay or where loss of
14 services may result, such corrections may be made by the Contracting Agency's
15 own forces or another contractor, in which case the cost of corrections shall be
16 paid by the Contractor. In the event the Contractor does not accomplish
17 corrections within the time specified, the work will be otherwise accomplished and
18 the cost of same shall be paid by the Contractor.

19

20 When corrections of defects are made, the Contractor shall then be responsible
21 for correcting all defects in workmanship and materials in the corrected work for
22 one year after acceptance of the corrections by Contracting Agency.

23

24 This guarantee is supplemental to and does not limit or affect the requirements
25 that the Contractor's work comply with the requirements of the Contract or any
26 other legal rights or remedies of the Contracting Agency.

27

28 **1-05.13 Superintendents, Labor, and Equipment of Contractor**

29 (August 14, 2013 APWA GSP)

30

31 Delete the sixth and seventh paragraph of this Section.

32

33 Add the following new section:

34

35 **1-05.16 Water and Power**

New Section

36 (October 1, 2005 APWA GSP)

37

38 The Contractor shall make necessary arrangements, and shall bear the costs for
39 power and water necessary for the performance of the work, unless the Contract
40 includes power and water as a pay item.

41

SPECIAL PROVISIONS - Continued

1 (*****)

2 **1-05.16(1) Dechlorination**

3
4 The Contractor is responsible for proper disposal of test and flush water.
5 Chlorinated water shall not be flushed, drained, or directed into the storm drains or
6 ditch systems.

7
8 Add the following new section:

9
10 **1-05.18 Record Drawings**

New Section

11 (March 8, 2013 APWA GSP)

12
13 The Contractor shall maintain one set of full size plans for Record Drawings,
14 updated with clear and accurate red-lined field revisions on a daily basis, and
15 within 2 business days after receipt of information that a change in Work has
16 occurred. The Contractor shall not conceal any work until the required information
17 is recorded.

18
19 This Record Drawing set shall be used for this purpose alone, shall be kept
20 separate from other Plan sheets, and shall be clearly marked as Record Drawings.
21 These Record Drawings shall be kept on site at the Contractor's field office, and
22 shall be available for review by the Contracting Agency at all times. The Contractor
23 shall bring the Record Drawings to each progress meeting for review.

24
25 The preparation and upkeep of the Record Drawings is to be the assigned
26 responsibility of a single, experienced, and qualified individual. The quality of the
27 Record Drawings, in terms of accuracy, clarity, and completeness, is to be
28 adequate to allow the Contracting Agency to modify the computer-aided drafting
29 (CAD) Contract Drawings to produce a complete set of Record Drawings for the
30 Contracting Agency without further investigative effort by the Contracting Agency.

31
32 The Record Drawing markups shall document all changes in the Work, both
33 concealed and visible. Items that must be shown on the markups include but are
34 not limited to:

- 35
- 36 • Actual dimensions, arrangement, and materials used when different than
 - 37 shown in the Plans.
 - 38
 - 39 • Changes made by Change Order or Field Order.
 - 40
 - 41 • Changes made by the Contractor.
 - 42
 - 43 • Accurate locations of storm sewer, sanitary sewer, water mains and other
 - 44 water appurtenances, structures, conduits, light standards, vaults, width of
 - 45 roadways, sidewalks, landscaping areas, building footprints, channelization
 - 46 and pavement markings, etc. Include pipe invert elevations, top of castings
 - 47 (manholes, inlets, etc.).

SPECIAL PROVISIONS - Continued

1 If the Contract calls for the Contracting Agency to do all surveying and staking, the
2 Contracting Agency will provide the elevations at the tolerances the Contracting
3 Agency requires for the Record Drawings.

4
5 When the Contract calls for the Contractor to do the surveying/staking, the
6 applicable tolerance limits include, but are not limited to the following:

	<u>Vertical</u>	<u>Horizontal</u>
As-built sanitary & storm invert and grate elevations	±0.01 foot	±0.01 foot
As-built monumentation	±0.001 foot	±0.001 foot
As-built waterlines, inverts, valves, hydrants	±0.10 foot	±0.10 foot
As-built ponds/swales/water features	±0.10 foot	±0.10 foot
As-built buildings (fin. Floor elev.)	±0.01 foot	±0.10 foot
As-built gas lines, power, TV, Tel, Com	±0.10 foot	±0.10 foot
As-built signs, signals, etc.	N/A	±0.10 foot

7
8 Making Entries on the Record Drawings:

- 9
- 10 • Use erasable colored pencil (not ink) for all markings on the Record
11 Drawings, conforming to the following color code:
 - 12 ➤ Additions - Red
 - 13 ➤ Deletions - Green
 - 14 ➤ Comments - Blue
 - 15 ➤ Dimensions - Graphite
 - 16
 - 17 • Provide the applicable reference for all entries, such as the change order
18 number, the request for information (RFI) number, or the approved shop
19 drawing number.
 - 20
 - 21 • Date all entries.
 - 22
 - 23 • Clearly identify all items in the entry with notes similar to those in the
24 Contract Drawings (such as pipe symbols, centerline elevations, materials,
25 pipe joint abbreviations, etc.).
 - 26

27 The Contractor shall certify on the Record Drawings that said drawings are an
28 accurate depiction of built conditions, and in conformance with the requirements
29 detailed above. The Contractor shall submit final Record Drawings to the
30 Contracting Agency. Contracting Agency acceptance of the Record Drawings is
31 one of the requirements for achieving Physical Completion.

SPECIAL PROVISIONS - Continued

1 Payment will be made for the following bid item:
2

Record Drawings (Minimum Bid \$ ***2,000***)	Lump Sum
---	----------

3
4 Payment for this item will be made on a prorated monthly basis for work completed
5 in accordance with this section up to 75% of the lump sum bid. The final 25% of
6 the lump sum item will be paid upon submittal and approval of the completed
7 Record Drawings set prepared in conformance with these Special Provisions.

8
9 A minimum bid amount has been entered in the Bid Proposal for this item. The
10 Contractor must bid at least that amount.

11 **1-06 CONTROL OF MATERIAL**

12
13 Add the following new section:

14
15 (*****)

16 **1-06.7 Shop Drawings and Submittals**

New Section

17
18 **1-06.7(1) General**

19
20 Shop drawing and submittal review by the Owner or Owner’s representative will
21 be limited to general design requirements only, and shall not relieve the Contractor
22 from responsibility for errors or omissions or responsibility for consequences due
23 to deviations from the Contract Documents. No changes may be made in any
24 submittal after it has been reviewed except with written notice and approval from
25 the Owner.

26
27 The Contractor shall review each submittal and provide approval in writing or by
28 stamping, with a statement indicating that he has reviewed and approved the
29 submittal, verified dimensional information, materials, catalog numbers, and
30 similar data, confirmed that specified criteria has been met, and acknowledges that
31 the product, method, or information will function as intended.

32
33 Shop drawing and submittal data for each item shall contain sufficient information
34 on each item to determine if it is in compliance with the contract requirements.

35
36 The Owner will provide review services for a first and second review of each
37 submittal item free from charge to the Contractor. The cost to provide additional
38 reviews shall be charged to the Contractor by withholding the appropriate amounts
39 from each progress payment.

40
41 Shop drawing and submittal items that have been installed in the work but have
42 not been approved through the review process shall be removed, and an approved

SPECIAL PROVISIONS - Continued

1 product shall be furnished, all at the Contractor's expense. Under no
2 circumstances shall payment be made to the Contractor for materials not approved
3 by the submittal process.
4

5 **1-06.7(2) Required Information**
6

7 Each submittal shall be submitted within 10 working days after contract execution
8 to the Engineer.

9 Shop drawings and submittals shall be submitted electronically and shall contain
10 the following information for all items:

- 11 1. Project Name.
- 12 2. Contractor.
- 13 3. Engineer.
- 14 4. Owner.
- 15 5. Applicable specification and drawing reference.
- 16 6. A stamp showing that the Contractor has checked the material or equipment
17 for conformance with the contract requirements, coordination with other
18 work on the job, and dimensional suitability.
- 19 7. A blank space for the Engineer to place a 3-inch by 4-inch review stamp.
- 20 8. Dimensions and weights.
- 21 9. Catalog information.
- 22 10. Manufacturer's specifications.
- 23 11. Special handling instructions.
- 24 12. Maintenance requirements.
- 25 13. Wiring and control diagrams.
- 26 14. List of contract exceptions.
- 27 15. Other information as required by the Engineer.
- 28 16. Installation and Operating Instructions.
29

SPECIAL PROVISIONS - Continued

1-06.7(3) Review Schedule

Shop drawings and submittals will be reviewed as promptly as possible and transmitted to the Contractor no later than 15 working days after receipt by the Engineer. The Contractor shall revise and resubmit previously rejected submittals as necessary to obtain acceptance. Delays caused by the need for resubmittal shall not be a basis for an extension of contract time or delay damages. Two sets of shop drawings or one electronic response will be returned to the Contractor after review.

1-06.7(4) Substitutions

Any product or construction method that does not meet these specifications will be considered a substitution. Substitutions must be approved prior to installation or use on this project, as specified below.

1-06.7(4)A After Contract Execution

Within 10 working days after the date of the Notice of Award of Contract, Owner will consider formal requests from Contractor for substitution of product in place of those specified. Contractor shall submit two copies of request for substitution. Data shall include the necessary change in construction methods, including a detailed description of proposed method and related drawings illustrating methods. An itemized comparison of proposed substitution with product or method shall be provided.

In making a request for substitution, Contractor represents that he has personally investigated the proposed product or method and has determined that it is equal or superior to, in all respects, the product specified. All substitutions shall be reviewed and approved by the Tribes prior to incorporation into the project. Upon review and acceptance by the Owner, Contractor shall coordinate installation of accepted substitutions into the work, making changes that may be required for work to be completed. Contractor waives all claims for additional costs related to substitutions that consequently become apparent.

1-06.7(4)B Equivalent Materials

Mention of equipment or materials by brand name and/or model number is occasionally made in order to establish a basis of quality for certain items of material, equipment, or processes. Such mention is intended to include products of other manufacturers that will meet the design standards of the product mentioned.

If the Contractor desires to use products other than those specified under this “or approved equivalent” provision, he shall obtain the approval of the Owner and the Engineer before entering an order therefore. All substitutions or products to be

SPECIAL PROVISIONS - Continued

1 used under the “or approved equivalent” provision shall be reviewed and approved
2 by the Tribes prior to incorporation into the project.

3
4 Wherever mention is made of a specific manufacturer, such mentions shall be
5 treated as if the phrase “or approved equivalent” appears thereafter whether or not
6 in fact it does. The terms “or equal” and/or “or approved equivalent” shall be
7 considered synonymous.

8
9 Cost of all work under this section shall be included in the lump sum contract bid
10 item of “Mobilization”.

11 **1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC**

12
13 **1-07.1 Laws to be Observed**

14
15 The first three paragraphs of Section 1-07.1 are revised to read:

16
17 (*****)

18 The Contractor shall always comply with all Federal, State, Tribal, or local laws,
19 ordinances, and regulations that affect Work under the Contract. The Contractor
20 shall indemnify, defend, and save harmless The Tulalip Tribes (including its Board
21 of Directors and all other officers and employees) and the State (including the
22 Governor, Commission, Secretary, and any agents, officers, and employees)
23 against any claims that may arise because the Contractor (or any employee of the
24 Contractor or Subcontractor or material person) violated a legal requirement.

25
26 The Contractor shall be responsible to immediately report to the Engineer any
27 deviation from the contract provisions pertaining to environmental compliance,
28 including but not limited to spills, unauthorized fill in waters of the Tribes including
29 wetlands, unauthorized fill in waters of the State including wetlands, water quality
30 standards, noise, air quality, etc.

31
32 The Contractor shall be responsible for the safety of all workers and shall comply
33 with all appropriate state safety and health standards, codes, rules, and
34 regulations, including, but not limited to, those promulgated under the Washington
35 Industry Safety and Health Act RCW 49.17 (WISHA) and as set forth in Title 296
36 WAC (Department of Labor and Industries). In particular, the Contractor’s attention
37 is drawn to the requirements of WAC 296.800 which requires employers to provide
38 a safe workplace. More specifically, WAC 296.800.11025 prohibits alcohol and
39 narcotics from the workplace. The Contractor shall likewise be obligated to comply
40 with all federal safety and health standards, codes, rules, and regulations that may
41 be applicable to the Contract Work.

SPECIAL PROVISIONS - Continued

1 Section 1-07.1 is supplemented with the following:

2
3 (*****)

4 **Indian Preference and Tribal Ordinances**

5 This project is located on the Tulalip Indian Reservation. It is the Contractor's
6 responsibility to comply with all applicable Tribal laws, codes, ordinances, and
7 regulations. The Contractor shall comply with them in accordance with
8 Section 1-07.1.

9
10 Tribal Employment Rights Ordinances (TEROs), may utilize a variety of tools to
11 encourage Indian employment. These tools may include, but are not limited to,
12 TERO fees, Indian hiring preference, Indian-owned business subcontracting
13 preference and/or an Indian training requirement. Other requirements may be a
14 Tribal business license, a required compliance plan, and/or employee registration
15 requirements. Every tribe is different and each may be willing to work cooperatively
16 with the Contractor to develop a strategy that works for both parties. For specific
17 details, the Contractor should contact The Tulalip Tribes' TERO Department at
18 6406 Marine Drive, Tulalip, Washington 98271, Office (360) 716-4747 or
19 Facsimile (360) 716-0249. <http://www.tulaliptero.com/>.

20
21 The Tulalip Tribes of Washington has the sovereign authority over the lands of the
22 Tulalip Indian Reservation and has the authority to enact and enforce its laws,
23 ordinances, codes, and regulations. The Contractor shall comply and cooperate
24 with the Tribes and its representatives. The costs related to such compliance shall
25 be borne solely by the Contractor, who is advised to contact the tribal
26 representative listed above, prior to submitting a bid, to assess the impact of
27 compliance on the project.

28
29 Although Indian preference can be compelled and mandated by the Contracting
30 Agency, there is no limitation whereby voluntary Contractor or Subcontractor
31 initiated preferences are given, if otherwise lawful. 41 CFR 60-1.5(a)7 provides as
32 follows:

33
34 Work on or near Indian reservations: It shall not be a violation of the equal
35 opportunity clause for a construction or non-construction Contractor to extend a
36 publicly announced preference in employment to Indians living on or near an Indian
37 reservation in connection with employment opportunities on or near an Indian
38 reservation. The use of the word near would include all that area where a person
39 seeking employment could reasonably be expected to commute to and from in the
40 course of a work day. Contractors or Subcontractors extending such a preference
41 shall not, however, discriminate among Indians on the basis of religion, sex, or
42 tribal affiliation, and the use of such a preference shall not excuse a Contractor
43 from complying with the other requirements as contained in the August 25, 1981
44 Department of Labor, Office of Federal Contract Compliance Programs,
45 Government Contractors Affirmative Actions Requirements.

SPECIAL PROVISIONS - Continued

TERO Participation shall be evaluated as follows:

Counting Tulalip Tribal Member Native American Owned Business or Native American Owned Business Participation.

When a Tulalip Tribal Member NAOB or NAOB participates in a contract, only the value of the work actually performed by the Tulalip Tribal Member NAOB or NAOB will be counted towards the Tulalip Tribal Member NAOB or NAOB subcontracting requirement.

1. Count the entire amount of the portion of the contract that is performed by the Tulalip Tribal-owned or Indian-owned enterprise or organization's own forces. Include the cost of supplies and materials obtained by the Tulalip Tribal Member NAOB or NAOB for the work of the contract, including supplies purchased or equipment leased by the Tulalip Tribal Member NAOB or NAOB (except supplies and equipment the lower-tiered Tulalip Tribal Member NAOB or NAOB purchases or leases from the Prime Contractor or its affiliates, unless the Prime Contractor is also a Tulalip Tribal Member NAOB or NAOB). Work performed by a Tulalip Tribal Member NAOB or NAOB, utilizing resources of the Prime Contractor or its affiliates will not be counted toward Tulalip Tribal-owned or Indian-owned enterprise or organization goals. In very rare situations, a Tulalip Tribal Member NAOB or NAOB may utilize equipment and or personnel from a non-Tulalip Tribal Member NAOB or NAOB other than the Prime Contractor or its affiliates. Should this situation arise, the arrangement must be short-term and must have prior written approval from the Contracting Agency. The arrangement must not erode a Tulalip Tribal Member NAOB or NAOB's ability to perform a Commercially Useful Function (see discussion of CUF, below).
2. Count the entire amount of fees or commissions charged by a Tulalip Tribal Member NAOB or NAOB firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance.
3. When a Tulalip Tribal Member NAOB or NAOB subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward the Tulalip Tribal Member NAOB or NAOB requirement only if the Tulalip Tribal Member NAOB or NAOB's lower-tier subcontractor is also a Tulalip Tribal Member NAOB or NAOB. Work that a Tulalip Tribal Member NAOB or NAOB subcontracts to a non-Tulalip Tribal Member NAOB or NAOB does not count toward the Tulalip Tribal Member NAOB or NAOB contracting requirement.
4. When a non-Tulalip Tribal Member NAOB or NAOB subcontractor further subcontracts to a lower-tier subcontractor or supplier who is a certified Tulalip Tribal-owned or Indian-owned enterprise or organization, then that portion of the work further subcontracted may be counted toward the Tulalip Tribal Member NAOB or NAOB requirement, so long as it is a distinct clearly defined

SPECIAL PROVISIONS - Continued

1 portion of the work of the subcontract that the Tulalip Tribal Member NAOB or
2 NAOB is performing in a commercially useful function with its own forces.
3

- 4 5. Continue to count the work subcontracted to a decertified Tulalip Tribal-owned
5 or Indian-owned enterprise or organization after decertification, provided the
6 prime contractor had a subcontract in force before the decertification and the
7 prime contractor's actions did not influence the Tulalip Tribal-owned or Indian-
8 owned enterprise's or organization's decertification.
9

Commercially Useful Function

10 Payments to a Tulalip Tribal Member NAOB or NAOB will count toward Tulalip
11 Tribal Member NAOB or NAOB requirements only if the Tulalip Tribal Member
12 NAOB or NAOB is performing a commercially useful function on the contract.
13
14

- 15 1. A Tulalip Tribal Member NAOB or NAOB performs a commercially useful
16 function when it is responsible for execution of the work of the contract and is
17 carrying out its responsibilities by actually performing, managing, and
18 supervising the work involved. To perform a commercially useful function, the
19 Tulalip Tribal Member NAOB or NAOB must also be responsible, with respect
20 to materials and supplies used on the contract, for negotiating price,
21 determining quality and quantity, ordering the material, installing (if applicable),
22 and paying for the material itself. Two-party checks are not allowed.
23
24 2. A Tulalip Tribal Member NAOB or NAOB does not perform a commercially
25 useful function if its role is limited to that of an extra participant in a transaction,
26 contract, or project through which funds are passed in order to obtain the
27 appearance of Tulalip Tribal Member NAOB or NAOB participation.
28

Trucking

29 Use the following factors in determining whether a Tulalip Tribal Member NAOB or
30 NAOB trucking company is performing a commercially useful function:
31
32

- 33 1. The Tulalip Tribal Member NAOB or NAOB must be responsible for the
34 management and supervision of the entire trucking operation for which it is
35 listed on a particular contract.
36
37 2. The Tulalip Tribal Member NAOB or NAOB must itself own and, with its own
38 workforce, operate at least one fully licensed, insured, and operational truck
39 used on the contract.
40
41 3. The Tulalip Tribal Member NAOB or NAOB receives credit only for the total
42 value of the transportation services it provides on the contract using trucks it
43 owns or leases, licenses, insures, and operates with drivers it employs.
44
45 4. For purposes of this paragraph, a lease must indicate that the Tulalip Tribal-
46 owned or Indian-owned enterprise or organization has exclusive use of and

SPECIAL PROVISIONS - Continued

- 1 control over the truck. This does not preclude the leased truck from working for
2 others during the term of the lease with the consent of the Tulalip Tribal Member
3 NAOB or NAOB, so long as the lease gives the Tulalip Tribal Member NAOB
4 or NAOB absolute priority for use of the leased truck. Leased trucks must
5 display the name and identification number of the Tulalip Tribal Member NAOB
6 or NAOB.
7
- 8 5. The Tulalip Tribal Member NAOB or NAOB may lease trucks from another
9 Tulalip Tribal Member NAOB or NAOB and may enter an agreement with an
10 owner-operator who is certified as a Tulalip Tribal Member NAOB or NAOB.
11 The Tulalip Tribal Member NAOB or NAOB who leases trucks from another
12 Tulalip Tribal Member NAOB or NAOB or employs a Tulalip Tribal Member
13 NAOB or NAOB owner-operator receives credit for the total value of the
14 transportation services the lessee Tulalip Tribal Member NAOB or NAOB
15 provides on the contract.
16
- 17 6. The Tulalip Tribal Member NAOB or NAOB may also lease trucks from a non-
18 Tulalip Tribal Member NAOB or NAOB and may enter an agreement with an
19 owner-operator who is a non-Tulalip Tribal Member NAOB or NAOB. The
20 Tulalip Tribal Member NAOB or NAOB who leases trucks from a non-Tulalip
21 Tribal Member NAOB or NAOB or employs a non-Tulalip Tribal Member NAOB
22 or NAOB owner-operator is entitled to credit only for the fee or commission it
23 receives as a result of the lease arrangement. The Tulalip Tribal Member NAOB
24 or NAOB does not receive credit for the total value of the transportation
25 services provided by the lessee, since these services are not provided by a
26 Tulalip Tribal Member NAOB or NAOB.
27
- 28 7. In any lease or owner-operator situation, as described in paragraphs 5 and 6
29 above, the following rules shall apply:
30 a. A written lease/rental agreement on all trucks leased or rented, showing
31 the true ownership and the terms of the rental must be submitted and
32 approved by the Contracting Agency prior to the beginning of the work.
33 The agreement must show the lessor's name, trucks to be leased, and
34 agreed-upon amount or method of payment (hour, ton, or per load). All
35 lease agreements shall be for a long-term relationship, rather than for
36 the individual project. Does not apply to owner-operator arrangements.
37 b. Only the vehicle (not the operator) is leased or rented. Does not apply
38 to owner-operator arrangements.
39
- 40 8. In order for Tulalip Tribal Member NAOB or NAOB project requirements to be
41 credited, Tulalip Tribal Member NAOB or NAOB trucking firms must be covered
42 by a subcontract or a written agreement approved by the Contracting Agency
43 prior to performing its portion of the work.
44

45 Expenditures Paid to Other Tulalip Tribal Member Native American-Owned
46 Business or Native American-Owned Business.

SPECIAL PROVISIONS - Continued

1 Expenditures paid to other Tulalip Tribal Member Native American-Owned
2 Business or Native American-Owned Business for materials or supplies may be
3 counted toward Tulalip Tribal Member NAOB or NAOB requirements as provided
4 in the following:

Manufacturer

1. Counting

8 If the materials or supplies are obtained from a Tulalip Tribal Member NAOB or
9 NAOB manufacturer, count 100 percent of the cost of the materials or supplies
10 toward Tulalip Tribal Member NAOB or NAOB requirements.

2. Definition

13 To be a manufacturer, the firm operates or maintains a factory or establishment
14 that produces, on the premises, the materials, supplies, articles, or equipment
15 required under the contract and of the general character described by the
16 specifications.

18 3. In order to receive credit as a Tulalip Tribal Member NAOB or NAOB
19 manufacturer, the firm must have received an “on-site” review and been
20 approved by TERO to operate as a Tulalip Tribal Member NAOB or NAOB
21 manufacturing firm prior to bid opening. Use of a Tulalip Tribal Member NAOB
22 or NAOB manufacturer that has not received an on-site review and approval by
23 TERO prior to bid opening will result in the bid being declared non-responsive,
24 unless the contribution of the manufacturer was not necessary to meet the
25 project requirement. To schedule a review, the manufacturing firm must submit
26 a written request to TERO and may not receive credit towards Tulalip Tribal
27 Member NAOB or NAOB participation until the completion of the review. Once
28 a firm’s manufacturing process has been approved in writing, it is not necessary
29 to resubmit the firm for approval unless the manufacturing process has
30 substantially changed. Information on approved manufacturers (per contract)
31 may be obtained from TERO.

Regular Dealer

1. Counting

35 If the materials or supplies are purchased from a Tulalip Tribal Member NAOB
36 or NAOB regular dealer, 10 percent of the cost of the materials or supplies will
37 count toward Tulalip Tribal Member NAOB or NAOB requirements.

2. Definition

40 a) To be a regular dealer, the firm must own, operate, or maintain a store,
41 warehouse, or other establishment in which the materials, supplies, articles or
42 equipment of the general character described by the specifications and
43 required under the contract are bought, kept in stock, and regularly sold or
44 leased to the public in the usual course of business. It must also be an
45 established, regular business that engages, as its principal business and under
46 its own name, in the purchase and sale or lease of the products in question.

SPECIAL PROVISIONS - Continued

1 b) A person may be a regular dealer in such bulk items as petroleum products,
2 steel, cement, gravel, stone, or asphalt without owning, operating, or
3 maintaining a place of business, as provided elsewhere in this specification,
4 if the person both owns and operates distribution equipment for the products.
5 Any supplementing of regular dealers' own distribution equipment shall be
6 by a long-term lease agreement and not on an ad hoc or contract-by-contract
7 basis.

8
9 c) Packagers, brokers, manufacturers' representatives, or other persons who
10 arrange or expedite transactions are not regular dealers.

11
12 Regular dealer status is granted on a contract-by-contract basis. To obtain regular
13 dealer status, a formal written request must be made by the interested supplier
14 (potential regular dealer) to TERO. TERO must be in receipt of this request at least
15 7 calendar days prior to bid opening. Included in the request shall be a full
16 description of the project, type of business operated by the Tulalip Tribal Member
17 NAOB or NAOB, and the manner the Tulalip Tribal Member NAOB or NAOB will
18 operate as a regular dealer on the specific contract. Once the request is reviewed
19 by TERO, the Tulalip Tribal Member NAOB or NAOB supplier requesting it will be
20 notified in writing whether regular dealer status was approved. Tulalip Tribal Member
21 Native American Owned Business or Native American Owned Business that are
22 approved as regular dealers for a contract (whenever possible) will be listed on the
23 Tulalip Tribes TERO's Native American Owned Business (NAOB) registry Internet
24 Homepage at: www.tulaliptero.com/Home/Contractors/NAOBRegistryReport.aspx
25 prior to the time of bid opening. In addition, bidders may request confirmation of the
26 Tulalip Tribal Member NAOB or NAOB supplier's approval to operate as a regular
27 dealer on a specific contract by writing the TERO Department, 6406 Marine Drive,
28 Tulalip, WA 98271 or by phone at (360) 716-4747. Use of a supplier that has not
29 received approval as a regular dealer prior to bid opening will result in the bid being
30 declared nonresponsive, unless the contribution of the regular dealer was not
31 necessary to meet the project requirement.

Materials or Supplies Purchased from a Tulalip Tribal Member NAOB or NAOB

32
33 With respect to materials or supplies purchased from a Tulalip Tribal Member
34 NAOB or NAOB who is neither a manufacturer nor a regular dealer, the entire
35 amount of fees or commissions charged for assistance in the procurement of the
36 materials and supplies, or fees or transportation charges for the delivery of
37 materials or supplies required on a job site may be counted toward the goal. No
38 part of the cost of the materials and supplies themselves may be applied toward
39 Tulalip Tribal Member NAOB or NAOB requirements.

Eligibility

40 To be eligible for award of the contract, the bidder must properly complete and
41 submit the List of Tulalip Tribal Member NAOB Subcontractor(s) and or Supplier(s)
42 and the List of NAOB Subcontractor(s) and or Supplier(s) which have been made

SPECIAL PROVISIONS - Continued

1 a part of the bidder's Bid Proposal Form. The above named lists contained in
2 Section IV of the Bid Proposal Form will be used by the Contracting Agency in
3 determining whether the bidder's bid proposal satisfies the Tulalip Tribal Member
4 NAOB and NAOB requirements.
5

6 For each Tulalip Tribal Member NAOB and NAOB described in the Bid Proposal
7 Form Section IV – List of Lower-Tiered Subcontractor(s) and or Supplier(s), the
8 bidder shall state the project role and work item in which that Tulalip Tribal Member
9 NAOB or NAOB will participate. A general description of the work to be performed
10 by the Tulalip Tribal Member NAOB or NAOB shall be included. If a Tulalip Tribal
11 Member NAOB or NAOB will perform a partial item of work, the bidder shall also
12 include a dollar amount for each partial item of work. The bidder shall also include
13 a dollar amount for each Tulalip Tribal Member NAOB or NAOB listed in Section IV
14 that will be applied towards meeting or exceeding the assigned Tulalip Tribal
15 Member NAOB and NAOB contract requirements.
16

17 In the event of arithmetic errors in completing the Bid Proposal Form Section IV,
18 the amount listed to be applied towards the requirement for each Tulalip Tribal
19 Member NAOB and NAOB shall govern and the Tulalip Tribal Member NAOB and
20 NAOB total shall be adjusted accordingly. The information and commitments
21 demonstrated in the Bid Proposal Form Section IV shall become a condition of any
22 subsequent award of a contract to that bidder and the Bid Proposal Form itself
23 shall become a part of the subsequent contract.
24

25 The Contracting Agency shall consider as non-responsive and shall reject any bid
26 proposal submitted that does not contain a Completed Section IV of the Bid
27 Proposal Form or contains a List of Tulalip Tribal Member NAOB Subcontractor(s)
28 and or Supplier(s) and or a List of NAOB Subcontractor(s) and or Supplier(s) that
29 fails to demonstrate that the bidder will meet the Tulalip Tribal Member NAOB or
30 NAOB contract requirements.
31

32 **Procedures Between Award and Execution**

33 After award of the contract, the successful bidder shall provide the additional
34 information described below. A failure to comply shall result in the forfeiture of the
35 bidder's proposal bond or deposit.
36

37 The Contracting Agency will notify the successful bidder of the award of the
38 contract in writing and will include a request for a further breakdown of the Tulalip
39 Tribal Member NAOB and NAOB information. After award and prior to execution
40 of the contract, the bidder shall submit the following items:
41

- 42 1. Additional information for all successful Tulalip Tribal Member NAOB and NAOB
43 as shown on the List of Tulalip Tribal Member NAOB Subcontractor(s) and or

SPECIAL PROVISIONS - Continued

1 Supplier(s) and the List of NAOB Subcontractor(s) and or Supplier(s) included in
2 Section IV of the Bid Proposal Form:
3

- 4 • Correct business name, federal employee identification number (if
5 available), and mailing address.
- 6 • List of all bid items assigned to each successful Tulalip Tribal Member
7 NAOB, or NAOB, including unit prices and extensions.
- 8 • Description of partial items (if any) to be sublet to each successful Tulalip
9 Tribal Member NAOB or NAOB specifying the distinct elements of work
10 under each item to be performed by the Tulalip Tribal Member NAOB or
11 NAOB and including the dollar value of the Tulalip Tribal Member NAOB or
12 NAOB.
- 13 • Submit evidence of certification issued by the Tulalip TERO Offices for the
14 Tulalip Tribal Member NAOB or NAOB.

15
16 Total amounts shown for each Tulalip Tribal Member NAOB and NAOB shall not
17 be less than the amount shown on the Bid Proposal Form Section IV. This
18 submittal, showing the Tulalip Tribal Member NAOB and NAOB work item
19 breakdown, when accepted by the Contracting Agency and resulting in contract
20 execution, shall become a part of the contract. A breakdown that does not conform
21 to the List of Tulalip Tribal Member NAOB Subcontractor(s) and or Supplier(s) and
22 the List of NAOB Subcontractor(s) and or Supplier(s) included in Section IV of the
23 Bid Proposal Form or that demonstrates a lesser amount of Tulalip Tribal Member
24 NAOB or NAOB participation than that included in the Certification will be returned
25 for correction. The contract will not be executed by the Contracting Agency until a
26 satisfactory breakdown has been submitted.
27

28 **Procedures After Execution Reporting**

29 The Contractor shall submit a “Quarterly Report of Amounts Credited as Tulalip
30 Tribal Member NAOB and NAOB Participation” (actual payments) on a quarterly
31 basis for any calendar quarter in which Tulalip Tribal Member NAOB and NAOB
32 work is accomplished or upon completion of the project, as appropriate. The
33 quarterly reports are due on January 20th, April 20th, July 20th, and October 20th
34 of each year. The dollars reported will be in accordance with the “Counting Tulalip
35 Tribal Member Native American-Owned Business or Native American-Owned
36 Business Participation” section of this specification.
37

38 In the event that the payments to a Tulalip Tribal Member NAOB or NAOB have
39 been made by an entity other than the Prime Contractor (as in the case of a lower-
40 tier subcontractor or supplier), then the Prime Contractor shall obtain the quarterly
41 report, including the signed affidavit, from the paying entity and submit the report
42 to the Contracting Agency.
43

SPECIAL PROVISIONS - Continued

Damages for Noncompliance

When a Contractor violates the Tulalip Tribal Member NAOB and or NAOB provisions of the contract, the Contracting Agency may incur damages. These damages consist of additional administrative costs including, but not limited to, the inspection, supervision, engineering, compliance, and legal staff time and expenses necessary for investigating, reporting, and correcting violations. Damages attributable to a Contractor's violations of the Tulalip Tribal Member NAOB and or NAOB provisions may be deducted from progress payments due to the Contractor or from retainage withheld by the Contracting Agency as allowed by the Contract documents. Before any money is withheld, the Contractor will be provided with a notice of the basis of the violations and an opportunity to respond.

The Contracting Agency's decision to recover damages for a Tulalip Tribal Member NAOB and or NAOB provision violation does not limit its ability to suspend or revoke the Contractor's pre-qualification status or seek other remedies as allowed by tribal, federal or State law. In appropriate circumstances, the Contracting Agency may also refer the Contractor to Tribal, State, or Federal authorities for additional sanctions.

1-07.2 State Taxes

Section 1-07.2, including its sub-sections, in its entirety is revised to read:

(*****)

The Tulalip Tribes of Washington is a federally recognized Indian Tribal government with a constitution and bylaws approved by the United States Secretary of the Interior. See: 65 Federal Register 13298, 13301 (March 13, 2000). As a recognized tribal government, The Tulalip Tribes of Washington and all of its governmental agencies, is a tax-exempt entity.

See: 26 USC § 7871, and Washington Administrative Code Excise Tax Rule 192 (WAC 458-20-192). The project is tax exempt from all Sales and/or Use Taxes for all materials and supplies incorporated in construction of the work that become a permanent part of the Project and some B&O taxes. Upon request, a Tax Exemption form may be obtained from The Tulalip Tribes.

The Washington State Department of Revenue has issued special rules on the State Sales Tax. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts.

SPECIAL PROVISIONS - Continued

1 The Contractor shall not collect from the Contracting Agency, retail sales tax on
2 the full contract price. The Contracting Agency will not add this sales tax to each
3 payment to the Contractor.

4
5 **1-07.3 Fire Prevention and Merchantable Timber Requirements**

6
7 **1-07.3(1) Fire Prevention Control and Countermeasures Plan**

8
9 Section 1-07.3(1) is revised to read:

10
11 (*****)

12 When the Work is in or next to Tribal, State, or Federal forests, the Contractor shall
13 know and observe all laws and rules (Tribal, State, or Federal) on fire prevention
14 and sanitation. The Contractor shall ask the Tulalip Tribes' Forestry Manager and
15 local forest supervisor or regional manager, as applicable, to outline requirements
16 for permits, sanitation, firefighting equipment, and burning.

17
18 The Contractor shall take all reasonable precautions to prevent and suppress
19 forest fires. In case of forest fire, the Contractor shall immediately notify The Tulalip
20 Tribes and the nearest forest headquarters of its exact site and shall make every
21 effort to suppress it. If needed, the Contractor shall require his/her employees and
22 those of any Subcontractor to work under forest officials in fire control efforts.

23
24 **1-07.3(2) Merchantable Timber Requirements**

25
26 Section 1-07.3(2) is revised to read:

27
28 (*****)

29 When merchantable timber is to be cut, the Contractor shall obtain a permit from
30 The Tulalip Tribes Forestry Department or the appropriate regional office of the
31 State Department of Natural Resources and comply fully with the laws and
32 regulations of The Tulalip Tribes and the State Forest Practices Act, as applicable.

33
34 No person may export from the United States, or sell, trade, exchange, or
35 otherwise convey to any other person for the purpose of export from the United
36 States, timber originating from the project.

37
38 The Contractor shall comply with the Forest Resources Conservation and
39 Shortage Relief Amendments Act of 1993 (Public Law 103-45) and the Washington
40 State Log Export Regulations (WAC 240-15).

SPECIAL PROVISIONS - Continued

1 **1-07.5 Environmental Regulations**

2
3 This Section is supplemented with the following:

4
5 (September 20, 2010 WSDOT GSP, Option 1.)

6 **Environmental Commitments**

7 The following Provisions summarize the requirements, in addition to those required
8 elsewhere in the Contract, imposed upon the Contracting Agency by the various
9 documents referenced in the Special Provision PERMITS AND LICENSES.
10 Throughout the work, the Contractor shall comply with the following requirements:

11
12 (*****)

13 The intentional bypass of stormwater from all or any portion of a stormwater
14 treatment system is prohibited without the approval of the Engineer.

15
16 No Contractor staging areas will be allowed within 100 feet of any waters of the
17 Tribes or State including wetlands.

18
19 (August 3, 2009 WSDOT GSP, Option 2)

20 **Payment**

21 All costs to comply with this special provision for the environmental commitments
22 and requirements are incidental to the contract and are the responsibility of the
23 Contractor. The Contractor shall include all related costs in the associated bid
24 prices of the contract.

25
26 **1-07.5(1) General**

27
28 The second paragraph of Section 1-07.5(1) is revised to read:

29
30 (*****)

31 The Contractor shall be responsible to immediately report to the Engineer any
32 deviation from the Contract provisions pertaining to environmental compliance,
33 including but not limited to spills, unauthorized fill in waters of the Tribes including
34 wetlands, unauthorized fill in waters of the State including wetlands, water quality
35 standards, noise, air quality, etc.

36
37 Item 3 in the third paragraph of Section 1-07.5(1) is revised to read:

38
39 (*****)

40 3. No equipment shall enter waters of the Tribes or waters of the State, except
41 as may be specified in the Contract.
42

SPECIAL PROVISIONS - Continued

1 **1-07.5(2) State Department of Fish and Wildlife**

2
3 Delete the first paragraph of Section 1-07.5(2) and replace with:

4
5 (*****)

6 In doing the Work located within the Tulalip Indian Reservation boundaries, the
7 Contractor shall follow the laws, ordinances, rules and regulations of the Tulalip
8 Tribes. Contractor shall consult with the Tulalip Tribes' Natural Resources
9 Department for specific requirements in completing the Work on the reservation.
10 In doing the Work located outside the boundaries of the Tulalip Tribes Reservation,
11 the Contractor shall:

12
13 **1-07.5(3) State Department of Ecology**

14
15 The first paragraph of Section 1-07.5(3) is revised to read:

16
17 (*****)

18 In doing the Work located within the Tulalip Indian Reservation boundaries, the
19 Contractor shall follow the laws, ordinances, rules and regulations of the Tulalip
20 Tribes. Contractor shall consult with the Tulalip Tribes' Natural Resources
21 Department for specific requirements in completing the Work on the reservation.
22 In doing the Work located outside the boundaries of the Tulalip Tribes Reservation,
23 the Contractor shall:

24
25 Items 4 and 8 in the first paragraph of Section 1-07.5(3) are revised to read:

26
27 (*****)

28 4. Perform Work in such a manner that all materials and substances not
29 specifically identified in the Contract documents to be placed in the water do
30 not enter waters of the Tribes or waters of the State, including wetlands. These
31 include, but are not limited to, petroleum products, hydraulic fluid, fresh
32 concrete, concrete wastewater, process wastewater, slurry materials, and
33 waste from shaft drilling, sediments, sediment-laden water, chemicals, paint,
34 solvents, or other toxic or deleterious materials.

35
36 8. Notify the Engineer and Ecology Department immediately should oil,
37 chemicals, or sewage spill into waters of the Tribes or waters of the State.

38
39 **1-07.5(4) Air Quality**

40
41 The first paragraph of Section 1-07.5(4) is revised to read:

42
43 (*****)

44 The Contractor shall comply with all rules of local air pollution authorities. If there
45 are none, air-quality rules of the State Department of Ecology shall govern the
46 Work located outside the boundaries of the Tulalip Tribes Reservation. The
47 Contractor shall consult with the Tulalip Tribes' Natural Resources Department to

SPECIAL PROVISIONS - Continued

1 ascertain the applicable laws, ordinances, rules, and regulations governing the
2 Work on the Tulalip Indian Reservation.

3
4 **1-07.6 Permit and Licenses**

5
6 Section 1-07.6 is supplemented with the following:

7
8 (*****)

9 The Contracting Agency will obtain the below-listed permit(s) for this project:

10
11 Tulalip Tribes Grading Permit

12
13 **1-07.7 Load Limits**

14 (March 13, 1995 WSDOT GSP, Option 6)

15
16 This Section is supplemented with the following:

17
18 If the sources of materials provided by the Contractor necessitate hauling over
19 roads other than State Highways, the Contractor shall, at the Contractor's
20 expense, make all arrangements for the use of the haul routes.

21
22 **1-07.11 Requirements for Nondiscrimination**

23
24 **1-07.11(2) Contractual Requirements**

25
26 **1-07.11(2)A Equal Employment Opportunity (EEO) Responsibilities**

27
28 Under the heading "Title VI Responsibilities" of Section 1-07.11(2)A, items 4, 5, and 6 in
29 the first paragraph are revised to read:

30
31 (*****)

32 4. **Information and Reports** – The Contractor shall provide all information and
33 reports required by the Regulations or directives issued pursuant thereto, and
34 shall permit access to its books, records, accounts, other sources of
35 information, and its facilities as may be determined by The Tulalip Tribes to be
36 pertinent to ascertain compliance with such Regulations, orders and
37 instructions. Where any information required of a Contractor is in the exclusive
38 possession of another who fails or refuses to furnish this information, the
39 Contractor shall so certify to The Tulalip Tribes as appropriate and shall set
40 forth what efforts it has made to obtain the information.

41
42 5. **Sanctions for Noncompliance** – In the event of the Contractor's
43 noncompliance with the nondiscrimination provisions of this Contract, The

SPECIAL PROVISIONS - Continued

1 Tulalip Tribes shall impose such Contract sanctions as it may determine to be
2 appropriate, including, but not limited to:

- 3
4 a. Withholding of payments to the Contractor under the Contract until the
5 Contractor complies, and/or;
6 b. Cancellation, termination, or suspension of the Contract, in whole
7 or in part.

8
9 **6. Incorporation of Provisions** – The Contractor shall include the provisions of
10 paragraphs (1) through (5) in every subcontract, including procurement of
11 materials and leases of equipment, unless exempt by the Regulations, or
12 directives issued pursuant thereto. The Contractor shall take such action with
13 respect to any Subcontractor or procurement as The Tulalip Tribes may direct
14 as a means of enforcing such provisions including sanctions
15 for noncompliance.

16
17 Provided, however, that in the event a Contractor becomes involved in, or is
18 threatened with, litigation with a Subcontractor or supplier as a result of such
19 direction, the Contractor may request The Tulalip Tribes to enter into such
20 litigation to protect the interest of The Tulalip Tribes.

21
22 **1-07.11(10) Records and Reports**

23
24 **1-07.11(10)B Required Records and Retention**

25
26 The first paragraph of Section 1-07.11(10)B is revised to read:

27
28 (*****)

29 All records must be retained by the Contractor for a period of 3 years following
30 acceptance of the Contract Work. All records shall be available at reasonable times
31 and places for inspection by authorized representatives of The Tulalip Tribes.

32
33 **1-07.12 Federal Agency Inspection**

34
35 Section 1-07.12 is supplemented with the following:

36
37 (*****)

38 **Indian Preference and Tribal Ordinances**

39
40 This project is located on the Tulalip Indian Reservation. It is the Contractor's
41 responsibility to contact the person and/or office listed in this special provision to
42 determine whether any tribal laws or taxes apply. If the tribal laws and taxes do
43 apply, the Contractor shall comply with them in accordance with Section 1-07.1.

44
45 Tribal Employment Rights Ordinances (TEROs), may utilize a variety of tools to
46 encourage Indian employment. These tools may include, but are not limited to,

SPECIAL PROVISIONS - Continued

1 TERO fees, Indian hiring preference, Indian-owned business subcontracting
2 preference and/or an Indian training requirement. Other requirements may be a
3 Tribal business license, a required compliance plan and/or employee registration
4 requirements. Every tribe is different and each may be willing to work cooperatively
5 with the Contractor to develop a strategy that works for both parties. For specific
6 details, the Contractor should contact the Tulalip Tribes.
7

8 The state recognizes the sovereign authority of the tribe and supports the tribe's
9 efforts to enforce its rightful and legal ordinances and expects the Contractor to
10 comply and cooperate with the tribe. The costs related to such compliance shall
11 be borne solely by the Contractor, who is advised to contact the tribal
12 representative listed above, prior to submitting a bid, to assess the impact of
13 compliance on the project.
14

15 Although Indian preference cannot be compelled or mandated by the Contracting
16 Agency, there is no limitation on voluntary Contractor or Subcontractor initiated
17 preferences if otherwise lawful. 41 CFR 60-1.5(a)7 provides as follows:
18

19 Work on or near Indian reservations – It shall not be a violation of the equal
20 opportunity clause for a construction or non-construction Contractor to extend
21 a publicly announced preference in employment to Indians living on or near an
22 Indian reservation in connection with employment opportunities on or near an
23 Indian reservation. The use of the word *near* would include all that area where
24 a person seeking employment could reasonably be expected to commute to
25 and from in the course of a work day. Contractors or Subcontractors extending
26 such a preference shall not, however, discriminate among Indians on the basis
27 of religion, sex, or tribal affiliation, and the use of such a preference shall not
28 excuse a Contractor from complying with the other requirements as contained
29 in the August 25, 1981 Department of Labor, Office of Federal Contract
30 Compliance Programs, Government Contractors Affirmative Actions
31 Requirements.
32

1-07.14 Responsibility for Damage

34 Section 1-07.14 is revised to read:
35
36

37 (*****)

38 The Tulalip Tribes, its Board of Directors, and all officers and employees, will not
39 be responsible in any manner: for any loss or damage that may happen to the
40 Work or any part; for any loss of material or damage to any of the materials or other
41 things used or employed in the performance of Work; for injury to or death of any
42 persons, either workers or the public; or for damage to the public for any cause
43 which might have been prevented by the Contractor, or the workers, or anyone
44 employed by the Contractor.
45

SPECIAL PROVISIONS - Continued

1 The Contractor shall be responsible for any liability imposed by law for injuries to,
2 or the death of, any persons or damages to property resulting from any cause
3 whatsoever during the performance of the Work, or before final acceptance.
4

5 Subject to the limitations in this section, and RCW 4.24.115, the Contractor shall
6 indemnify, defend, and save harmless The Tulalip Tribes, its Board of Directors
7 from all claims, suits, or actions brought for injuries to, or death of, any persons or
8 damages resulting from construction of the Work or in consequence of any
9 negligence or breach of Contract regarding the Work, the use of any improper
10 materials in the Work, caused in whole or in part by any act or omission by the
11 Contractor or the agents or employees of the Contractor during performance or at
12 any time before final acceptance. In addition to any remedy authorized by law, The
13 Tulalip Tribes may retain so much of the money due the Contractor as deemed
14 necessary by The Tulalip Tribes to ensure the defense and indemnification
15 obligations of this section until disposition has been made of such suits or claims.
16

17 Subject to the limitations in this section and RCW 4.24.115, the Contractor shall
18 indemnify, defend, and save harmless any county, city, or region, its officers, and
19 employees connected with the Work, within the limits of which county, city, or
20 region the Work is being performed, all in the same manner and to the same extent
21 as provided above for the protection of The Tulalip Tribes, its Directors, officers,
22 and employees. The Tulalip Tribes may retain so much of the money due the
23 Contractor as deemed necessary by the Tulalip Tribes to ensure the defense and
24 indemnification obligations of this section pending disposition of suits or claims for
25 damages brought against the county, city, or district.
26

27 Pursuant to RCW 4.24.115, if such claims, suits, or actions result from the
28 concurrent negligence of (a) the indemnitee or the indemnitee's agents or
29 employees and (b) the Contractor or the Contractor's agent or employees, the
30 indemnity provisions provided in the preceding paragraphs of this section shall be
31 valid and enforceable only to the extent of the Contractor's negligence or the
32 negligence of its agents and employees.
33

34 The Contractor shall bear sole responsibility for damage to completed portions of
35 the project and to property located off the project caused by erosion, siltation,
36 runoff, or other related items during the construction of the project. The Contractor
37 shall also bear sole responsibility for any pollution of rivers, streams, ground water,
38 or other waters that may occur as a result of construction operations.
39

40 The Contractor shall exercise all necessary precautions throughout the life of the
41 Project to prevent pollution, erosion, siltation, and damage to property.
42

43 The Contracting Agency will forward to the Contractor all claims filed against the
44 Tulalip Tribes according to RCW 4.92.100 that are deemed to have arisen in
45 relation to the Contractor's Work or activities under this Contract, and, in the
46 opinion of the Contracting Agency, are subject to the defense, indemnity, and

SPECIAL PROVISIONS - Continued

1 insurance provisions of the Contract. Claims will be deemed tendered to the
2 Contractor and insurer, who has named The Tulalip Tribes and the State as a
3 named insured or an additional insured under the Contract's insurance provisions,
4 once the claim has been forwarded via certified mail to the Contractor. The
5 Contractor shall be responsible to provide a copy of the claim to the Contractor's
6 designated insurance agent who has obtained/met the Contract's insurance
7 provision requirements.

8
9 Within 60 calendar days following the date a claim is sent by the Contracting
10 Agency to the Contractor, the Contractor shall notify the Claimant, The Tulalip
11 Tribes of the following:

- 12
13 a. Whether the claim is allowed or is denied in whole or in part, and, if so, the
14 specific reasons for the denial of the individual claim, and if not denied in
15 full, when payment has been or will be made to the claimant(s) for the
16 portion of the claim that is allowed, or
17 b. If resolution negotiations are continuing. In this event, status updates will be
18 reported no longer than every 60 calendar days until the claim is resolved
19 or a lawsuit is filed.

20
21 If the Contractor fails to provide the above notification within 60 calendar days,
22 then the Contractor shall yield to the Contracting Agency sole and exclusive
23 discretion to allow all or part of the claim on behalf of the Contractor, and **the**
24 **Contractor shall be deemed to have WAIVED any and all defenses,**
25 **objections, or other avoidances to the Contracting Agency's allowance of**
26 **the claim, or the amount allowed by the Contracting Agency,** under common
27 law, constitution, statute, or the Contract and the Contract. If all or part of a claim
28 is allowed, the Contracting Agency will notify the Contractor via certified mail that
29 it has allowed all or part of the claim and make appropriate payments to the
30 claimant(s) with Tribal funds.

31
32 Payments of Tribal funds by the Contracting Agency to claimant(s) under this
33 section will be made on behalf of the Contractor and at the expense of the
34 Contractor, and the Contractor shall be unconditionally obligated to reimburse the
35 Contracting Agency for the "total reimbursement amount", which is the sum of the
36 amount paid to the claimant(s), plus all costs incurred by the Contracting Agency
37 in evaluating the circumstances surrounding the claim, the allowance of the claim,
38 the amount due to the claimant, and all other direct and indirect costs for the
39 Contracting Agency's administration and payment of the claim on the Contractor's
40 behalf. The Contracting Agency will be authorized to withhold the total
41 reimbursement amount from amounts due the Contractor, or, if no further
42 payments are to be made to the Contractor under the Contract, the Contractor
43 shall directly reimburse the Contracting Agency for the amounts paid within 30
44 days of the date notice that the claim was allowed was sent to the Contractor. In
45 the event reimbursement from the Contractor is not received by the Contracting
46 Agency within 30 days, interest shall accrue on the total reimbursement amount

SPECIAL PROVISIONS - Continued

1 owing at the rate of 12 percent per annum calculated at a daily rate from the date
2 the Contractor was notified that the claim was allowed. The Contracting Agency's
3 costs to enforce recovery of these amounts are additive to the amounts owing.
4

5 The Contractor specifically assumes all potential liability for actions brought by
6 employees of the Contractor and, solely for the purpose of enforcing the defense
7 and indemnification obligations set forth in Section 1-07.14, the Contractor
8 specifically waives any immunity granted under the State industrial insurance law,
9 Title 51 RCW. This waiver has been mutually negotiated by the parties. The
10 Contractor shall similarly require that each Subcontractor it retains in connection
11 with the project comply with the terms of this paragraph, waive any immunity
12 granted under Title 51 RCW, and assume all liability for actions brought by
13 employees of the Subcontractor.
14

1-07.15 Temporary Water Pollution Prevention

15
16
17 Section 1-07.15 is supplemented with the following:

18
19 (*****)

20 In an effort to prevent, control, and stop water pollution and erosion within the
21 project, thereby protecting the Work, nearby land, streams, and other bodies of
22 water, the Contractor shall perform all Work in strict accordance with all Tribal,
23 Federal, State, and local laws and regulations governing waters of the Tribes and
24 waters of the State, as well as permits acquired for the project.
25

26 The Contractor shall perform all temporary water pollution/erosion control
27 measures shown in the Plans, specified in the Special Provisions, proposed by the
28 Contractor and approved by the Engineer, or ordered by the Engineer as Work
29 proceeds.
30

1-07.15(1) Spill Prevention, Control, and Countermeasures Plan

31
32
33 Under the heading "SPCC Plan Element Requirements" of Section 1-07.15(1), item 2 of
34 the first paragraph is revised to read:

35
36 (*****)

37 **Spill Reporting:** List the names and telephone numbers of the Tribal, Federal,
38 State, and local agencies the Contractor shall notify in the event of a spill.
39

SPECIAL PROVISIONS - Continued

1 **1-07.16 Protection and Restoration of Property**

2
3 **1-07.16(2) Vegetation Protection and Restoration**

4
5 Section 1-07.16(2) is supplemented with the following:

6
7 (August 2, 2010 WSDOT GSP, Option 1)

8 Vegetation and soil protection zones for trees shall extend out from the trunk to a
9 distance of 1 foot radius for each inch of trunk diameter at breast height.

10
11 Vegetation and soil protection zones for shrubs shall extend out from the stems at
12 ground level to twice the radius of the shrub.

13
14 Vegetation and soil protection zones for herbaceous vegetation shall extend to
15 encompass the diameter of the plant as measured from the outer edge of the plant.

16
17 **1-07.16(4) Archaeological and Historical Objects**

18
19 Section 1-07.16(4) is supplemented with the following:

20
21 (*****)

22 A. The Contractor is advised that construction work within this Contract is subject
23 to the provisions of state and federal laws and regulations pertaining to the
24 preservation of archaeological and cultural resources.

25
26 B. In the event that any archaeological or cultural resources are uncovered during
27 the course of construction, all work shall cease until an inspection and
28 evaluation of the site has been made by an archaeologist to insure that
29 archaeological data are properly preserved. The Contractor shall notify the
30 Owner who will in turn notify the proper authorities.

31
32 C. The Contractor should anticipate reasonable delays while the archaeological
33 investigations are being made and should make allowance for these delays
34 under the appropriate bid items. No additional compensation will be allowed.

35
36 D. The Owner will determine if provisions for a cultural resources representative
37 to be on site during construction activities is required, at no cost to the
38 Contractor.

SPECIAL PROVISIONS - Continued

1-07.17 Utilities and Similar Facilities

Section 1-07.17 is supplemented with the following:

(April 2, 2007 WSDOT GSP Option 1)

Locations and dimensions shown in the Plans for existing facilities are in accordance with available information obtained without uncovering, measuring, or other verification.

The following addresses and telephone numbers of utility companies known or suspected of having facilities within the project limits are supplied for the Contractor's convenience:

Telephone/Communication: Zippy Fiber Tim Rennick 13293 Smokey Point Blvd Marysville, WA 98271 Office (425) 263-4025 Cell (425) 210-0333	Telephone/Communication: Tulalip Technology Data Services Kevin Jones 2601 88th St. NE Quil Ceda Village, WA 98271 (360) 716-5150
Telephone/Communication: Salish Networks Richard Brown 2601 88th St. NE Quil Ceda Village, WA 98271 Office (360) 716-3277	Telephone/Communication: Verizon OSP Engineering Tim Rennick PO Box 1003 Everett, WA 98200 Office: (425) 327-8118
Water: Tulalip Utilities Mike Leslie 3015 Mission Beach Rd Tulalip, WA 98271 Office: (360) 716-4840	Power: Snohomish Co. Public Utilities District (PUD) Kallen Shaughnessy-Randall 210 East Division Street Arlington, WA 98223 (425) 783-4370

This Section is supplemented with the following:

(*****)

The temporary removal, replacement, bracing or holding of any utility or structure, including power and telephone poles, required to accomplish the work, shall be included in the contract price(s) for the bid item(s) involved unless otherwise stated in the Plans or these Special Provisions. Resetting existing structures to grade shall be performed by the Contractor.

The Contractor is responsible for coordinating with the utility companies and providing adequate advance notice to avoid schedule delays.

SPECIAL PROVISIONS - Continued

1-07.17(2) Utility Construction, Removal, or Relocation by Others

Delete this section in its entirety and replace with the following:

(*****)

Any authorized agent of the Contracting Agency or utility owners may enter the property and/or right-of-way to repair, rearrange, alter, or connect their equipment. The Contractor shall cooperate with such effort and shall avoid creating delays or hindrances to those doing the work. As needed, the Contractor shall arrange to coordinate work schedules.

The Contractor shall carry out the Work in a way that will minimize interference and delay for all forces involved. Any costs incurred prior to the utility owners anticipated completion (or if no completion is specified, within a reasonable period of time) that results from the coordination and prosecution of the Work regarding utility adjustment, relocation, replacement, or construction shall be at the Contractor's expense as provided in Section 1-05.14.

The Contractor shall coordinate all work with the various utility companies and their Contractors. The Contractor, when scheduling his work crews, shall use production rates that anticipate the need to provide block-outs and/or gaps in the driveways, curb and gutter, and/or pavement sections where existing utility structures currently exist, and then come back at a later time to construct the missing sections after the utility has been relocated or adjusted by the applicable utility. The Contractor shall assume that the utilities will not be relocated prior to construction of this project nor at his convenience during the course of construction. As such, the Contractor shall assume such, and schedule his crews and his subcontractors to remobilize to the various sites and temporarily relocate his or his subcontractor's crews to other areas of the project and complete other unaffected portions of the project in order to coordinate the relocation of the utilities with the various utility companies. There shall be no additional money or time due the Contractor for leaving gaps or for buck-out construction, remobilization, demobilization, out of sequence construction, relocation of work crews, and construction of curb, gutter, or driveway patches after the utility has been relocated. It is the intent of these Specifications that the Contractor diligently pursue other work on the site when such conflicts occur and recognize and plan for the inherent inefficiencies and impaired production rates.

Payment

All costs to comply with this Section and repair specified in this Section, unless otherwise stated, are incidental to the Contract and are the responsibility of the Contractor. The Contractor shall include all related costs in the bid prices of the Contract.

SPECIAL PROVISIONS - Continued

1 **1-07.23 Public Convenience and Safety**

2
3 This section is supplemented with the following:

4
5 (*****)
6 The following special traffic requirements shall be adhered to during all phases of
7 construction:

8
9 When constructing the utility connections, lane restrictions and traffic control
10 requirements shall be as required by the Contracting Agency, in accordance with
11 approved traffic control plans and as required in an applicable traffic control permit
12 for the work. Road closures will be limited to the hours of 9AM and 3PM Monday
13 through Thursday and 9AM to 1PM on Fridays unless otherwise approved by the
14 Contracting Agency. Road closures will require an approved detour plan. Traffic
15 control plans and detour plans shall be approved by the Contracting Agency prior
16 to submittal to Snohomish County for review and approval of an applicable traffic
17 control permit. Copies of any traffic control permits obtained shall be provided to
18 the Contracting Agency. The Contracting Agency shall maintain final approval
19 authority for all traffic control plans, detour plans and at no time shall traffic control
20 permit requirements be implemented by the Contractor without written approval to
21 do so.

22
23 A safe pedestrian access shall be provided at all times through the project area.
24 All lane closures shall be coordinated with the adjacent businesses, other
25 contractors working within the project vicinity, local transit agencies, and approved
26 by the County.

27
28 The Contractor shall notify all property owners and tenants of detours, street and
29 alley closures, or other restrictions that may interfere with access. Notification shall
30 be at least twenty four (24) hours in advance for residential property, and at least
31 forty eight (48) hours in advance for commercial property.

32
33 Emergency traffic, such as police, fire, and disaster units, shall be provided access
34 at all times. In addition, the Contractor shall coordinate Contractor activities with
35 all disposal firms and transit bus service that may be operating in the project area.

36 **1-07.23(2) Construction and Maintenance of Detours**

37
38 This section is supplemented with the following:

39
40 (*****)
41 Detour signing during any allowed road closures shall be in accordance with
42 Detour Plans, when included in the Contract Documents. When plans are not
43 included in the Contract Documents, the Contractor shall submit plans for detours
44 in accordance with the "Manual on Uniform Traffic Control Devices (MUTCD)". In
45 addition, where the Contractor believes an alternate plan will safely and adequately

SPECIAL PROVISIONS - Continued

1 maintain vehicular and pedestrian traffic, the Contractor may submit alternate
2 plans to those for traffic control and detours required by MUTCD or Contract
3 Documents. Such alternate plans must comply with the MUTCD and shall be in
4 writing and submitted to the Engineer and Snohomish County at least fifteen (15)
5 days in advance of intended use.

6
7 The Contractor shall notify the Engineer three (3) working days in advance of
8 implementation of any street closures/detours allowed under the Contract.
9 Advance notice signing shall be placed a minimum of three (3) working days prior
10 to implementation of any street closure/detour.

Pedestrian Control and Protection

11
12 When the work area encroaches upon a sidewalk, walkway, shoulder or crosswalk
13 area, special consideration must be given to pedestrian safety. Maximum effort
14 must be made to separate pedestrians from the work area. Protective barricades,
15 fencing, pathways, and bridges, together with warning and guidance devices and
16 signs, shall be utilized so that the passageway for pedestrians is safe and well
17 defined. Whenever pedestrian walkways are provided across excavations, they
18 shall be provided with suitable handrails. Footbridges shall be safe, strong, free of
19 bounce and sway, have a slip resistant coating, and be free of cracks, holes, and
20 irregularities that could cause tripping. Ramps shall be provided at the entrance
21 and exit of all raised footbridges, again to prevent tripping. Adequate illumination
22 and reflectorization shall be provided during hours of darkness. All walkways shall
23 be maintained with at least 4 feet clear width.

24
25
26 Where walks are closed by construction, an alternate walkway shall be provided,
27 preferably within the planting strip.

28
29 Where it is necessary to divert pedestrians into the roadway, jersey-style
30 barricades shall be provided to separate the pedestrian walkway from the adjacent
31 vehicular traffic lane. At no time shall pedestrians be diverted into a portion of a
32 street used concurrently by moving vehicular traffic.

33
34 At locations where adjacent alternate walkways cannot be provided, appropriate
35 signs shall be posted at the limits of construction and in advance of the closure at
36 the nearest crosswalk or intersection to divert pedestrians across the street.

1-07.23(3) Work Zone Clear Zone

37
38 This section is supplemented with the following:

39
40
41 (*****)

42 At the end of every shift the Contractor shall remove their equipment from the Work
43 Zone Clear Zone distance as shown in the table in this Section.
44

SPECIAL PROVISIONS - Continued

1 **1-07.27 No Waiver of State’s Legal Rights**

2
3 Section 1-07.27 including title is revised to read:

4
5 (*****)

6 **1-07.27 No Waiver of The Tulalip Tribes’ Legal Rights**

7
8 The Tulalip Tribes shall not be precluded or estopped by any measurement,
9 estimate, or certificate made either before or after the completion and acceptance
10 of the Work and payment therefore from showing the true amount and character
11 of the Work performed and materials furnished by the Contractor, or from showing
12 that any such measurement, estimate, or certificate is untrue or incorrectly made,
13 or that the Work or materials do not conform, in fact, to the Contract. The Tulalip
14 Tribes shall not be precluded or estopped, notwithstanding any such
15 measurement, estimate, or certificate, and payment in accordance therewith, from
16 recovering from the Contractor and the Sureties such damages as it may sustain
17 by reason of the Contractor’s failure to comply with the terms of the Contract.
18 Neither the acceptance by The Tulalip Tribes, nor any payment for the whole or
19 any part of the Work, nor any extension of time, nor any possession taken by The
20 Tulalip Tribes shall operate as a waiver of any portion of the Contract or of any
21 power herein reserved or any right to damages herein provided, or bar recovery of
22 any money wrongfully or erroneously paid to the Contractor. A waiver of any breach
23 of the Contract shall not be held to be a waiver of any other or subsequent breach.
24

25 The Contractor and The Tulalip Tribes recognize that the impact of overcharges to
26 The Tulalip Tribes by the Contractor resulting from antitrust law violations by the
27 Contractor’s suppliers or Subcontractors adversely affects The Tulalip Tribes
28 rather than the Contractor. Therefore, the Contractor agrees to assign to The
29 Tulalip Tribes any and all claims for such overcharges.

30 **1-08 PROSECUTION AND PROGRESS**

31
32 Add the following new section:

33
34 **1-08.0 Preliminary Matters**
35 (May 25, 2006 APWA GSP)

New Section

36
37 **1-08.0(1) Preconstruction Conference**
38 (July 8, 2024 APWA GSP)

39
40 Prior to the Contractor beginning the work, a preconstruction conference will be
41 held between the Contractor, the Engineer and such other interested parties as
42 may be invited. The purpose of the preconstruction conference will be:

- 43
44 1. To review the initial progress schedule;

SPECIAL PROVISIONS - Continued

- 1 2. To establish a working understanding among the various parties associated
- 2 or affected by the work;
- 3
- 4 3. To establish and review procedures for progress payment, notifications,
- 5 approvals, submittals, etc.;
- 6
- 7 4. To review DBE Requirements, Training Plans, and Apprenticeship Plans,
- 8 when applicable.
- 9
- 10 5. To establish normal working hours for the work;
- 11
- 12 6. To review safety standards and traffic control; and
- 13
- 14 7. To discuss such other related items as may be pertinent to the work.

15
16 The Contractor shall prepare and submit at the preconstruction conference the
17 following:

- 18 1. A breakdown of all lump sum items;
- 19
- 20 2. A preliminary schedule of working drawing submittals; and
- 21
- 22 3. A list of material sources for approval if applicable.
- 23

24 Add the following new section:

25
26 **1-08.0(2) Hours of Work** **New Section**
27 (*****)

28
29 Except in the case of emergency or unless otherwise approved by the Engineer,
30 the normal working hours for the Contract shall be any consecutive 8-hour period
31 between 8:00 a.m. and 5:00 p.m. Monday through Friday, exclusive of a lunch
32 break. If the Contractor desires different than the normal working hours stated
33 above, the request must be submitted in writing prior to the preconstruction
34 conference, subject to the provisions below. The working hours for the Contract
35 shall be established at or prior to the preconstruction conference.

36
37 All working hours and days are also subject to local permit and ordinance
38 conditions (such as noise ordinances).

39
40 If the Contractor wishes to deviate from the established working hours, the
41 Contractor shall submit a written request to the Engineer for consideration. This
42 request shall state what hours are being requested, and why. Requests shall be
43 submitted for review no later than *** 5 days *** prior to the day(s) the Contractor
44 is requesting to change the hours.

45

SPECIAL PROVISIONS - Continued

1 If the Contracting Agency approves such a deviation, such approval may be
2 subject to certain other conditions, which will be detailed in writing. For example:

- 3
4 1. On non-Federal aid projects, requiring the Contractor to reimburse the
5 Contracting Agency for the costs in excess of straight-time costs for
6 Contracting Agency representatives who worked during such times. (The
7 Engineer may require designated representatives to be present during the
8 work. Representatives who may be deemed necessary by the Engineer
9 include, but are not limited to: survey crews; personnel from the Contracting
10 Agency's material testing lab; inspectors; and other Contracting Agency
11 employees or third party consultants when, in the opinion of the Engineer,
12 such work necessitates their presence.)
13
- 14 2. Considering the work performed on Saturdays, Sundays, and holidays as
15 working days with regard to the contract time.
16
- 17 3. Considering multiple work shifts as multiple working days with respect to
18 contract time even though the multiple shifts occur in a single 24-hour
19 period.
20
- 21 4. If a 4-10 work schedule is requested and approved the non working day for
22 the week will be charged as a working day.
23
- 24 5. Davis Bacon wage rates apply to this Contract, all requirements must be
25 met and recorded properly on certified payroll.

26 **1-08.1 Subcontracting**

27
28 Section 1-08.1 is revised as follows:

29
30 (*****)

31 Prior to any subcontractor or lower tier subcontractor beginning work, the
32 Contractor shall submit to the Engineer a certification (WSDOT Form 420-004 EF)
33 that a written agreement between the Contractor and the subcontractor or between
34 the subcontractor and any lower tier subcontractor has been executed.
35

36 A Subcontractor or lower tier Subcontractor will not be permitted to perform any
37 work under the contract until the following documents have been completed and
38 submitted to the Engineer:

- 39
40 1. Request to Sublet Work (Form 421-012 EF), and
41
- 42 2. Contractor and Subcontractor or Lower Tier Subcontractor Certification for
43 Federal-aid Projects (Form 420-004 EF), and
44
- 45 3. An approved Tulalip Tribes TERO Compliance Plan for the Subcontractor.
46

SPECIAL PROVISIONS - Continued

1 The Contractor's records pertaining to the requirements of this Special Provision
2 shall be open to inspection or audit by representatives of the Contracting Agency
3 during the life of the contract and for a period of not less than 3 years after the date
4 of acceptance of the contract. The Contractor shall retain these records for that
5 period. The Contractor shall also guarantee that these records of all
6 Subcontractors and lower tier Subcontractors shall be available and open to similar
7 inspection or audit for the same time period.
8

9 **1-08.3 Progress Schedule**

10 Section 1-08.3 is supplemented with the following:
11

12
13 (*****)

14 The Contractor shall submit a construction schedule to the Contracting Agency
15 within 10 calendar days of award of contract. The Contracting Agency will have the
16 right to review the schedule, and must approve the schedule prior to issuing Notice
17 to Proceed.
18

19 The weekly schedule updates shall clearly identify the critical path items of the
20 work.
21

22 **1-08.4 Prosecution of Work**

23
24 Delete this Section and replace it with the following:
25

26 (*****)

27 **1-08.4 Notice to Proceed and Prosecution of Work**

28
29 Notice to Proceed will be given after the contract has been executed and the
30 contract bond and evidence of insurance have been approved and filed by the
31 Contracting Agency. The Contractor shall not commence with the work until the
32 Notice to Proceed has been given by the Engineer. The Contractor shall
33 commence construction activities on the project site within ten days of the Notice
34 to Proceed Date, unless otherwise approved in writing. The Contractor shall
35 diligently pursue the work to the physical completion date within the time specified
36 in the contract. Voluntary shutdown or slowing of operations by the Contractor shall
37 not relieve the Contractor of the responsibility to complete the work within the
38 time(s) specified in the contract.
39

40 When shown in the Plans, the first order of work shall be the installation of high
41 visibility fencing to delineate all areas for protection or restoration, as described in
42 the Contract. Installation of high visibility fencing adjacent to the roadway shall
43 occur after the placement of all necessary signs and traffic control devices in
44 accordance with 1-10.1(2). Upon construction of the fencing, the Contractor shall
45 request the Engineer to inspect the fence. No other work shall be performed on

SPECIAL PROVISIONS - Continued

1 the site until the Contracting Agency has accepted the installation of high visibility
2 fencing, as described in the Contract.

Construction Coordination Meetings

4 The Contracting Agency or its authorized representative will schedule and
5 administer construction coordination meetings on a weekly basis with the
6 Engineer, Contractor, subcontractors, and other interested parties. The Contractor
7 shall actively and regularly prepare for, attend, and participate in these meetings
8 throughout the duration of the project until Contract Completion. The purpose of
9 these meetings is to coordinate and facilitate communication between the parties
10 to facilitate the performance of the respective responsibilities and the successful
11 completion of the project.

13 The Contracting Agency will establish the weekly meeting times, dates and location
14 with agreement from the Engineer and Contractor.

16 Project meetings shall be held at a location designated by the Contracting Agency.

18 The Contracting Agency will make physical arrangements for meetings, prepare
19 agenda with copies for participants, preside at meetings, record minutes, and
20 distribute copies within 5 working days to participants and those affected by
21 decisions made at meetings.

23 Attendance: Contracting Agency, Engineer, Contractor's Project Manager, and
24 Project Superintendent all as appropriate to address agenda topics for each
25 meeting. Major subcontractors and suppliers shall attend when requested by the
26 Contracting Agency, Engineer, or Contractor.

28 The specific administrative and procedural requirements for project meetings
29 including, but not limited to, Safety, RFI Status, Contract Submittals, Materials
30 Submittals, RFPs, Field Directives, Change Orders, project schedule, and 2-week
31 look ahead, Working Days, Critical path items, Contract compliance, Pay
32 applications, and open discussion.

Safety

34 All parties agree that they are responsible for compliance with all tribal, local, and
35 federal laws, regulations, and standards that pertain to safety, as those laws,
36 regulations, and standards apply to its employees. All parties recognize that the
37 responsibility for employee safety rests with each employer respectively. Each
38 contractor (prime or sub) shall be responsible for the safety of its own employees.
39 The Contracting Agency accepts no responsibility for, nor will it provide any safety
40 consultation, monitoring, or enforcement to any contractor on the site concerning
41 the safety of contractor's employees. Any safety equipment needed on the job,
42 including but not limited to, PPE, shall be furnished by each contractor for its
43 employees.

SPECIAL PROVISIONS - Continued

1 The Contracting Agency will regard safety on this project to be of the utmost
2 importance. Under no conditions shall safety requirements be waived for the sake
3 of cost, schedule, or convenience. SAFETY MAY BE USED AS CRITERIA FOR
4 APPROVAL OF PAY APPLICATIONS. Unsafe conditions, lack of proper and/or
5 untimely documentation and submittals, and lack of adherence to safety rules and
6 requirements will not be tolerated.
7

8 Each contractor, AS A MINIMUM, shall follow all tribal, local, and federal laws
9 regarding worker safety. This shall include all requirements of OSHA and
10 referenced standards therein included.
11

12 The Contracting Agency may, at various times, request voluntary OSHA
13 inspections. Each contractor shall immediately correct and respond to any
14 violations in writing to the Contracting Agency, and to the appropriate agency.
15

16 Indiscriminate accumulations of debris, waste, or scrap in work areas will not be
17 permitted. (Areas must be designated for storage or disposal.) All materials, tools,
18 and equipment must be stored in an orderly manner in designated areas.

Safety Program

19
20 A. Contractor shall submit, within 10 days of Notice to Proceed, a copy of its
21 company safety program including jobsite-specific safety plans. This program
22 shall incorporate all lower-tier subcontractor safety information or separate
23 policies shall be submitted for all lower-tier subcontractors used on the project.
24 This safety policy shall conform to all OSHA requirements and shall include as
25 follows:
26

27 B. A Hazard Communications Program, including site specific Materials Safety
28 Data Sheets (MSDS) for all chemicals used by Contractor and its
29 subcontractors.
30

- 31 1. Provisions for continual training of all on-site employees. This shall be done
32 by holding weekly safety toolbox talks, documented by signed attendance
33 sheets with safety topic submitted to the Contracting Agency at each weekly
34 project meeting.
- 35 2. Weekly jobsite safety inspections shall be completed by each Contractor.
- 36 3. Designation and continual training of competent persons for the project.
- 37 4. Contractor shall provide services of a competent safety person (as defined
38 by OSHA) for the project to inspect the project for safety hazards related to
39 their Work. The safety person should not be one of the superintendents
40 dedicated to this Project; however, the safety person shall be on-site
41 whenever Work is being performed by Contractor. The safety person shall
42 attend the Project coordination meetings.
- 43 5. Contractor, with assistance from all contractors' safety persons, shall
44 perform a monthly total Project safety audit conducted by a company safety
45 officer or independent consultant of the Contractor. Results of the safety

SPECIAL PROVISIONS - Continued

1 audit shall be submitted to the Contracting Agency and distributed to all
2 contractors the same day the audit is conducted by Contractor. If a
3 contractor does not immediately address any observed or noted safety
4 concern, Contractor's company safety officer or independent consultant
5 shall contact the Owner, through the Contracting Agency. Contractor's
6 company safety officer or independent consultant, with assistance from
7 Contractor's competent safety person, shall record all accidents for the
8 Project and report their findings to the Owner, through the Contracting
9 Agency.

- 10 6. Provisions for enforcement of the safety policies by Site Foreman,
11 Superintendent, and/or Project Manager.
12 7. Documentation that each on-site employee has been trained in general
13 safety and has been informed of the location of the Safety Program, Haz-
14 Com Program, and Emergency procedures on this project.

Submittals

17 A. Company safety programs, as described above, shall be submitted to the
18 Contracting Agency within ten days of Notice to Proceed or Letter of Intent to
19 Award. Additions to the program, such as documentation of training as new
20 employees arrive at the site, shall be forwarded to the Contracting Agency. All
21 contractor Safety Programs, and Haz-Com Programs, with MSDS Sheets, will
22 be kept in one central location within the Contractor's office throughout the
23 duration of the project.

24 B. Contractor is required to conduct and all employees are required to attend a
25 "Tool Box"-type safety meeting once a week. These meetings may either be
26 presided over by Contractor's foreman or another competent representative
27 designated by Contractor. The Contracting Agency's personnel are available to
28 participate in these safety meetings.

29 Contractor will be responsible to submit WEEKLY tool box safety meeting
30 minutes to the Contracting Agency while Contractor has employees on-site.

31 C. All weekly inspections will be documented by Contractor and submitted to the
32 Owner, through the Contracting Agency. Contractor shall immediately correct
33 all deficiencies and submit a list of corrective actions within 1 working day, or
34 sooner if required, of safety inspection.

35 D. Subject-specific daily and/or weekly inspections by Contractor, including
36 temporary electric, crane, or other work activities as required, shall be timely
37 submitted to the Owner through the Contracting Agency.

Training

38 A. Contractor shall ensure that employee designated as Project Competent
39 Person has been fully trained for this task and has the full authority to take
40 corrective action when required.

SPECIAL PROVISIONS - Continued

1
2 B. Contractor shall provide continual training to Project Competent Person,
3 Superintendent, and Foreman as required by Tribal or OSHA standards.
4

5 C. The Contracting Agency may recommend General Safety Topics to enable
6 Contractor's supervising personnel to train employees if a Contractor requests
7 such assistance.
8

9 **1-08.5 Time for Completion**

10
11 Revise the third and fourth paragraphs to read:
12

13 (*****)

14 Contract time shall begin on the first working day following the Notice to Proceed
15 Date.
16

17 Each working day shall be charged to the contract as it occurs, until the contract
18 work is physically complete. If substantial completion has been granted and all the
19 authorized working days have been used, charging of working days will cease.
20 Each week the Engineer will provide the Contractor a statement that shows the
21 number of working days: (1) charged to the contract the week before; (2) specified
22 for the physical completion of the contract; and (3) remaining for the physical
23 completion of the contract. The statement will also show the nonworking days and
24 any partial or whole day the Engineer declares as unworkable. Within 10 calendar
25 days after the date of each statement, the Contractor shall file a written protest of
26 any alleged discrepancies in it. To be considered by the Engineer, the protest shall
27 be in sufficient detail to enable the Engineer to ascertain the basis and amount of
28 time disputed. By not filing such detailed protest in that period, the Contractor shall
29 be deemed as having accepted the statement as correct. If the Contractor is
30 approved to work 10 hours a day and 4 days a week (a 4-10 schedule) and the
31 fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as
32 a working day then the fifth day of that week will be charged as a working day
33 whether or not the Contractor works on that day.
34

35 Revise the sixth paragraph to read:
36

37 (*****)

38 The Engineer will give the Contractor written notice of the completion date of the
39 contract after all the Contractor's obligations under the contract have been
40 performed by the Contractor. The following events must occur before the
41 Completion Date can be established:
42

- 43 1. The physical work on the project must be complete; and
- 44 2. The Contractor must furnish all documentation required by the contract and
45 required by law, to allow the Contracting Agency to process final acceptance
46

SPECIAL PROVISIONS - Continued

1 of the contract. The following documents must be received by the Project
2 Engineer prior to establishing a completion date:

- 3
4 a. Certified Payrolls (per Section 1-07.9(5)).
5 b. Material Acceptance Certification Documents.
6 c. Final Contract Voucher Certification.
7 d. Copies of the approved "Affidavit of Prevailing Wages Paid" for the
8 Contractor and all Subcontractors.
9 e. Property owner releases per Section 1-07.24.
10 f. An original signed and notarized Final Waiver and Release of Claim
11 Form from the Contractor.
12 g. Original signed and notarized Final Waiver and Release of Claim Form
13 for all Subcontractors and Material Suppliers regardless of tier.
14 h. Affidavit from the Tulalip Tribes TERO office that the TERO Fee for the
15 Project has been paid.
16

17 Section 1-08.5 is supplemented with the following:

18
19 (*****)

20 This project shall be physically completed within 60 working days.

21 **1-09 MEASUREMENT AND PAYMENT**

22
23 **1-09.2 Weighing Equipment**

24
25 **1-09.2(1) General Requirements for Weighing Equipment**

26 (January 4, 2024 APWA GSP, Option B)

27
28 Revise item 4 of the fifth paragraph to read:

- 29
30 4. Test results and scale weight records for each day's hauling operations are
31 provided to the Engineer daily. Reporting shall utilize WSDOT form 422-027A,
32 Scaleman's Daily Report, unless the printed ticket contains the same
33 information that is on the Scaleman's Daily Report Form. The scale operator
34 must provide AM and/or PM tare weights for each truck on the printed ticket.
35

36 **1-09.6 Force Account**

37 (December 30, 2022 APWA GSP)

38
39 Supplement this section with the following:

40
41 The Contracting Agency has estimated and included in the Proposal, dollar
42 amounts for all items to be paid per force account, only to provide a common
43 proposal for Bidders. All such dollar amounts are to become a part of Contractor's
44 total bid. However, the Contracting Agency does not warrant expressly or by

SPECIAL PROVISIONS - Continued

1 implication, that the actual amount of work will correspond with those estimates.
2 Payment will be made on the basis of the amount of work actually authorized by
3 the Engineer.
4

1-09.7 Mobilization

6
7 Section 1-09.7 is supplemented with the following:
8

9 (*****)

10 Payment for Mobilization will be made from two-thirds of the lump sum amount
11 named in the Bid Schedule, which price shall be complete compensation for all
12 mobilization of employees, equipment and materials, and preparation of all
13 necessary submittals as well as the bonds, insurance, site improvements etc. all
14 in conformance with the Contract Documents. In calculating the partial payment
15 due for mobilization, percent completion will be based on the sum of completed
16 work. Payment for Demobilization will be made from one-third of the lump sum
17 amount based on completion of all work which payment will be considered
18 complete compensation for removal of all equipment, materials, labor hauling,
19 cleanup, restoration work etc. required to remove all of the Contractor's operation
20 and cleanup the site in accordance with the Contract Documents. In calculating
21 the partial payment due for demobilization, percent completion will be based on
22 the sum of completed work.
23

1-09.8 Payment for Material on Hand

24
25
26 The last paragraph of Section 1-09.8 is revised to read:
27

28 (August 3, 2009 WSDOT GSP, Option 1)

29 The Contracting Agency will not pay for material on hand when the invoice cost is
30 less than \$2,000. As materials are used in the work, credits equaling the partial
31 payments for them will be taken on future estimates. Each month, no later than the
32 estimate due date, the Contractor shall submit a letter to the Engineer that clearly
33 states: 1) the amount originally paid on the invoice (or other record of production
34 cost) for the items on hand, 2) the dollar amount of the material incorporated into
35 each of the various work items for the month, and 3) the amount that should be
36 retained in material on hand items. If work is performed on the items and the
37 Contractor does not submit a letter, all of the previous material on hand payment
38 will be deducted on the estimate. Partial payment for materials on hand shall not
39 constitute acceptance. Any material will be 12 rejected if found to be faulty even if
40 partial payment for it has been made.
41

1-09.9 Payments

42
43
44 Revise the first paragraph to read:
45

46 (*****)

47 The basis of payment will be the actual quantities of Work performed according to
48 the Contract and as specified for payment. For items Bid as lump sum, with a bid

SPECIAL PROVISIONS - Continued

1 price of more than or equal to \$20,000, the Contractor shall submit a breakdown
2 of the lump sum price in sufficient detail for the Engineer to determine the value of
3 the Work performed on a monthly basis. Lump sum breakdowns shall be provided
4 to the Engineer no later than the date of the preconstruction conference.
5

6 Delete the third paragraph and replace it with the following:
7

8 (*****)

9 Progress payments for completed work will be based upon progress estimates
10 prepared by the Contractor. A progress estimate cutoff date will be established at
11 the preconstruction conference.
12

13 The initial progress estimate will be made no later than 30 days after the Contractor
14 commences the work, and successive progress estimates will be made every
15 month thereafter until the Completion Date. Progress estimates made during
16 progress of the work are tentative, and made only for the purpose of determining
17 progress payment. The progress estimates are subject to change at any time prior
18 to the calculation of the Final Payment.
19

20 The value of the progress estimate will be the sum of the following:

- 21 1. Unit Price Items in the Bid Form – the approximate quantity of acceptable
22 units of work completed multiplied by the unit price.
- 23 2. Lump Sum Items in the Bid Form – partial payment for lump sum Bid items
24 will be a percentage of the price in the Proposal based on the Engineer’s
25 determination of the amount of Work performed, with consideration given
26 to, but not exclusively based on, the Contractor’s lump sum breakdown for
27 that item.
- 28 3. Change Orders – entitlement for approved extra cost or completed extra
29 work as determined by the Engineer.

30 Progress payments will be made in accordance with the progress estimate less:

- 31 1. Retainage per Section 1-09.9(1);
- 32 2. The amount of Progress Payments previously made; and
- 33 3. Funds withheld by the Contracting Agency for disbursement in accordance
34 with the Contract Documents.
35

36 Progress payments for work performed shall not be evidence of acceptable
37 performance or an admission by the Contracting Agency that any work has been
38 satisfactorily completed. The determination of payments under the contract will be
39 final in accordance with Section 1-05.1.
40

41 Payments will be made by warrants, issued by the Contracting Agency’s fiscal
42 officer, against the appropriate fund source for the project. Payments received on

SPECIAL PROVISIONS - Continued

1 account of work performed by a subcontractor are subject to the provisions of
2 RCW 39.04.250.

3
4 **1-09.11 Disputes and Claims**

5
6 Section 1-09.11 is revised to read:

7
8 (*****)

9 **Forum For Equitable Relief**

10 The Tribal Court of the Tulalip Tribes of Washington shall have exclusive
11 jurisdiction over any action or proceeding for any injunction or declaratory
12 judgment concerning any agreement or performance under the Contract
13 Documents or in connection with the Project. Any such action or proceeding arising
14 out of or related in any way to the Contract or performance thereunder shall be
15 brought only in the Tribal Court of the Tulalip Tribes of Washington and the
16 Contractor irrevocably consents to such jurisdiction and venue. The Contract shall
17 be governed by the law of the State of Washington.

18
19 **Forum For Money Damages**

20 The Tribal Court of the Tulalip Tribes of Washington shall be the exclusive
21 jurisdiction for any action or proceeding for any injunction or declaratory judgment
22 concerning any agreement or performance under the Contract Documents or in
23 connection with the Project. The Tribal Court of the Tulalip Tribes of Washington
24 shall be the exclusive jurisdiction for any action or proceeding by the Contractor or
25 the Contractor’s Surety, if applicable, for any money damages concerning any
26 agreement or performance under the Contract Documents or in connection with
27 the Project.

28
29 **1-10 TEMPORARY TRAFFIC CONTROL**

30
31 **1-10.1 General**

32
33 The first paragraph of Section 1-10.1 is revised as follows:

34
35 (*****)

36 The Contractor shall provide construction staging and traffic control plans to The
37 Contracting Agency for review and approval for all work located within public rights
38 of way. Plans shall be submitted for review no more than 7 calendar days following
39 award of the contract. Notice to Proceed will not be given until the traffic control
40 plans are approved. Plans shall be in accordance with the MUTCD and the
41 WSDOT “Work Zone Traffic Control Guidelines.” A minimum of 10 working days
42 will be required for review. Whenever traffic control devices are located on state
43 highways or affect traffic on state highways, the temporary traffic control plans will
44 also be reviewed and approved by WSDOT. Plans will be developed by the Traffic
45 Control Supervisor or a licensed civil engineer. These plans shall supplement
46 Construction Staging Plans. Construction Staging Plans shall be prepared by the

SPECIAL PROVISIONS - Continued

1 Contractor or a licensed civil engineer. The traffic control plans as provided by the
2 Contractor shall include and not be limited to the following information:

- 3
- 4 • Minimum lane widths provided for vehicular travel.
- 5 • Location, legend, and size for all signage.
- 6 • Location of flagger stations.
- 7 • Lane closure tapers.
- 8 • Identification and spacing for traffic control devices.
- 9 • Identification of pedestrian access routes.

10
11 The Contractor shall provide flaggers, signs, and other traffic control devices not
12 otherwise specified as being furnished by the Contracting Agency. The Contractor
13 shall erect and maintain all construction signs, warning signs, detour signs, and
14 other traffic control devices necessary to warn and protect the public at all times
15 from injury or damage as a result of the Contractor's operations which may occur
16 on highways, roads, streets, sidewalks, or paths. No work shall be done on or
17 adjacent to any traveled way until all necessary signs and traffic control devices
18 are in place.

19
20 Construction Staging Plans as provided by the Contractor shall separate the
21 project into stages of construction that when completed will include all of the work
22 included in the contract. Construction Staging Plans shall include and not be
23 limited to the following information:

- 24
- 25 • Delineation of areas where work will occur in each stage.
- 26 • Delineation including lane widths for vehicular travel lanes that will be
27 maintained during each stage of construction.
- 28 • A description of the work that will be completed within each stage.
- 29 • Location(s) for access to and from the work area(s).

30 31 **1-10.2 Traffic Control Management**

32 33 **1-10.2(1) General**

34
35 Section 1-10.2(1) is supplemented with the following:

36
37 (October 3, 2022 WSDOT GSP, Option 1)

38 The Traffic Control Supervisor shall be certified by one of the following:

39
40 The Northwest Laborers-Employers Training Trust
41 27055 Ohio Ave.
42 Kingston, WA 98346
43 (360) 297-3035
44 <https://www.nwlett.edu>

SPECIAL PROVISIONS - Continued

1
2 Evergreen Safety Council
3 12545 135th Ave. NE
4 Kirkland, WA 98034-8709
5 1-800-521-0778
6 <https://www.esc.org>
7

8 The American Traffic Safety Services Association
9 15 Riverside Parkway, Suite 100
10 Fredericksburg, Virginia 22406-1022
11 Training Dept. Toll Free (877) 642-4637
12 Phone: (540) 368-1701
13 <https://atssa.com/training>
14

15 Integrity Safety
16 13912 NE 20th Ave.
17 Vancouver, WA 98686
18 (360) 574-6071
19 <https://www.integritysafety.com>
20

21 US Safety Alliance
22 (904) 705-5660
23 <https://www.ussafetyalliance.com>
24

25 K&D Services Inc.
26 2719 Rockefeller Ave.
27 Everett, WA 98201
28 (800) 343-4049
29 <https://www.kndservices.net>
30

31 **1-10.2(2) Traffic Control Plans**

32
33 The first sentence of Section 1-10.2(2) is replaced with the following:
34

35 (*****)

36 Traffic control plans and Construction Staging Plans have not been provided by
37 the Owner. The Contractor shall prepare traffic control plans and Construction
38 Staging Plans. Traffic control plans and Construction Staging Plans shall be
39 prepared based on the requirements set forth in Sections 1-07.23 and 1-10.1 of
40 these Special Provisions. Preparation of the Traffic Control Plan and Construction
41 Staging Plans shall be included in other items of work contained in the proposal.

42 **END OF DIVISION 1**
49

Technical Specifications

A large, solid red diagonal shape that starts from the bottom-left corner and extends towards the top-right corner, covering approximately the right half of the page.

Division 02

Existing Conditions

SECTION 02 41 00
DEMOLITION

PART 1 – GENERAL

1.01 SCOPE

- A. This section covers the removal of existing site features and equipment as shown on the drawings and listed herein.

1.02 SUBMITTALS

- A. Contractor shall provide a written plan detailing the proposed sequence of electrical demolition work to demonstrate that continuous power supply will be provided to the wastewater pumping facilities regardless of if they are existing, temporary, or the newly constructed pump system. Plan shall be submitted for the Engineer's review.

1.03 PROJECT CONDITIONS

- A. While the project is underway the Contractor shall coordinate with the Tribes to insure that wastewater is conveyed in an uninterrupted manner such that the wastewater level in the gravity system does not exceed the maximum level allowed as stated on the drawings.

PART 2 – PRODUCTS

2.01 SALVAGE

- A. Salvage to the Tribes:

- 1. Contractor shall carefully remove in a manner to prevent damage to all materials and equipment specified or indicated to be salvaged and reused or to remain property of the Tribes. The contractor shall store and protect salvaged items specified or indicated to be reused in the work.
- 2. Any items damaged in removal, storage or handling through carelessness or improper procedures shall be replaced by the Contractor in kind or with new items. All materials considered salvageable as identified on the drawings shall be accumulated and tightly packaged in a container suitable for the type of materials being salvaged.

- B. Property of Contractor:

- 1. Demolition, not indicated for salvage, becomes property of the Contractor, and shall be removed from the site at the Contractor's expense to a legal waste site obtained by the Contractor or recycled or sold.
- 2. Materials deemed to be non-salvageable by the Tribe shall be disposed by the Contractor to a legal dump site obtain by him. All costs to dispose of non-salvageable materials shall be the contractor's responsibility.

3. The contractor may, if approved by the Tribes, furnish and install new items in lieu of those specified or indicated to be salvaged and reused, in which case such removed items will become the Contractor's property. Existing materials and equipment removed by the Contractor shall not be reused in the work except where so specified or indicated.

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall remove all features indicated for removal on the demolition drawings.
- B. There is no on-site disposal area for the demolition debris. The Contractor shall comply with all regulations when disposing of the materials resulting from this demolition work.

3.02 PREPARATION FOR DEMOLITION

- A. All demolition work shall be closely coordinated to achieve continuous conveyance of wastewater from the site and into the force main.
- B. Install all associated erosion control measures prior to conducting any demolition activities.
- C. Install barriers, shoring, and padding to protect existing structure, finishes, materials, utilities, and systems not to be demolished.

3.03 DEMOLITION

- A. Remove items to be salvaged for the Tribes and place in designated storage area.
- B. Demolish in an orderly and careful manner so as to protect existing work to remain.
- C. Remove demolition materials as work progresses. Upon completion, leave areas in a clean condition.
- D. Transport demolition debris off site and dispose in a legal manner. The Contractor must notify the Engineer of the disposal location and must also notify the disposal/recycle facility if lead paint is present.
- E. Provide disposal documents and receipts upon request.

3.04 DAMAGED WORK

- A. Repair any portion of work damaged during demolition. Replace entirely where repair is not practical or satisfactory to meet original condition of work.

3.05 PREPARATION FOR CUTTING AND PATCHING

- A. Cut, move or remove items as necessary for access to alteration work. Replace and restore at completion.

- B. Remove debris and abandoned items, not designated for salvage.
- C. Clean and prepare surfaces including removal of surface finishes to provide proper installation and application of new work.

3.06 PROTECTION

- A. Protect existing construction to remain, including systems, finishes, and equipment from damage during construction.
- B. Erect temporary enclosures and barriers. Seal off work areas from adjacent occupied areas to protect from dust, noise and entry of unauthorized persons.

3.07 PATCHING AND EXTENDING EXISTING WORK

- A. Remove, cut and prepare existing construction materials in manner to minimize damage and to provide a means of restoring products and finishes to original condition, except as otherwise indicated. Perform in manner to avoid damaging adjacent work.
- B. Patch and extend existing work, filling holes and depressions. Match existing adjacent work in texture and appearance and as specified for new work.
- C. Patch floors, walls and ceilings with finish materials matching existing where partitions, fixtures, utilities, equipment and such items are removed.
- D. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

3.08 REPAIR OF DAMAGED SURFACES

- A. Patch or repair portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

3.09 FINISHES

- A. Finish of patches and repairs: Produce uniform texture and general appearance over entire area. When surface finish cannot be matched, refinish entire surface to nearest intersection.
- B. Final finishes of finished surfaces: As specified under individual sections.

END OF SECTION

This Page Intentionally Left Blank

Division 0'

7 ccrete

SECTION 03 15 19
ANCHORS, INSERTS, AND EMBEDDED PRODUCTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the materials and installation requirements for metal embedment into concrete or grouted masonry.
- B. Items Included:
 - 1. Cast-in-place anchor bolts (anchor rods).
 - 2. Manufactured cast-in-place inserts for suspended piping or electrical items.
 - 3. Inserts for structural attachments.
 - 4. Collars or sleeves for pipe penetrations.
 - 5. Post-installed anchors.

1.02 SUBMITTALS

- A. Shop drawings for all anchors, inserts, and embedded products (wall castings, pipes with seep rings, and special castings or fabrications).
- B. Manufacturer's Data: Submit complete data for fasteners including materials, dimensions, resins, colors, and other information.
- C. Current ICBO Evaluation Reports for all expansion and adhesive anchors.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Cast-in-place Anchor Bolts: ASTM F1554, Grade 36, hot dip galvanized steel unless otherwise noted. Configuration shall be as shown or noted on the Drawings.
- B. Expansion (Wedge) Anchors: ICBO approved for use in cracked and uncracked concrete for all anchors used for wind or seismic anchorage applications.
 - 1. All anchors to be Stainless Steel complying with the following:
 - a. Stud: Stainless steel bar conforming to ASTM A276 with chemical composition of AISI Type 316.
 - b. Wedge: Manufactured from either AISI Type 316 stainless steel.
 - c. Nut: Stainless steel conforming to ASTM F594 with chemical composition of AISI Type 316 and meeting dimensional requirements of ANSI B18.2.2.
 - d. Washer: AISI Type 316 stainless steel conforming to ASTM A240.

2. Products:
 - a. Hilti, Kwik-Bolt TZ SS 316.
 - b. Powers Fasteners, Power-Stud + SD6.
 - c. Simpson Strong Tie, Strong-Bolt 2, Type 316 stainless steel.
 - d. Other manufacturers upon approval of Engineer.

C. Adhesive Anchors:

1. Adhesive anchors shall be used in all locations subject to wet/dry cycles.
2. Anchor rod material shall conform to AISI Type 316 stainless steel.
3. Products:
 - a. Hilti, HIT-RE 500-V3.
 - b. Powers Fasteners, PE1000+.
 - c. Simpson Strong-Tie, SET-XP.
 - d. Other manufacturers upon approval of Engineer.

D. Stainless Steel Plates and Shapes: Conform to AISI Type 316 unless otherwise noted.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Coordinate the location and placement of all items to be embedded in concrete.
- B. Coat any embedded aluminum with asphalt paint.
- C. Adhesive and expansion anchors to be installed in holes drilled with carbide tipped drill bits. Anchors shall be installed per manufacturer's recommendations. Insert and tighten bolts in accordance with manufacturer's installation instructions. In case of interference with reinforcing bars or steel objects, notify the Engineer.

3.02 EMBEDDING

- A. Set accurately and hold in position all embedded products during placement until the concrete is set.

3.03 INSPECTION

- A. Anchors shall be inspected by Special Inspector as required by the Inspection Requirements described in the Structural General Notes contained on the Drawings or as required by the Building Official.

END OF SECTION

SECTION 03 30 01
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies cast-in-place reinforced concrete, including embedded material and formwork.

1.02 QUALITY ASSURANCE

- A. Referenced Standards: This section incorporates by reference the latest revision of the following document. It is a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
ACI 301	Specifications for Structural Concrete
ACI 315	Manual of Standard Practice for Detailing Reinforced Concrete Structures
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-15	Field Reference Manual
ASTM A615	Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C33	Specification for Concrete Aggregates
ASTM C94	Specification for Ready-Mixed Concrete
ASTM C150	Specification for Portland Cement
ASTM E329	Specification for Agencies Engaged in Construction Inspection, Testing or Special Inspection

- B. Contractor shall have available in the field office a copy of the ACI Field Reference Manual SP 15. This field reference manual is a compilation of ACI 301 and selected ACI and ASTM references listed in that specification.

1.03 TESTING

- A. Perform and submit materials testing to demonstrate conformance with the specifications.
- B. Evaluation and Acceptance: Strength level of concrete will be satisfactory if 90% of strength test results and averages of all sets of three consecutive strength test results equal or exceed specified strength and not more than one test result in 100 is below specified strength by more than 500 psi.

C. Concrete Test Cylinders:

1. Owner will retain and pay for the services of an independent testing laboratory. Contractor shall coordinate and cooperate with testing service and the Engineer to perform the following:
 - a. Prepare a minimum of three test cylinders for each location (slab, wall, etc.) for each day's placement or every 50 cubic yards, whichever is less.
2. Test set of three cylinders as follows:
 - a. One at 7 days.
 - b. Two at 28 days.
3. Prepare and test cylinders per ASTM C31 and C39.

D. Prior to placement, have available at placement location all tools, cylinder molds, slump cone, rod, curing containers, and all other apparatus required for sampling and testing.

E. Air Entrained: One test for each pour.

1.04 SUBMITTALS

A. Concrete-Mix Designs:

1. Submit two copies of trial mix designs proposed and one copy each of 30 consecutive test results and the mix design used from a record of past performance in accordance with ACI 301.
2. Submit manufacturer's certification of meeting these Specifications for materials proposed including names, sources, descriptions, and warranties for cement, fly-ash, grouts, water reducing admixtures, epoxy bonding materials, and curing compounds.
3. Submit a sample ready-mixed concrete delivery ticket.

B. Curing Compounds.

C. Admixtures.

D. Reinforcing Steel:

1. Placing drawings, bending, and cut sheet schedules.
2. Mill test reports for each shipment of reinforcement.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Concrete:

1. A. Maintain in continuous clean environment and in manner required to maintain homogeneity.
2. Cements, grouts, and mortar containerized and kept in dry humidity environment. Engineer shall reject materials, which have hardened or show any evidence of initial hydration.

B. Reinforcing Steel:

1. Deliver reinforcement to project site in bundles marked to coordinate with placement drawings.
2. Handle and store to prevent contamination from dirt, oil, and other materials, which will affect bond.
3. Store a minimum of 6 inches above ground and in locations where the material will not be subject to abuse.

PART 2 – PRODUCTS

2.01 CONCRETE

A. ASTM C94 and mix design approved by Engineer.

B. Strength:

1. Schedule (except as noted on Drawings):

<u>Type of Structure</u>	<u>Minimum Compressive Strength</u>	<u>Maximum Water/Cement Ratio</u>
Concrete Tanks and water-containing structures	5,000 psi at 28 days	0.40
Building Structures (foundations, slabs, wetwell lid)	4,000 psi at 28 days	0.45
Miscellaneous Structures (equipment pads, etc.)	4,000 psi at 28 days	0.50
Duct bank or pipe encasement	2,500 psi at 28 days	Per supplier mix design

2. Cementitious Content:

- a. For 5,000 psi concrete, shall not be less than 610 pounds per cubic yard.
- b. For 4,000 psi concrete, shall not be less than 520 pounds per cubic yard.

3. Entrained air 5-1/2 plus or minus 1%, for tanks and exterior concrete. Not required for interior slabs.
 4. Maximum slump 3 inches; 4 inches for walls (without use of water-reducing admixtures). Where water-reducing admixtures are required to increase workability necessary to facilitate placement of low water, cement ratio concretes, slump range may be 6 to 11 inches in strict accordance with manufacturer's recommendations.
- C. Cement ASTM C150: Type I or Type II for all structures.
- D. Aggregates:
1. Maximum aggregate size 3/4 inch conforming to ASTM C33, grading No. 67.
 2. Maximum wear 50% at 500 revolutions, AASHTO 96.
- E. Water: Clear, free from injurious amounts of oil, acid, salt, alkali, organic matter, or other deleterious substances.
- F. Admixtures:
1. Shall be subject to approval of the Engineer.
 - a. General:
 - 1) Use only those specified in approved mix design.
 - 2) Apply in strict accordance with manufacturer's printed instructions.
 - 3) No chloride content permitted.
 - 4) Must be compatible with other admixtures.
 2. Air-Entraining Agent: Air entrainment admixtures shall conform to ASTM C260.
 3. Water-Reducing Admixture: Water-reducing admixture shall conform to ASTM C494, Type A.
 4. High-Range Water-Reducing Admixture: High-range water-reducing admixture (superplasticizer) shall conform to ASTM C494, Type G.
 5. Accelerating Admixture: Accelerating admixture, when used, shall conform to ASTM C494, Type E.
 6. Retarding Admixture: Retarding admixture, when used, shall conform to ASTM C494, Type D.

2.02 CURING MATERIALS

- A. Polyethylene Sheeting: 0.004-inch thick.
- B. Waterproof Paper: Polyethylene-coated, Federal Specification UU-B-790 Type I, Grades A, B, C, Style 4. Define lap control lines clearly by printed markings.
- C. Membrane Forming Compound: Conform to ASTM C309.

2.03 CONTROLLED DENSITY FILL (CDF) CONTROLLED DENSITY FILL (CDF)

- A. Controlled Density Fill (CDF) or Controlled Low-Strength Material (CLSM) – a self compacting, cementitious, flowable material requiring no subsequent vibration or tamping to achieve consolidation. The Contractor shall provide a mix design in writing to the Engineer and utilize ACI 229 as a guide to develop the CDF mix design. CDF shall be designed to have a minimum 28-day strength of 50 psi and a maximum 28-day strength not to exceed 150 psi. The CDF consistency shall be flowable (approximate slump 3 to 10 inches).
- B. The following testing methods shall be used by the Contractor to develop the CDF mix design:
 - 1. 28-day compressive strength – ASTM D4832;
 - 2. Unit weight, yield, and air content – ASTM D6023;
 - 3. Slump – FOP for AASHTO T 119.

2.04 MISCELLANEOUS CEMENTITIOUS MATERIALS

- A. For Fill (Manhole or Basin Bottom Fill): 400 pounds of cement, 120 pounds of fly ash per cubic yard of concrete, 3/8-inch-maximum aggregate, W/C = 0.45.

2.05 REINFORCEMENT

- A. Reinforcing Bars:
 - 1. ASTM A615, grade 60, unless otherwise shown, using deformed bars for Number 3 and larger.
 - 2. Bending – ACI 318.
- B. Welded Wire Fabric:
 - 1. Steel, conforming to ASTM A185, 65 ksi yield strength. Supply in sheets; rolls are not acceptable.
- C. Tie Wire:
 - 1. Steel, black annealed, 16-gauge minimum.

D. Reinforcing Bar Supports:

1. Per CRSI "Manual of Standard Practice," Chapter 3, pre-galvanized or plastic coated for chairs bearing on non-exposed surfaces, plastic or stainless steel for chairs or spacers in exposed work.

E. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI.

F. Do not use reinforcement having any of the following defects:

1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances.
2. Bends or kinks not indicated on the Drawings or required for this work.
3. Bars with cross-section reduced due to excessive rust or other causes.

2.06 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor.

PART 3 – EXECUTION

3.01 EXISTING CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 EMBEDDED ITEMS

- A. Do not embed piping or electrical conduit in structural concrete unless indicated on the Drawings or approved by the Engineer.
- B. Set and secure bolts, inserts, and other required items in the precise locations needed so these items are not displaced.
- C. Prior to concrete placement, ensure the actual locations of embedded items are noted on the as-built set of drawings.

3.03 FORMS

- A. Design, erect, support, brace, and maintain formwork to safely support vertical and lateral loads which will be applied until such loads can be supported safely by the concrete structure.
- B. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.

3.04 MIXING CONCRETE

- A. Transit mix the concrete in accordance with provisions of ASTM C94.
- B. Do not use concrete that has stood for over 30 minutes after leaving the batch plant, or concrete that is not placed within 90 minutes after water is first introduced into the mix.

3.05 PLACING CONCRETE

- A. Deliver only in sufficient quantities required for specified time interval use and placement. Discard concrete having initial set before placement. No remixing with water or supplementing with other materials will be permitted once initial set has occurred. Initial set as evidenced by typical hydration characteristics to be determined by Engineer.
- B. Place as nearly as possible to final position to avoid segregation of the materials and displacement of reinforcement. Placement shall be completed within 60 minutes after water is first added to the mix. However, at the Engineer's discretion if climatic and temperature conditions are suitable and when the concrete is continually agitated, the time may be extended to 1-1/2 hours.
- C. Do not change consistency (slump) for a given placement without the Engineer's written permission.
- D. Keep open trough and chutes of steel or steel lined clean and free from coatings of hardened concrete.
- E. Do not drop concrete a distance of more than 4 feet or through a cage of reinforcing steel unless concrete is designed flowable with the specified superplasticizer included in the mix, then concrete can free fall up to 10 feet.
- F. Layout and sequence of placing of concrete in monolithic structures as shown on the Drawings or approved by the Engineer.
- G. Within a placement, deposit concrete in horizontal layers not to exceed 24 inches in depth. Place at rate such that:
 - 1. No concrete surface shall obtain initial set before additional concrete is placed on it.
 - 2. Yielding of forms is not so great as to cause the concrete surfaces to exceed the tolerances specified.
- H. Unless specified otherwise, place all slabs and finished floors to finish elevation in one continuous operation, except that the Contractor may place a separate finish topping if prior approval is received from the Engineer. Floor and roof slab sectional thicknesses shown are minimum thicknesses. Slopes on floors or roofs increase, rather than decrease, slab thicknesses.

- I. Construction Joints:
1. Limit size of each slab or wall pour as shown on the Drawings, or as approved by the Engineer.
 2. Locate construction joints so as not to impair the strength of the structure, and only at locations shown on the shop drawings or approved by the Engineer.
 3. Construct bulkheads to neatly fit reinforcement and water stops and prevent concrete leakage.
 4. Provide water stops or sealants in construction joints where required.
 5. Continue reinforcement through construction joint unless otherwise shown or noted.
 6. When noted, alternate pour at each side of construction joints with specified minimum curing time between pours.
 7. Before placing concrete against previously placed concrete, thoroughly roughen and clean by wet sandblasting or green cutting with an air-water jet.
 - a. Use air-water cutting at the proper time after the initial set. Use a high-pressure air-water jet to expose clean, sound aggregate without undercutting the edges of the larger aggregate. Protect adjacent subgrade when cutting is used on slab edges.
 - b. After cutting or sandblasting, rinse the surface until wash water contains no cloudiness. Dispose of wastes from cutting, washing, and rinsing so wastes do not stain or abrade exposed surfaces.
 8. Place concrete continuously to a predetermined construction joint.
- J. Care shall be taken in placing concrete through reinforcements so that no segregation of the coarse aggregate occurs. In any placement where segregation may occur, the concrete shall be designed flowable and placed at 6 inches plus slump. Vibrators shall be inserted no farther than 3 feet from the point of placement of concrete into forms, as concrete is being placed.
- K. Special care shall be taken to prevent splashing forms or reinforcement with concrete. Any hardened concrete or partially hardened concrete on the forms or reinforcements above the level of the concrete already in place shall be removed before proceeding with the work.

L. Cold Weather Placement:

1. Concrete shall be placed only when the temperature is at least 40° F, and rising, unless permission to pour is obtained from the Engineer.
2. Material shall be heated and otherwise prepared so that batching and mixing can proceed in full accord with the provisions of this specification.
3. Suitable means shall be provided for maintaining the concrete at a temperature of at least 50° F for a period of at least the first 5 days and at a temperature above freezing for the remainder of the specified curing period, except that where high-early-strength cement is used, this period may be reduced to 72 hours. The methods proposed for heating the materials and protecting the concrete shall be approved by the Engineer.
4. Salts, chemicals, or other materials shall not be mixed with concrete for the purpose of preventing freezing.

M. Hot Weather Placement:

1. The temperature of fresh concrete at the time of placement during hot weather shall be a maximum of 90° F, to prevent an accelerated setting of the concrete.
2. A retarding densifier admixture shall be used when the high expected atmospheric temperature for the day is 85° F or above. Admixture shall be used in accordance with the manufacturer's recommendations.

N. Placing Concrete Against Earth:

1. Unless otherwise called for on the Drawings, earth cuts shall not be used as forms for vertical surfaces without the prior approval of the Engineer.
2. Concrete placed on or against earth shall be placed only upon or against firm, damp surfaces free from frost, ice, and standing or running water. Concrete shall not be placed upon mud or upon fills until the required compaction has been obtained.

3.06 COMPACTING

- A. Compact all concrete with high-frequency internal vibrators immediately after placing.
- B. Use external vibrators for compacting concrete where the concrete is inaccessible for adequate compaction by internal vibrators; construct forms sufficiently rigid to resist displacement or damage from external vibration.
- C. Use mechanical vibrating equipment, always keeping the vibrator within 3 feet of the discharge point into the form. For exposed concrete surfaces and architectural concrete, keep the vibrator on the unexposed side of the reinforcing steel or at least 2-1/2 inches from the form surface. Vibrate the concrete as the concrete is being placed to prevent honeycomb, rock pockets, and voids. Do not insert vibrators into lower layers of concrete that have begun to set. Vibration required on flowable concrete is about one-fourth that needed for 4-inch-slump concrete.

3.07 CURING AND PROTECTION

A. General:

1. Maintain at site, ready to install, before actual concrete placing begins, all equipment and materials needed for optimum concrete curing and protection; maintain extra vibrators on standby in case of malfunction of any unit.
2. Protect finished surfaces or edges from stains, abrasions, and breakage during the entire construction period.
3. Protect all concrete from accelerated drying and excessive heat at all times. Close all conduits and other formed openings through the concrete during the entire curing period and as long thereafter as practicable to prevent drying of concrete by air circulation.
4. Install slab-curing covers immediately after initial set or as soon as free water has disappeared from the surface of the concrete after finishing or surfacing.

B. Water Curing (use water curing specified herein for all walls and slabs where watertight construction is required):

1. Keep continuously wet by covering with an approved material or by a system of perforated pipes or mechanical sprinklers or other approved methods.
2. Keep forms wet at all times to prevent opening of joints and the drying out of the concrete.
3. Water for curing shall be clean and free from any elements, which might cause objectionable staining or discoloration of the concrete.
4. Cover surfaces completely with sheeting. Where a single sheet does not cover the entire surface, lap ends and edges at least 4 inches, and continuously seal with tape or other suitable means recommended by the manufacturer.
5. Continue waterproof sheet curing for 7 days. Maintain sheeting and edge and end seals intact for entire period. Repair immediately any breaks in the sheeting envelope.

C. Curing Compounds (use only when specifically approved and for optimum climatic conditions):

1. Do not use curing compounds unless this use is authorized in writing by the Engineer. Curing compounds are unacceptable where concrete is exposed to the direct rays of the sun or in accelerated drying conditions.
2. All interior slabs shall have membrane-forming compounds that meet the moisture retention required by ASTM C309 when applied at a normal single coat.

3. Prior to applying curing compounds to formed surfaces, the surfaces shall be moistened with a spray of water immediately after forms are removed. Moistening shall be continued until the surfaces will not readily absorb more water. The compound shall be applied as soon as the moisture film has disappeared and while the surface is still damp.
4. On slabs, the compounds shall be applied immediately after finishing and after bleeding water and “shine” has disappeared.
5. Curing compounds shall not be used on surfaces where future bonding, painting, or protective coating is required. In cold weather, curing compounds shall not be used on concrete surfaces, which are kept at curing temperature, by the use of steam.

3.08 CONCRETE FINISHING

- A. Unless otherwise indicated, provide the following finishes at the indicated locations.
 1. Non-slip broom finish: apply to slabs, walks, stairs, drives, ramps, and similar pedestrian and vehicular areas.
 2. Formed surfaces: repair all rock pockets, voids, air bubbles, etc. greater than 1/2 inch in any dimension.
- B. Round off all edges of slabs and tops of walls with a steel-edging tool, except where a cove finish is shown. Steel edging tool radius shall be 1/4 inch for all slabs subject to wheeled traffic.

3.09 TOLERANCES

- A. Unless otherwise required, allowable tolerances for concrete surfaces shall be in accordance with those shown in the table below. Surface irregularities are classified as either “abrupt” or “gradual.” Offsets caused by displaced or misplaced form sheathing, lining, or form section or by defective form lumber shall be considered as abrupt irregularities. All others are classed as gradual irregularities. Gradual irregularities shall be measured with a template consisting of a straight edge for plane surfaces and its equivalent for curved surfaces.
- B. The length of the template for testing formed surfaces is 5 feet. The length of the template for unformed surfaces is 10 feet. Maintain a 5-foot-long and a 10-foot-long steel template on the job site.
- C. Maximum Allowable Irregularities in Concrete:

<u>Location</u>	<u>Irregularity in Inches</u>	
	<u>Gradual</u>	<u>Abrupt</u>
Walls	1/4	3/16
Slabs	1/4	1/4

3.10 UNSATISFACTORY CONCRETE

- A. Any concrete placed which fails to meet or exceed the specified strength requirements as determined from molded cylinders, or cores, or to meet the density or surface requirements, or which has been frozen during placing or curing, shall be removed and replaced with satisfactory materials at the Contractor's expense.
- B. Method of Determining Unsatisfactory Concrete: Visual appearance characteristic of rain or freeze damage to concrete which is apparent to the Engineer.

3.11 BONDING TO OLD CONCRETE

- A. Clean existing concrete surfaces by using wet sandblast or high pressure water jet to remove the surface film and contaminants. Roughen to 1/4-inch amplitude or as shown on the Drawings.
- B. Coat the contact surfaces with bonding agent. Apply the bonding agent in conformance with the manufacturer's instructions.
- C. As concrete is placed, thoroughly vibrate against the contact surface.

3.12 REINFORCING INSTALLATION

- A. Placement and Tolerances: Conform to *CRSI Manual of Standard Practice*.
- B. Splices:
 - 1. Do not splice bars except at locations shown or noted on the Drawings or as otherwise approved.
 - 2. Tie lap splices securely with wire to prevent displacement of splice during placement of concrete.
- C. Cleaning: Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that may reduce bond with concrete.
- D. Protection during Concreting: Keep reinforcing in proper position during concrete placement.
- E. Concrete Cover: Maintain minimum concrete cover over reinforcement as specified in ACI 318 or as noted. Bend tie wire away from concrete surfaces to maintain required clearances.

END OF SECTION

SECTION 03 40 00
PRECAST CONCRETE VAULTS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section covers furnishing and installation of special purpose precast concrete vaults, manholes, and catch basins.

1.02 ADAPTATION OF PRODUCT

- A. Furnish product readily adaptable for installation and operation in the manner shown on the Drawings.

1.03 SUBMITTALS

- A. Shop drawings showing detailed dimensions, block outs, and specifications for materials used, parts, devices, and other accessories forming part of the vault.

PART 2 – PRODUCTS

2.01 DESIGN

- A. Conform to ASTM C913.
- B. Design for 16,000-pound wheel load, AASHTO HL-93.

2.02 FABRICATION

- A. Precast elements shall provide for watertight sealing of mating surfaces using epoxy grout, field applied.
- B. Openings shall be located and sized as dimensioned on the Drawings. Where drains are connected to piping below the base of the precast unit, provide adequate opening with keyway to facilitate a field installation and grouting of base drains and trap units as shown on the Drawings. Standard products may be used where provision exists for achieving the configuration shown on the Drawings.
- C. Embedded items shall be provided in the tops, walls, and bases where indicated on the Drawings.

2.03 LADDER RUNGS

- A. Conform to applicable requirements of ASTM C478.
- B. Conform to OSHA.
- C. Designed so that foot cannot slide off the ends.

- D. Space rungs at 12 inches and locate as shown on the Drawings.
- E. Project uniformly inside wall.
- F. Be deformed bar conforming to ASTM A615, intermediate or standard grade, hot bent and galvanized after bending. For bending, the temperature shall be at least 1,600°F. Galvanizing shall conform to ASTM A123.
- G. Design utilizing other materials or shapes that conform to the requirements of this specification may be used upon written approval of the Owner.
- H. Where indicated on the Drawings, provide fabricated ladder in lieu of rungs.
- I. Where indicated on the Drawings, provide ladder safety post.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Foundation materials, including overexcavation, ballast, structural fill, geotextile, and/or geogrid, shall be provided for all structures in conformance with the project geotechnical report.
- B. Foundation bedding material shall be brought to precise elevations called for on the Drawings and leveled if required.
- C. Install structure and accessories in conformance with Drawings, Specifications, and recommendations of vault manufacturer unless otherwise instructed in writing by the Engineer. Vault location and orientation shall conform to the Drawings.
- D. The structure joints, pipeline, and conduit penetrations through walls, as shown on the Plans, shall be sealed watertight using epoxy cement grout. No leakage will be allowed into the structure.

END OF SECTION

SECTION 03 60 00
GROUTING

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies nonshrink grout and epoxy grout for use in applications including but not limited to grouts for leveling machine bases to equipment pads, manhole masonry units, joints between precast concrete sections, and grouting under base plates. Epoxy adhesives for concrete applications including, but not limited to pressure injection of cracks and doweling of anchor bolts, threaded rod anchors and reinforcing bar dowels.

1.02 QUALITY CONTROL

- A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
ASTM C33	Concrete Aggregates
ASTM C40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C88	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C136	Test Method for Sieve Analysis of Fine and Course Aggregates
ASTM C150	Portland Cement
ASTM C289	Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C881	Standard for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C1017	Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM D2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM E329	Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
CRD-C-621	Corps of Engineers Specification for Nonshrink Grout

1.03 SUBMITTALS

- A. Manufacturer's Data for the following:
 - 1. Nonshrink cementitious grout.
 - 2. Epoxy grout.
 - 3. Admixtures for cement grout.
 - 4. Adhesive for pressure injection of cracks.
 - 5. Adhesive for doweling.
 - 6. Retardants.
 - 7. Bonding compounds.
- B. Certified Test Reports: Before delivery of materials or grout, submit certified reports of the tests specified herein. Accompany the certified reports on previously tested materials with the manufacturer's certified statement that the previously tested material is of the same type, quality, manufacture, and make as that proposed for use in this Contract. Certified test reports are required for all cement grout constituents, including cement and aggregates.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Grout mixes and admixtures shall not contain more than 0.05% chloride ions.
- B. Water for washing aggregate, for mixing, and for curing:
 - 1. Shall be free from oil and deleterious amounts of acids, alkalis, and organic materials.
 - 2. Shall not contain more than 1,000 mg/L of chlorides as Cl, nor more than 1,300 mg/L of sulfates as SO₄.
 - 3. Shall not contain an amount of impurities that may cause a change of more than 25% in the setting time of the cement nor a reduction of more than 5% in the compressive strength of the grout at 14 days when compared with the result obtained with distilled water.
 - 4. Water used for curing shall not contain an amount of impurities sufficient to discolor the grout.

2.02 GROUT

- A. Use grout specified on the Contract Plans or as specified in the equipment recommendations.
- B. Nonshrink cementitious grout:

1. Cementitious grout that conforms to ASTM C1107, CRD-C-621, "Corps of Engineers Specification for Non-Shrink Grout," and the following requirements:
 - a. Nonmetallic aggregate.
 - b. Acceptable manufacturers:
 - 1) Euclid Chemical Co., "Euco NS."
 - 2) BASF, "Masterflow 713 Plus."
 - 3) Five Star Grout Co., "Five-Star Grout."
 - 4) Or approved equal.

C. Epoxy Grout:

1. Multi-component, 100% solids compound conforming to the following requirements:
 - a. Suitable for use on dry or damp surfaces.
 - b. Comply with ASTM C881.
 - c. Acceptable manufacturer:
 - 1) Euclid Chemical Co., "DuralBond."
 - 2) Sika Chemical Co, "Sikadur 35 Hi-Mod LV."
 - 3) BASF, "SCB Concreactive 1380."
 - 4) Or approved equal.

D. Cement grout:

1. A mixture of 1 part Portland cement, 1 to 2 parts fine aggregate, and with sufficient water to impart workability but not such that the grout will flow:
 - a. Cement shall be Portland cement, ASTM C150 Type II or Type V, and shall be low alkali cement, containing less than 0.60% alkalis.
 - b. Fine aggregate shall conform to ASTM C33 and to the following requirements:
 - 1) Nonreactive and washed before use.
 - 2) When sources of aggregate are changed, provide test reports for the new material. Perform the tests specified prior to commencing grout work.
 - 3) Fine aggregate shall be hard, dense, durable particles of either sand or crushed stone regularly graded from coarse to fine.

- 4) When tested in accordance with ASTM C136, gradation of fine aggregate shall be such that 100% by weight will pass a standard No. 8 mesh sieve and no less than 45% by weight will pass a standard No. 40 mesh sieve.
- 5) Variation from the specified gradations in individual tests of fine aggregates will be accepted if the average of three consecutive tests is within the specified limits and the variation is within the permissible variation listed below.
- 6) Comply with ASTM C33 as modified herein.

<u>U.S. Standard Sieve Size</u>	<u>Permissible Variation, Percent</u>
30 or coarser	2
50 or finer	0.5

- 7) Other tests shall be in accordance with the following specifications:

<u>Test Method</u>	<u>Test</u>	<u>Requirements</u>
ASTM C40	Organic Impurities	Color lighter than standard
ASTM C117	Passing 200 sieve	3% maximum
ASTM C88	Soundness	10% max loss with sodium sulfate
ASTM C289	Reactivity	Innocuous aggregate
ASTM D2419	Sand Equivalent	Minimum 80

E. Admixtures:

1. Admixtures shall be compatible with the grout and shall conform to the following requirements:
 - a. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.
 - b. Use admixtures in accordance with the manufacturer's recommendations and add separately to the grout mix.
 - c. Chemical admixtures for flowing concrete grout shall comply with ASTM C1017.
 - d. Water reducing, retarding admixture:
 - 1) The admixture shall comply with ASTM C494 Type D requirements and not contain more chloride ions than are present in municipal drinking water.
 - 2) Acceptable manufacturers:
 - a) Euclid Chemical Co., "Eucon Retarder-75."
 - b) BASF, "Pozzolith 100 XR."

- c) Sika Corporation, "Plastiment."
- d) Or approved equal.

2.03 ADHESIVES

- A. Adhesive for pressure injection of cracks in concrete:
 - 1. A two-component, moisture tolerant, low viscosity, liquid epoxy adhesive conforming to ASTM C881 for load-bearing applications.
 - 2. Acceptable manufacturers:
 - a. BASF, "SCB Concreative 1350 or 1360."
 - b. Sika Chemical Co, "Sikadur 35 Hi-Mod LV."
 - c. Euclid Chemical Co., "Eucopoxy Injection Resin."
 - d. Or approved equal.
- B. Adhesive for doweling of anchors and reinforcing bars in concrete:
 - 1. A two-component, moisture tolerant, epoxy gel conforming to ASTM C881 for load-bearing applications.
 - 2. Acceptable manufacturers:
 - a. Euclid Chemical Co., "Euco #452."
 - b. Sika Corporation, "Sikadur Anchor Fix-4."
 - c. Simpson Strong Tie., "Set XP."
 - d. Hilti, "HIT RE 500SD."
 - e. BASF, "SCB Concreative 1380."
 - f. Or approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Mix, place and cure in accordance with the manufacturer's instructions.
- B. For grouting of equipment base plates, refer to manufacturer's instructions for appropriate procedures.

3.02 EXAMINATION

- A. Inspect concrete surfaces to receive grout or mortar and verify that they are free of ice, frost, dirt, grease, oil, curing compounds, paints, impregnations, and all loose material or foreign matter likely to affect the bond or performance of grout or mortar.
- B. Inspect base plate and anchor systems for rust, oil, and other deleterious substances that may affect the bond or performance of grout.
- C. Confirm that newly placed concrete has been cured sufficiently to attain its design strength and limit further shrinkage.
- D. Verify that temperature of cementitious or epoxy grout does not exceed manufacturer's recommendations.

3.03 PREPARATION

A. Surface Preparation:

- 1. Roughen all concrete surfaces by heavy sandblasting, chipping, or other mechanical means to ensure bond. Loose or broken concrete shall be removed.
- 2. All grease, oil, dirt, curing compounds, laitance, and other deleterious materials that may affect bond that were identified in the inspection process shall be completely removed from concrete and bottoms of base plates. All metal surfaces should have a 2- to 3-mil peak-to-valley profile for epoxy grouts.
- 3. For cementitious mortars and grouts, concrete shall be saturated surface damp. Any standing water shall be removed prior to placing grouts.
- 4. For epoxy grouts, do not wet concrete surfaces with water. Instead, where required, wet surfaces with epoxy for horizontal work or epoxy gel for vertical or overhead work prior to placing epoxy grouts.

B. Forms and Headboxes for Cementitious or Epoxy Grouts:

- 1. Forms for grouts shall be built of material with adequate strength to withstand the placement of grouts.
- 2. Forms must be rigid and liquid tight. All cracks and joints shall be caulked with an elastomeric sealant. All forms shall be lined with polyethylene for easy grout release. Forms carefully waxed with two coats of heavy-duty paste wax shall also be acceptable.
- 3. Forms shall be 4 to 6 inches higher than the base plate on one side of the base plate configuration when using head pressure for placement.
- 4. A sufficient number of headboxes shall be built to facilitate placement of grouts.
- 5. Air relief holes a minimum 1/8 inch in diameter shall be provided when required by a base plate configuration to avoid entrapping air underneath.

3.04 NONSHRINK CEMENTITIOUS GROUT

- A. Prepare concrete surfaces in accordance with the grout manufacturer's instructions.
- B. Do not retemper grout by adding more water after stiffening.

3.05 EPOXY GROUT

- A. Prime concrete in accordance with the grout manufacturer's instructions.
- B. Epoxy grouts shall be mixed in complete units. Do not vary the ratio of components or add solvent to change the consistency of the mix.
- C. Mix until aggregate is uniformly wetted. Over mixing will cause air entrapment in the mix.

3.06 PRESSURE INJECTION OF CRACKS

- A. Design system to permit injection of adhesive resin at pressures up to 50 psi.
- B. Injection Equipment:
 - 1. Include a mixer and holdover agitator tanks.
 - 2. Provide gauges to indicate pressure used.
 - 3. Provide a meter capable of indicating the volume of grout used to 1/10 of a cubic foot.

3.07 DOWEL INSTALLATION

- A. Install per adhesive manufacturer's instructions.
- B. Obstructions in Drill Path:
 - 1. Locate holes in existing concrete to miss existing reinforcing. Prior to drilling holes, field verify and mark the location of existing reinforcing using a pachometer or other approved locating equipment.
 - 2. When reinforcing steel is encountered in the drill path, slant drill to clear obstruction. Drill shall not be slanted more than 10 degrees. Where slanting the drill does not resolve the conflict the Contractor shall stop and notify the Owner Representative and resolve the conflict to the satisfaction of the Owner Representative.
 - 3. Abandoned dowel or anchor holes shall be completely filled with nonshrink grout and struck off flush with the adjacent surface.

3.08 CURING

- A. Cementitious Grouts:
 - 1. Clean equipment and tools as recommended by the grout manufacturer.

2. Cure Grouts in accordance with manufacturer's specifications and recommendations. Keep grout moist for a minimum of 3 days. The method needed to protect grouts will depend on temperature, humidity, and wind. Wet burlap, a soaker hose, sun shading, ponding, and, in extreme conditions, a combination of methods shall be employed.
3. Grouts shall be maintained above 40°F until they have attained a compressive strength of 3,000 pounds per square inch, or above 70°F for a minimum of 24 hours to avoid damage from subsequent freezing.

B. Epoxy Grouts:

1. Cure grouts in accordance with manufacturers' specifications and recommendations. Do not wet cure epoxy grouts.
2. Consult the manufacturer for appropriate cure schedule. In no case should any surface in contact with epoxy grout be allowed to fall below 50°F for a minimum of 48 hours after placement.

3.09 TESTING

- A. To ensure compliance with the specified requirements for grout, provide the services of an independent testing laboratory that complies with the requirements of ASTM E329, ASTM C109, and ASTM C579, Method B.
- B. The testing laboratory will sample and test grout materials and submit results to the Owner Representative.
- C. During the course of construction, the Owner Representative may take separate field samples of the following materials for confirming tests:
 1. Cement.
 2. Aggregates.
 3. Cement grout mixture.
 4. Commercially manufactured grout products.

END OF SECTION

Division 05

Metals

SECTION 05 12 20
STRUCTURAL STEEL

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

- A. Materials, Fabrication, and Erection: Conform to the latest edition of AISC *Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings*.
- B. Welding: By operators qualified by tests as prescribed by the AWS in Standard Qualification Procedure for performance of the type of work required. Structural welding shall be performed by welders certified by ICBO or local building department jurisdiction.

1.02 SUBMITTALS

- A. Shop Drawings: All fabricated metals illustrating dimensions, erection details, cuts, copes, connections, holes, threaded fasteners, and welds. Base dimensional data on actual field measurements where connections interface with other materials required.
- B. Mill Test Reports: Submit mill test reports for each shipment of materials or products.

1.03 PRODUCT HANDLING

- A. Delivery of Materials Installed Under Other Sections:
 - 1. Deliver anchor bolts, anchorage devices, sleeves, and other steel to be embedded in cast-in-place concrete or masonry prior to start of concrete or masonry work.
 - 2. Provide setting drawings, templates, and direction for installation of anchor bolts and other devices.
- B. Store above grade. Protect from corrosive elements.
- C. Handle and store during construction to prevent overstressing any elements.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Structural Steel – All new material, clean and free from damage:
 - 1. Rolled Shapes: ASTM A992.
 - 2. American Standard Shapes, Channels, Angles, Bars, and Plates: ASTM A36.
 - 3. Steel pipe: ASTM A53 Grade B.
 - 4. Tubes (HSS): ASTM A500 Grade B or C.

B. Bolts:

1. Standard Bolts and Nuts: ASTM A307.
2. High Strength Bolts and Nuts: ASTM A325-N.

C. Welded Studs: TRW Nelson Headed anchor studs or approved equal.

2.02 FABRICATION

A. Fabricate structural and architectural steel in accordance with the appropriate AISC Specifications with the modifications and additional requirements specified in this section.

B. Weld all shop connections unless otherwise noted.

1. Conform to AWS D1.1, "Structural Welding Code – Steel."
2. Remove all weld spatter from exposed surfaces.

C. Straightness of Structural Members: Straightness of structural members and fabricated assemblies shall conform to AISC Specification.

D. Shop Assembly:

1. Fabricate units in as large parts and sections as practicable.
2. Holes in members: Punch or drill as necessary to receive bolts and similar items. Do not cut holes with a torch.
3. Provide holes as required for venting closed members that are to be galvanized.

PART 3 – EXECUTION

3.01 ERECTION

A. Set and secure structural steel members and appurtenant connections accurately to the required lines and levels shown on Drawings.

B. All procedures and tolerances per AISC Standards and Specifications.

C. Bolts, Anchors and Other Accessories: Install as necessary and as required for erection of structural steel.

D. Bearing Plates:

1. Provide under all steel, such as ends of beams bearing on concrete.
2. Shim with metal only.

E. Columns:

1. Set on leveling nuts or on metal shims to accurate elevations and grout solid.
2. Shim with metal only. Do not use wood wedges.

F. Anchor Bolts and Anchors: Locate and build into connecting work. Preset anchor bolts and anchors using templates of configuration required for fastening to structural members.

G. Grouting: After all structural members have been properly positioned and all bolts and anchor bolts tightened, place grout between concrete and steel. Finish exposed surfaces or grout flush and smooth.

END OF SECTION

This Page Intentionally Left Blank

SECTION 05 50 00
METAL FABRICATIONS

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

- A. Materials, Fabrication, and Erection: Conform to the latest edition of AISC “Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings” (steel assemblies) and the Aluminum Association’s Aluminum Construction Manual (aluminum assemblies).
- B. Welding: By operators qualified by tests as prescribed by the AWS in “Standard Qualification Procedure” for performance of the type of work required. Structural welding will require all welders to be certified by ICBO or local building department jurisdiction.
- C. Comply with OSHA/WISHA and Building Code requirements.

1.02 SUBMITTALS

- A. Shop Drawings: All fabricated metals illustrating dimensions, erection details, cuts, copes, connections, holes, threaded fasteners, and welds. Base dimensional data on actual field measurements where connections interface with other materials required.
- B. Mill Test Reports: Submit mill test reports for each shipment of materials or products.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials in such a manner as to prevent damage to finished surfaces.
- B. Store above grade in clean and dry locations. Protect from corrosive elements.

PART 2 – PRODUCTS

2.01 STRUCTURAL STEEL

- A. Conform to Section 05 12 20, “Structural Steel.”
- B. All structural steel shall be galvanized unless otherwise specified.
- C. Bolts: As specified in Section 05 12 20, “Structural Steel,” hot dip galvanized.

2.02 STAINLESS STEEL

- A. Bars and Shapes: ASTM A276, Type 304.
- B. Plates: ASTM A240, Type 316, except where indicated as Type 304 on the Drawings.

C. Bolts: ASTM A193, Type 316.

D. Nuts: ASTM A194, Type 316.

PART 3 – EXECUTION

3.01 FABRICATION

A. Fabricate in accordance with the Drawings and additional requirements specified in this section.

B. Shop Assembly:

1. Holes in Members: Punch or drill as necessary to receive bolts and similar items. Do not cut holes with a torch.

C. Galvanize all carbon steel bolts, fastenings, and hardware unless otherwise noted.

3.02 ERECTION

A. Set and secure accurately to the required lines and levels.

B. Protect the finish from scratches, nicks, and dents during erection.

C. Handrail: Install true to line and grade. Remove all burrs at cut ends of rail.

D. Grind smooth surfaces and edges that can be exposed to personnel.

E. Prepare and touch up paint where damaged or welded.

END OF SECTION

Division 07

Thermal and
Moisture Protection

SECTION 07 41 33
METAL ROOFING PANELS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The work of this section includes the furnishing of all labor, equipment, and material required to install the metal roofing as shown on the drawings, and all accessories as required, including, but not limited to, building felt, fasteners, ridge cap, flashing, trim, and vents.

1.02 QUALITY ASSURANCE

- A. Metal roofing shall be designed, constructed, and installed utilizing the applicable provisions and recommendations of the following:
1. American Institute of Steel Construction (AISC).
 2. International Code Council (IBC).
 3. American Iron and Steel Institute (AISI).
 4. Metal Building Manufacturers Association (MBMA).

1.03 WARRANTY

- A. All metal roofing components shall have a guarantee for a minimum of 2 years after day of Substantial Completion for faulty materials and workmanship for ordinary wear conditions. Finishes of metal roofing shall have a 10-year warranty, minimum.

1.04 SUBMITTALS

- A. Shop drawings shall be submitted to clearly indicate general construction, configurations, joining methods and locations, fastening methods and locations, and installation details.
- B. Samples of building materials and colors shall be provided to the Owner's Representative or Owner for selection of all colors from standard colors available.

PART 2 – PRODUCTS

2.01 PANEL MATERIALS

- A. Roofing shall be formed from zinc-aluminum coated steel of minimum 22 US gauge conforming to ASTM A792, with exterior and interior factory applied coatings.
- B. Roof panels shall have high ribs spaced at approximately 7.2 inches on center and ribs shall be approximately 1-1/2 inches in depth and shall be continuous, without joints, for full length of runs.

1. Basis of Bid: Reversed Box Rib by AEP Span (ASC Profiles, Inc.) 2141 Milwaukee Way, Tacoma, WA 98421, 800.733.4955 – 253.383.4955.
2. Other manufacturers of similar products, dependent on approval.

C. Finishes:

1. All roof and siding shall be galvanized steel with a factory-applied coating system.
2. Exterior coating system shall be a fluoropolymer type, with a minimum of 70% KYNAR 500 resins. The coating system is applied with a primer and finish coat for a total dry-film thickness of 0.851.2 mils.
3. Interior coating shall consist of a factory applied primer and finish coat of polyester paint with a total dry film thickness of 0.5 mils, color to be Light Gray.
4. Exterior color shall be selected by Owner from the manufacturer's available color chart. Color shall be consistent for all metal components specified herein.

2.02 ACCESSORIES

- A. Ridge cap, trim, flashing, and other roof and siding accessories shall be of same material, finish, and color as roof and siding specified herein.
- B. Flashing and/or boots compatible with roofing material shall be provided for all vent piping and other roof penetrations.
- C. Gutters and downspouts shall be compatible with roof and siding material, and be of same material, finish, and color. Gutters to be continuous, without joints, for full length of building.

2.03 FASTENERS

- A. Roofing system shall have exposed fastener systems.
- B. Provide fasteners compatible with the base material and the environment. Provide quantity, size, and type for proper installation of metal roof, siding, and accessories to meet performance criteria.

PART 3 – EXECUTION

3.01 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle material in accordance with the manufacturer's requirements and recommendations.
- B. Materials shall be stored away from construction activity, in a secure area, covered to keep dry and clean.

3.02 CONSTRUCTION

- A. Construction of metal roof, siding, and accessories shall be in accordance with the manufacturer's requirements and recommendations and good trade practices.
- B. Install panels, trim, fasteners, and accessories so that they are plumb, level, and straight to be consistent with the performance requirements.
- C. Roof and siding panels shall be installed with the ribs vertical as shown on the drawings with fasteners supplied by the manufacturer.
- D. Coordinate installation with the work of other trades.
- E. Install caulking in accordance with the manufacturer's instructions to provide a weather-tight installation as required, interior and exterior.
- F. Separate metals from incompatible metals or other material that may prove to be corrosive by coating concealed surfaces or applying isolation tape at points of contact.

3.03 CLEANUP AND PROTECTION

- A. After installation, all panels shall be wiped clean.
- B. All minor scratches and abrasions shall be touched up with a paint recommended or supplied by the manufacturer of same color as panels.
- C. Damage to panels or accessories during delivery, storage, handling, or construction shall be the responsibility of the Contractor. Damaged components shall be replaced with material as defined herein with same color. Discoloration or panels and accessories of significant color difference shall be considered damaged.

END OF SECTION

This Page Intentionally Left Blank

Division 08

Openings

SECTION 08 34 00
FLOOR DOORS

PART 1 – GENERAL

1.01 WORK SCHEDULED

- A. This section covers the provision and installation of metal floor doors (access hatches).
- B. Floor doors shall be installed in cast-in-place concrete vault lids and precast vaults as specified in Section 03 40 00, "Precast Concrete Vaults," or as specified in Section 03 30 01, "Cast-In-Place Concrete."

1.02 GENERAL REQUIREMENTS

- A. The unit shall be single leaf or double leaf as shown on the Drawings.
- B. The minimum design load for each hatch shall be HL-93 loading.
- C. The manufacturer shall guarantee the unit against defects in materials and workmanship for a period of not less than 5 years.
- D. Unit shall be, LW Products, Halliday, Bilco or approved equal.

1.03 SUBMITTALS

- A. Provide manufacturer's standard product literature.
- B. Provide load ratings for door.
- C. Drawings with physical dimensions and materials of construction.

PART 2 – PRODUCTS

2.01 FLOOR DOOR

- A. Materials as noted on Drawings, unless otherwise specified herein.
- B. A rain gutter shall be around the frame periphery and at the leaf latch area with 1-1/2-inch drain coupling in corner of frame. For vaults, drain shall be piped to wall of structure and terminated 3 inches above the vault bottom. Piping shall be secured to the wall and be located in a way that does not hinder ingress, egress, and access to piping and equipment.
- C. Hardware shall be stainless steel. This includes nuts, bolts, washers, hinges, springs, spring assisted operators, and automatic hold-open arm with release lever.
- D. Each leaf shall have a spring-assisted operator to reduce lifting force to 15 pounds.
- E. The door shall have recessed padlock hasp with hinged cover.

- F. The leaves shall securely latch when closed.
- G. Frame and door shall be aluminum, welded plate or extruded sections, as required. Surfaces of aluminum embedded or in contact with concrete shall be coated with bituminous paint for corrosion protection.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's instructions for installation of access doors.
- B. Coordinate installation with work of other trades.
- C. Connect drain from channel frame as indicated.
- D. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.
- E. Provide airtight gasketing on floor doors over wet well.

3.02 ADJUST AND CLEAN

- A. Adjust hardware and doors after installation for proper operation.
- B. Remove and replace doors or frames that are warped, bowed, or otherwise damaged.

END OF SECTION

Division 09

Finishes

SECTION 09 90 00

PAINTING

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the surface preparation, painting, and finishing of exposed interior and exterior items and surfaces, including previously painted surfaces, where indicated.
1. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.
- B. Paint exposed surfaces whether or not colors are designated in schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Engineer will select from standard colors or finishes available.
1. Painting includes field painting exposed bare and covered pipes (including color coding), hangers, pipe supports, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
 2. Painting also includes the existing concrete wet well after cleaning, sealing, and surface preparation has been performed.
- C. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
1. Unless otherwise specified on the Drawings, prefinished items not to be painted include the following factory-finished components:
 - a. Finished mechanical and electrical equipment.
 - b. Light fixtures.
 - c. Switchgear.
 - d. Distribution cabinets.
 - e. Submersible pumps.
 - f. Flowmeters.
 - g. Instrumentation.
 - h. Nameplates.

- i. Concrete.
 - j. Masonry.
- D. Finished metal surfaces not to be painted include:
 - 1. Aluminum.
 - 2. Stainless steel.
 - 3. Chromium plate.
- E. Operating parts not to be painted include moving parts of operating equipment such as the following:
 - 1. Valve and damper operators.
 - 2. Linkages.
 - 3. Sensing devices.
 - 4. Motor, pump, and fan shafts.
- F. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual, or other code required labels or equipment name, identification, performance rating, or nomenclature plates.

1.02 SUBMITTALS

- A. All submittals shall be in accordance with the specifications unless otherwise noted.
- B. Data Sheets:
 - 1. For each paint system furnish Safety Data Sheets (SDS), the manufacturer's Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system.
 - 2. Submit required information on a system-by-system basis.
 - 3. Manufacturer's color charts for color selection.
- C. Samples:
 - 1. Reference Panel:
 - a. Unless otherwise specified, before painting work is started, prepare minimum 8 inch by 10-inch samples with type of paint and application specified on similar substrate to which paint is to be applied. Provide color samples for each color tint for each individual system.

- b. Furnish additional samples as required until colors, finishes, and textures are approved.
- c. Approved samples to be the quality standard for final finishes.

D. Quality Control Submittals:

- 1. Applicator's Qualification: Contractor shall provide a list of five references substantiating experience, including current contact names and phone numbers of each reference for verification.
- 2. Factory-Applied Coatings:
 - a. Manufacturer's certification stating factory-applied coating system meets or exceeds requirements specified.
 - b. Current certificate from the coating manufacturer indicating that the applicator is knowledgeable in the product and is qualified to apply the coating system.
 - c. Results of Coating Test.
- 3. Manufacturer's written instructions and special details for applying each type of paint.

1.03 QUALITY ASSURANCE

A. Qualifications:

- 1. Applicator: Minimum five years of experience in application of specified products.

B. Regulatory Requirements:

- 1. Meet federal, state, and local requirements limiting the emission of volatile organic compounds.
- 2. Perform surface preparation and painting in accordance with recommendations of the following:
 - a. Paint manufacturer's instructions.
 - b. SSPC-PA Guide No. 3, Guide to Safety in Paint Applications.
 - c. Federal, state, and local agencies having jurisdiction.

C. Single Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

D. Testing of Factory Applied Coating of Ductile Iron Pipe:

- 1. The film thickness of the coating shall be checked using a magnetic film thickness. Measurements shall be taken per SSPC PA2 Section 5.1.
- 2. The coated areas of the pipe shall be tested for pinholes using a 2000 volt pinhole detection test. Any pinholes found shall be repaired prior to shipment.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the jobsite in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Federal specification number, if applicable.
 - 4. Manufacturer's stock number and date of manufacture.
 - 5. Contents by volume, for pigment and vehicle constituents.
 - 6. Thinning instructions.
 - 7. Application instructions.
 - 8. Color name and number.
 - 9. SDS, Safety Data Sheets, for all coatings and thinners.

- B. Store materials not in use in tightly covered containers in a well-ventilated area at an ambient temperature greater than the minimum temperature recommended by the manufacturer. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.05 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50°F and 90°F, unless otherwise recommended by the paint manufacturer.

- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45°F (7°C) and 95°F (35°C).

- C. Do not apply paint in snow, rain, fog, or mist when the relative humidity exceeds 85%, at temperatures less than 5°F above the dew point unless specifically allowed by the paint manufacturer, or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature and humidity limits specified by the manufacturer during application and drying periods.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers:

1. Subject to compliance with requirements, provide paint system products from the following paint manufacturers for this project:
 - a. Wasser Corporation (Wasser).
 - b. Tnemec Company, Inc. (Tnemec).
 - c. The Sherwin-Williams Company (Sherwin-Williams).
 - d. PPG Industries, Inc. (PPG).

2.02 PAINT MATERIALS, GENERAL

- A. **Material Compatibility:** Provide primers, finish-coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application as demonstrated by the manufacturer based on testing and field experience.
- B. **Material Quality:** Provide the manufacturer's best-quality trade-sale paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. **Proprietary Names:** Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.
- D. **Colors:** Provide color selections made by the Engineer from the manufacturer's full range of standard colors.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.
 1. Do not begin to apply paint until unsatisfactory conditions have been corrected.
 2. Start of painting will be construed as the applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work:

1. Review other sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
2. Notify the Engineer about anticipated problems using the materials specified over substrates primed by others, or over existing coated surfaces that are to be prepared and recoated.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings with a quality bio-degradable cleaner and thoroughly rinse with clean water. Allow for complete drying of substrate to be painted. Remove all oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation:
1. Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.
 2. Provide barrier coats over incompatible primers and existing coatings or remove and redo. Notify Engineer in writing about anticipated problems using the specified finish coat material with substrates primed by others.
 3. Cementitious Materials: Prepare concrete and concrete masonry unit surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, release agents, and existing unsound coatings. Roughen as required to remove glaze. If hardeners or sealers have been used during curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition prior to paint application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

4. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
5. Ferrous Metals:
 - a. Clean un-galvanized ferrous-metal surfaces that have not been shop-coated and previously painted metals indicated for painting; remove oil, grease, dirt, loose mill scale, and other foreign substances. Perform abrasive blast cleaning methods if recommended by paint manufacturer or as specified. Use solvent or mechanical cleaning methods that comply with recommendations of the formerly named Steel Structures Painting Council (SSPC), now called The Society of Protective Coatings.
 - b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.
6. Galvanized Surfaces:
 - a. Clean galvanized surfaces with nonpetroleum-based solvents so that the surface is free of all oil and surface contaminants.
 - b. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
7. PVC Pipe:
 - a. Prepare PVC surfaces in accordance with manufacturer's instructions.
 - b. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
 - c. Scarify PVC surfaces to impart a profile and remove all loose particles.
8. Ductile Iron Pipe:
 - a. Prepare ductile or cast iron surfaces in accordance with manufacturers' instructions.
 - b. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants. Provide solvent cleaning per National Association of Pipe Fabricators Standard NAPF 500-03-01. Also, blast all Ductile Iron Pipe in accordance with NAPF 500-03-04/05.

D. Materials Preparation:

1. Carefully mix and prepare paint materials according to manufacturer's directions.
2. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
3. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
4. Use only thinners approved by the paint manufacturer and only within recommended limits.

E. Tinting:

1. Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied.
2. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 FIELD APPLICATION

A. General:

1. Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth, even surface according to the manufacturer's directions.
5. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
6. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

7. Paint surfaces behind movable equipment the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment with prime coat only.
8. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular acrylic latex black paint.

B. Scheduling Painting:

1. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
2. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures:

1. Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.
 - a. Brushes: Use brushes best suited for the material applied.
 - b. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 - c. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer and as specified, whichever is greater.

E. Electrical items to be painted include, but are not limited to, the following:

1. Exposed conduit and fittings in occupied spaces.
2. Motors provided without factory-applied coatings.

F. Prime Coats:

1. Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others.
2. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Completed Work:

1. Match approved samples for color, texture, and coverage.
2. Remove, refinish, or repaint work not complying with specified requirements.

3.04 FACTORY COATED DUCTILE IRON PIPE

- A. Jobsite Repair: Any areas where damage has occurred due to handling shall be repaired using a touch-up kit provided by the coating manufacturer prior to installation to equal the original coating.
- B. Handling: All pipes shall be handled with belt slings and padded forks to avoid damage. All shipping timbers and straps shall be padded when shipping pipe.
- C. Pipe Condition: All pipe shall be delivered to the coating applicator bare.
- D. Surface Preparation: The entire surface to be coated shall be abrasive blasted.
- E. Coating of Pipe: After surface preparation and within 8 hours of surface preparation. If any rusting is apparent prior to coating the surface, the entire area must be re-blasted.

3.05 CLEANING

- A. Cleanup:
 1. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 2. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Do not scratch or damage adjacent finished surfaces.

3.06 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Protect adjacent walls, floors, and ceilings against splash and overspray. Correct damage by cleaning, repairing or replacing, and repainting. The Contractor shall be solely responsible for costs to repair damages to Owner's property or private property due to splash and overspray.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.07 PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates indicated. Spreading rate and dry film thickness of each coat of paint (i.e., primer and finish coat) shall be in accordance with the paint manufacturer's requirements. Unless otherwise specified, the following definitions shall apply to the paint systems specified below:
1. Interior: Surfaces located inside of a building, protected from weather elements.
 2. Exterior: Equipment and piping surfaces located outside and exposed to weather elements or inside of below-grade vaults and other below-grade, unconditioned structures.
 3. Immersed: All piping surfaces located inside manholes or wet wells.
- B. Interior and Exterior Zinc-Coated Metal: Provide the following paint systems, consisting of two finish coats applied over a galvanized metal primer, over all exposed zinc-coated (galvanized) metal piping and equipment surfaces:
1. Surface Preparation: For existing surfaces, power tool cleaning per SSPC SP-3. For new galvanized surfaces, solvent cleaning per SSPC SP-1.
 2. Primer:
 - a. Tnemec: Series 115 Unibond.
 - b. Sherwin-Williams: Galvite HS B50WZ30.
 - c. Wasser: MC-Universal Primer 100.
 3. First and Second Finish Coats: Shall be full-gloss, exterior, alkyd enamel.
 - a. Tnemec: Series 1029 Enduratone.
 - b. Sherwin-Williams: Industrial Alkyd Urethane Enamel B54-150 Series.
 - c. Wasser: MC-Luster 100.
- C. Interior and Exterior Ferrous Metal, Piping, and Valves: Provide the following paint system, consisting of one rust-inhibiting primer and two finish coats. Bolts and nuts shall not be coated. Valve Vault piping and valves shall be factory coated and shall not be field coated.
1. Surface Preparation: Shall be performed in accordance with NAPF 500 03-04/05 and paint manufacturer's recommendations.
 2. Primer: Polyamide Rust Inhibitive Direct to Metal Epoxy.
 - a. Tnemec: Series 161 Epoxoline.
 - b. Sherwin-Williams: Macropoxy 646 FC B58-600 Series.
 - c. Wasser: MC-Ferroclad 100.

3. First Finish Coat: Polyamide Epoxy.
 - a. Tnemec: Series 161 Epoxoline.
 - b. Sherwin-Williams: Macropoxy 646 FC B58-600 Series.
 - c. Wasser: MC-Luster 100.
 4. Second Finish Coat: Acrylic, Aliphatic Polyurethane.
 - a. Tnemec: Series 73 EnduraShield.
 - b. Sherwin-Williams: Acrolon 218 HS B65-650 Series.
 - c. Wasser: MC-Luster 1000.
- D. Immersed Ductile Iron Pipe: Provide the factory applied paint system below on the exterior surfaces of the ductile iron piping located inside the Wet Well. Paint system shall consist of a single coat applied over bare ductile iron pipe.
1. Surface Preparation: Shall be as directed by the coating manufacturer.
 2. Coating: Coating shall be applied an average of 25 mils (20 mils minimum) over the entire pipe spool.
 - a. Induron: Ceramawrap Epoxy.
 - b. Or equal.
- E. Electrical Shelter Structure: Provide the following shop applied paint system, consisting of one rust-inhibiting primer and a finish coat.
1. Surface Preparation: Shall be performed in accordance with SSPC-SP6/NACE No. 3 Commercial Blast Cleaning and paint manufacturer's recommendations.
 2. Primer: Polyamide Rust Inhibitive Direct to Metal Epoxy (4 to 6 mils)
 - a. Tnemec: Series 161 Epoxoline.
 - b. Sherwin-Williams: Macropoxy 646 FC B58-600 Series.
 - c. Wasser: MC-Ferroclad 100.
 3. Finish Coat: Acrylic, Aliphatic Polyurethane (2 to 5 mils).
 - a. Tnemec: Series 73 EnduraShield.
 - b. Sherwin-Williams: Acrolon 218 HS B65-650 Series.
 - c. Wasser: MC-Luster 1000.

- F. Concrete Wet Well: Provide the following finish systems for the wet well concrete surfaces. Interior service condition is an immersed and non-immersed corrosive environment. Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Temperature of the surface to be coated shall be between 40°F to 120°F. Contractor shall follow all manufacturers' installation procedures.
1. Interior coatings shall be Raven AquataFlex 505 100% solids epoxy/polyurethane system by PPG - Raven Lining Systems.
 - a. Coatings shall have a minimum wet film thickness of 125 mils or as recommended by the manufacturer and approved by the Engineer.
 - b. Contractor shall hire a third party to test the interior coating in the presence of a Project Representative:
 - 1) Moisture in Concrete:
 - a) Perform ASTM D4263-83, Standard Test Method Indicating Moisture in the Concrete by the Plastic Sheet Method. If the presence of moisture is indicated, dry the substrate prior to coating application. Perform this test once for every 100 square feet of area to be coated and more frequently at darkened concrete areas.
 - b) Perform Calcium Chloride Moisture Vapor Emissions Tests in accordance with ASTM F-1869 for all floors, containment, below grade applications or any other moisture tests required by the manufacturer.
 - c) The Project Representative may approve adhesion testing of a small coating test patch per ASTM D7234 in lieu of moisture testing.
 - 2) Holiday testing: Perform for the entire coating per NACE SP0188-2006. Any holidays detected shall be repaired and retested after cure of the coating is complete.
 - 3) Adhesion: Perform adhesion tests per ASTM D7234. It is the responsibility of the Contractor to repair any damage to the coating resulting from adhesion testing.
 - a) Minimum adhesion values shall be 400 psi or substrate failure.
 2. Exterior coating shall be bituminous waterproof coating material.
- G. Vaults: Provide the following finish systems for the concrete vault surfaces. Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Temperature of the surface to be coated shall be between 40°F to 120°F. Contractor shall follow all manufacturers' installation procedures.
1. Exterior coating shall be bituminous waterproof coating material.

3.08 COLORS

- A. Pipe Identification Painting:
1. Color code all piping except electrical conduit and stainless steel piping. Paint all PVC and metallic fittings and valves the same color as the adjoining piping.
 2. Piping Color Coding: As shown in Table 09 90 00-1.
 3. Pipe Supports: Color of all pipe supports shall be No. 70 light gray as specified in ANSI 359-A-85.
- B. Colors: Provide as designated herein and as selected by Owner or Engineer. Remaining colors to be determined by Engineer during submittal review.
- C. Proprietary identification of colors is for identification only. Selected manufacturer may supply matching colors upon acceptance by the Engineer.
- D. Equipment Colors:
1. Equipment includes the machinery or vessel itself plus the structural supports and fasteners and attached electrical conduits.
 2. Paint equipment and piping one color as selected.
 3. Paint equipment the same color as the piping it serves, except as itemized below:
 - a. Dangerous Parts of Equipment and Machinery: OSHA Orange.
 - b. Fire Protection Equipment and Apparatus: OSHA Red.
 - c. Physical Hazards in Normal Operating Area and Energy Lockout Devices: OSHA Yellow.
 - d. Safety Equipment, Including, but Not Limited to, Eyewashes and Safety Showers: OSHA Green.
- E. Fiberglass reinforced plastic (FRP) grating and ductwork with an integral colored gel coat does not require painting, provided the color is as selected by the Owner.

Table 09 90 00-1. Pipe Service Color Codes

Pipe Service	Color
Drain	Same as pipe service being drained
Sanitary Sewer	Black
Vent	Same as pipe service being vented
Water – Non-Potable	Safety Blue
Electrical Shelter	Black

END OF SECTION

Division 13

Special Construction

SECTION 13 05 41

SEISMIC RESTRAINT REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the anchorage and bracing for equipment and seismic anchoring and bracing for suspended equipment and equipment over 200 pounds.

1.02 QUALITY ASSURANCE

- A. Reference Standards: This section incorporates by reference the latest revisions of the following documents. These documents are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
IBC 2021	International Building Code
ASCE/SEI 7-16	Minimum Design Loads for Buildings and Other Structures

1.03 SUBMITTALS

- A. List of freestanding equipment weighing 200 pounds or more.
- B. Anchorage details for equipment and freestanding items weighing between 200 and 400 pounds.
- C. No less than 4 weeks in advance of equipment installation, for items weighing over 400 pounds. Required anchorage and bracing drawings and calculations bearing the stamp of a Professional Engineer; show the criteria used to determine seismic coefficients and forces applied to the equipment, including seismic zone, soil profile type, and importance factors.

1.04 DESIGN AND PERFORMANCE REQUIREMENTS

- A. In accordance with IBC, all equipment shall be anchored and braced to resist seismic forces prescribed in the code and ASCE/SEI 7, Chapter 13 or 15. All equipment includes equipment which is free standing, supported by stand frames, suspended, anchored to walls, and anchored to floors or slabs.
- B. Seismic anchorage and bracing for equipment shall be designed by a State of Washington Registered Engineer using the site-specific seismic criteria.

1.05 SITE SEISMIC CRITERIA

- A. Short Periods, $S_d = 0.976$
- B. Importance Factor, $I_p = 1.5$.

- C. Site Class = D.
- D. Risk Category: III.
- E. Seismic Design Category: D.
- F. Response Modification Coefficient and Amplification Factors: In accordance with ASCE/SEI 7-16 Sections 13.5 or 13.6.

PART 2 – PRODUCTS

2.01 ANCHORAGE TO CONCRETE

- A. Post-installed expansion or adhesive anchors are allowed only if, based upon the current ICC Evaluation Service Report, the anchors are permitted to be used for seismic loads.
- B. Cable or wire bracing is not allowed, except for suspended ceilings.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

Division 14

Conveying Equipment

SECTION 14 46 00
PORTABLE DAVIT HOIST

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This section specifies portable davit hoists and accessories to be installed on this project.
2. Furnish units complete with all appurtenances which are required for proper and safe operation.
3. Fabricate, assemble, erect, and place all specified equipment in proper operating condition in full conformity with the Contract Drawings, Specifications, and manufacturer's recommendations.
4. Provide load tests and certification for the rated loads.

1.02 DESIGN STANDARDS

A. The portable davit hoist and accessories shall be the manufacturer's normal design for the services specified. Standard replacement parts shall be readily available. The design, materials, and fabrication of the cranes shall comply with the latest Codes and Standards referred to herein.

B. Construction and Manufacture:

1. Equipment furnished under this section shall comply in all respects with the requirements of the following standards:
 - a. Hoist: ANSI B30.11, Hoist Manufacturers' Institute.
 - b. Wire Rope Hoist Service Class: ANSI HST 4M.
 - c. Chain Hoist Service Class: ANSI HST 1M.
 - d. Hook: ANSI B30.10.
 - e. Stress and Safety Factors: ANSI B30.11. Properly select materials of construction for stresses to which subjected.
 - f. Safety of Operation, Accessibility, Interchangeability, and Durability of Parts: ANSI B30.
 - g. HMI: Hoist Manufacturer's Institute.

- h. NEMA: National Electric Manufacturer's Association.
- i. NEC: National Electric Code.
- j. OSHA and/or WISHA Standards.

1.03 SUBMITTALS

- A. Submittals shall be in accordance with the Specifications.
- B. Shop Drawings and Equipment Data:
 - 1. Manufacturer's catalog data and certification confirming rated capacities.
 - 2. Complete catalog information, descriptive literature, materials of construction, and specifications on hoist, wheels, gears and bearing, trolley drive system, hook, brakes, and accessories.
 - 3. Dimensional drawings and details for cranes and hoists.
 - 4. Painting/coatings.
- C. Operations and Maintenance:
 - 1. Equipment function, normal operating characteristics, and limiting conditions.
 - 2. Assembly, installation, alignment, adjustment, and checking instructions.
 - 3. Operating instructions for start-up, routine and normal operation, regulation and control, shutdown, and emergency conditions.
 - 4. Lubrication and maintenance instructions.
 - 5. Guide to "troubleshooting."
 - 6. Parts list and predicted life of parts subject to wear.
 - 7. Outline, cross-sections, assembly drawings, and engineering data.
 - 8. Test data and performance curves, where applicable.
 - 9. As-built drawings.
- D. Operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered.

1.04 PROTECTION

- A. Protect all equipment during shipment, handling, and storage.

B. Painted Surfaces:

1. Protect against impact, abrasion, discoloration, and other damage.
2. After installation, repaint or touch up all painted surfaces that are scratched or damaged, prior to final acceptance.

1.05 QUALITY ASSURANCE

A. Certification:

1. Manufacturer's certification that equipment is capable of lifting the specified capacity with an acceptable industry safety factor.
2. On-site load test to 125% of rated load in accordance with OSHA/WISHA requirements.

- B. Unit Responsibility: The Contractor shall assign unit responsibility to a single manufacturer, namely, the manufacturer responsible for the complete crane/hoist system. Unit responsibility shall include the hoist and appurtenances.

1.06 WARRANTIES

- A. Provide a 1-year equipment warranty.

PART 2 – PRODUCTS

2.01 PORTABLE DAVIT HOISTS

- A. Provide portable davit hoist accessories by Pelsue or approved equal.
1. Contractor shall coordinate with the Tribe to provide flush floor mount sleeves and sleeve caps that match the diameter of the Tribe's existing equipment.
- B. Provide and install a stainless steel flush floor mount sleeves (Pelsue DSS-C1 or approved equal) at locations indicated on Drawings with Sleeve Caps (DSC-S1 or approved equal) to keep debris from entering sleeve mount. Flush floor mounts shall be drained into wet well.

PART 3 – EXECUTION

3.01 INSTALLATION AND INSPECTION

- A. Inspect floor mount sleeve for conformance with reviewed shop drawings and Contract Documents prior to installation of equipment. Correct or replace nonconforming work prior to proceeding with installation.

3.02 TESTING

- A. Hoist equipment and accessories, as applicable, shall be operated through a complete lift and lowering cycle to determine that the equipment shall perform smoothly and safely. All tests shall be carried out with the hoist loaded at 125% of capacity. The Contractor shall provide the test weight loads. Contractor shall provide certification of load test to the Engineer signed by a Manufacturer's representative. Any defects shall be corrected by the Contractor without any expense to the Owner.

3.03 USE BY CONTRACTOR

- A. Hoist equipment and accessories used by the Contractor shall be repaired, repainted, load tested, and otherwise refurbished to like-new condition prior to its acceptance. The Contractor assumes all responsibility for operation and maintenance until the hoist and accessories has been accepted.

3.04 TRAINING AND ORIENTATION

- A. Contractor shall arrange and conduct a training and orientation for facility maintenance personnel and staff users. One session of up to 2 hours shall be conducted and shall cover operation, maintenance, and safety features of the hoisting equipment; questions and answers; and hands on demonstration.

3.05 CLEANUP

- A. Upon completion of work, area shall be cleaned and restored to original condition, acceptable to the Owner.

END OF SECTION

Division 22

Plumbing

SECTION 22 05 00
GENERAL REQUIREMENTS FOR PIPING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section specifies the general requirements for piping systems. Additional information regarding material requirements, installation, etc. can be found in the individual piping sections. The actual pipe size and fittings shall be as shown on the Drawings, and described in the Pipe Schedule.
- B. This specification section applies to the sewer facilities associated with this project.
- C. Provide required permits, inspections, labor project equipment and materials, tools, construction equipment, transportation, and test equipment, and satisfactorily complete piping work shown on the Drawings. In addition, provide complete mechanical installation including piping, supporting, and anchoring for the equipment that will be provided under Divisions of these specifications for a complete working system.
- D. Piping designations (indicating the nominal pipe size and individual piping system) are used throughout the mechanical Drawings. Note that in most cases, the piping system material is not included below the piping designation on the Drawings. Rather, the pipe material for each corresponding piping system is identified in the piping schedule contained in Section 22 06 00, "Pipe Schedule." Contractor shall be responsible for matching up the piping system designations shown on the Drawings with the corresponding pipe materials listed in the "Pipe Schedule" to determine which piping materials are to be installed for this project.

1.02 SUBMITTALS

- A. Shop Drawings and Product Data:
 - 1. Submit product review or product information Shop Drawings for materials and equipment as required under each specification section in accordance with the specifications.
 - 2. For product review submittals, submit a single, complete submittal package for items specified for each specification section of Division 22. Submittal packages shall be organized by service type. Include separators and tabs or other means of identifying each section and specification paragraph of the submittal.
 - 3. Provide piping layout Drawings showing the locations, lengths, and elevations for all piping systems (exposed, buried, and submerged) in that area with respect to structures, other piping, and utilities (ductwork, conduit, etc.) Drawings shall contain details and location of all joints, anchors, supports, fittings, connections, penetrations, valves, piping appurtenances, flexible couplings, manholes, and other items as required. Deviations from anchorage requirements in accordance with the specifications shall be specified and supported with anchorage calculations.

4. For each piping system identified in the Pipe Schedule, submit pipe, fittings, linings, and coatings to be used for each piping system specified.
 5. Manufacturer's handling, delivery, storage, and installation instructions.
 6. Pipeline layout showing stations and elevations.
 7. Welder certifications and qualifications.
 8. Details of stulling and shipping packaging.
 9. Pipe is to be furnished with special lengths, field-trim pieces, and closure pieces as required by Plans and sections for location of elbows, tees, reducers, valves, and other in-line fittings. The pipe fabricator shall prepare a pipe laying schedule showing the location of each piece by mark number with station and invert elevation at each end.
- B. Leakage Testing Report Documentation: After testing of each piping segment has been completed, submit the following in accordance with the Division 1 Specifications:
1. Actual test date.
 2. Description and identification of piping segment tested.
 3. Testing fluid/medium used.
 4. Actual test pressure.
 5. Remarks, including:
 - a. Leaks (type, location).
 - b. Repair/replacement performed to remedy excessive leakage.
 6. All test report documentation shall be signed by the Contractor to represent that the testing has been satisfactorily completed.
- C. Record Drawings: Prior to Final Acceptance, deliver one complete set to the Engineer for review. Final Acceptance will not be granted until favorable review is completed.
1. Submittal Drawings: Revise manufacturers Shop Drawings to show any construction changes.
 2. Contract Drawings: Provide Contract Record Drawings in accordance with the specifications.
- D. Quality Control Submittals:
1. Certified welding inspection and test results.
 2. A copy of the surveyor's notes for the newly installed pipe and appurtenances.

3. Pipe Leakage Testing Plan:

- a. Submit prior to testing and include at least the information that follows:
 - 1) Testing dates.
 - 2) Piping systems and section(s) to be tested.
 - 3) Test type, pressure, and duration.
 - 4) Method of isolation.
 - 5) Calculation of maximum allowable leakage for piping section(s) to be tested.
- b. Certifications of Calibration: Testing equipment.

c. Certified Test Report.

- 1) Actual test date.
- 2) Description and identification of piping segment tested.
- 3) Testing fluid/medium used.
- 4) Actual test pressure.
- 5) Remarks, including:
 - a) Leaks (type, location).
 - b) Repair/replacement performed to remedy excessive leakage.
- 6) All test report documentation shall be signed by the Contractor to represent that the testing has been satisfactorily completed.

1.03 HANDLING, STORAGE, AND SHIPPING

- A. Pipe shall be stulled as required to maintain roundness of plus or minus 1 percent during shipping and handling.
- B. Coated pipe shall be shipped on padded bunks with nylon belt tie-down straps or padded banding located approximately over stulling.
- C. Coated pipe shall be stored on padded skids, sand or dirt berms, sandbags, old tires, or other suitable means so that coating will not be damaged.
- D. Coated pipe shall be handled with wide belt slings. Chains, cables, or other equipment likely to cause damage to the pipe or coating shall not be used.

1.04 PIPING SYSTEMS

A. General:

1. Furnish and install pipe, specials, fittings, closure pieces, supports, bolts, nuts, gaskets, jointing materials, and appurtenances as shown and specified, and as required for a complete and functioning piping system. All pressure pipe joints shall be restrained. Stainless steel pipe shall have full circumferential welds.
2. All exposed piping shall be adequately supported and restrained with devices of appropriate design and as specified in Section 22 05 29, "Pipe Hangers and Supports." Where details are shown, the supports shall conform thereto and shall be placed as indicated, provided that support for all piping shall be complete and adequate regardless of whether or not supporting devices are specifically shown.
3. Lined and coated pipe shall be stored in such a manner that the lining and coating will not crack or otherwise be damaged due to the effects of freezing and thawing, sunlight, and dry weather conditions.
4. All Materials delivered to the jobsite shall be new, free from defects, and marked to identify the material, class, and other appropriate data, such as thickness for piping.
5. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the complete product. Acceptance of installed piping systems shall be based on inspection and leakage tests.
6. All valves and operators of the same type shall be by a single manufacturer.

B. Pipe Laying:

1. Both line and grade shall be checked using survey instruments and recorded in a field book for each piece of pipe and appurtenances laid. The Contractor shall have instruments such as transits, levels, laser devices, and other equipment for transferring alignment and grades from offset hubs. Contractor also shall employ a person who is qualified to use such instruments and who shall be on the job site at all times when pipe is being installed and shall have the responsibility of placing and maintaining such construction guides. The Contractor shall furnish to the Engineer a copy of the surveyor's notes for the newly installed pipe and appurtenances.
2. At a sufficient distance prior to encountering a known obstacle or tie into an existing pipe, expose and verify the exact location of the obstacle or pipe so that proper alignment and grade may be determined before the pipe sections are laid in the trench and backfilled.
3. Pipe laid on grades of 10 percent or greater shall be installed beginning at the bottom of the slope.

4. Maintain the pipeline free of standing water at all times during construction prior to filling the pipeline for testing.
5. Bends and tees in buried pressure piping systems shall be anchored by means of restrained joints. Restrained joint length shall be as required for the test pressure shown in the piping system. Submit calculations showing the type of restrained joint proposed and the length of restrained joint required. Concrete thrust blocks shall not be used unless specifically shown.

C. Pipe Installation:

1. All pipe penetrations through reinforced concrete structures shall be constructed to prevent metal-to-metal contact between the pipe and reinforcing steel in the wall. Care shall be exercised to avoid bypassing insulating flanges with cable, piping, or other metallic objects.
2. Equipment shall be positioned and aligned so that no strain shall be induced within the equipment during or subsequent to the installation of piping.
3. When temporary supports are used, they shall be sufficiently rigid to prevent any shifting or distortion of the piping or related work.
4. Takedown couplings shall be installed where shown on the Drawings and at such other points as may be required for ease of installation or removal of the pipe, subject to approval of the Engineer. Takedown couplings shall be of the positive lock type where necessary to prevent separation of pipe due to internal pressure.

PART 2 – PRODUCTS

2.01 PIPING SYSTEMS AND CORRESPONDING PIPE MATERIALS

- A. As specified on Pipe Schedule located at the end of this section and other sections of Division 22.

2.02 JOINTS

A. Grooved End System:

1. Grooved pipe and groove joints shall be in accordance with AWWA C606. All grooved ductile iron piping shall be furnished with rigid radius grooves, unless otherwise shown on the Drawings.
2. Grooved Piping Accessories:
 - a. Grooved Coupling: Shall be used to connect ductile iron pipe grooved-ends together.
 - b. Grooved Flanged Adapter: Shall be used to connect ductile iron pipe grooved-end to a 125# flanged connection. When required, furnish with grooved-type flange adapters of same manufacturer as grooved end couplings.
 - c. Transition Fittings: Shall be used to connect grooved-ends of dissimilar materials.

3. Acceptable Manufacturers:
 - a. Victaulic.
 - b. Anvil International.
 - c. Grinnell.
 - d. Or approved equal.
- B. Flanged Joints:
 1. Flat-faced carbon steel or alloy flanges when mating with flat-faced cast or ductile iron flanges conforming to AWWA C115-11. Bolt circle and bolt holes shall match those of ANSI B16.1, Class 125 flanges and ANSI B16.5, Class 150 flanges.
 2. Higher pressure rated flanges as required to mate with equipment when equipment flange is of higher pressure rating than required for piping.
- C. Threaded Joints: NPT taper pipe threads in accordance with ANSI B1.20.1.
- D. Mechanical Joint Anchor Gland Follower:
 1. Ductile iron anchor type, wedge action, with break-off tightening bolts. Fittings shall conform to AWWA/ANSI C110/A21.10. Mechanical properties shall conform to AWWA/ANSI C151/A21.51.
- E. Proprietary Restrained
 1. Restrained mechanical joint couplings shall be ROMAGRIP by Romac Industries Inc.
 2. Flanged coupling adapters shall be RFCA by Romac Industries Inc.
- F. Push-On and Proprietary Restrained: Shall conform to AWWA C110/A21.10 and C111/A21.11. Restrained Joints shall be designed for a working pressure of 350 psi for sizes 4-inch through 24-inch, and 250 psi for sizes 30-inch through 36-inch.
- G. Flexible Mechanical Compression Joint Coupling for Drains and Gravity Piping:
 1. Stainless steel, ASTM A276, Type 305 bands.
- H. Thrust Tie-Rod Assemblies:
 1. NFPA 24; tie-rod attachments relying on clamp friction with pipe barrel to restrain thrust are unacceptable.
 2. For welded steel pipe, design per AWWA M11 based on test pressure of the pipe.
- I. All fittings shall be lined and coated to match pipe.

2.03 VALVES

- A. All valves shall be furnished complete with all necessary geared actuators, handwheels, levers, valve bonnets, valve boxes, extension stems, operating nuts, and T handle wrenches, which are required for proper valve operation. All operators, actuators, and accessories shall be factory-mounted prior to shipping to the project site. Renewable parts including discs, packing, and seats shall be of types specified herein and acceptable by valve manufacturer for the intended service. All units shall have the name of the manufacturer and the size of the valve cast on the body or bonnet, or shown on a permanently attached stainless steel plate in raised embossed letters. All isolation valves shall be suitable for the intended service with bubble tight shutoff to flow in either direction.
- B. All valves shall be the same size and all valve ends shall be the same type as the adjoining pipe unless noted otherwise in the Drawings.
- C. All valves shall open by turning the operator counterclockwise.
- D. All non-elastomeric valves and valve operators shall be factory prepared and primed, and field finish coated in accordance with Section 09 90 00, "Painting." Color shall match the adjoining piping.
- E. All valves of the same type shall be from one manufacturer.
- F. Manual Operators:
 - 1. General: Unless otherwise indicated, provide operators as shown on the Drawings.
 - a. Operator force not to exceed 80 pounds under any operating condition, including initial breakaway. Gear reduction operator when force exceeds 80 pounds.
 - b. Operator self-locking type or equipped with self-locking device.
 - c. Position indicator on quarter-turn valves.
 - d. Worm and Gear Operators: One-piece design worm gears of gear bronze material. Worm-hardened alloy steel with thread ground and polished. Traveling nut type operators, threaded steel reach rods with internally threaded bronze or ductile iron nut.
 - 2. Exposed Operator:
 - a. Galvanized and painted handwheels.
 - b. Cranks on gear type operators.
 - 3. Buried Operator:
 - a. Buried service operators on valves larger than 2-1/2 inches shall have a 2-inch AWWA operating nut. Buried operators on valves 2 inches and smaller shall have

cross handle for operation by forked key. Enclose moving parts of valve and operator in housing to prevent contact with the soil.

- b. Design buried service operators for quarter-turn valves to withstand 450 foot pounds of input torque at the FULLY OPEN or FULLY CLOSED positions, grease packed and gasketed to withstand a submersion in water to 10 psi.
- c. Buried valves shall be furnished with extension stems, bonnets, and valve boxes.

G. Valve Boxes:

- 1. Valve boxes shall be cast iron two-piece slip-type standard design with a base corresponding to the size of the valve, coal tar painted with manufacturer's standard. Distribution system valve boxes shall include cast iron ring and pentagon bolt locking cast iron cover labeled "SEWER" for sanitary sewer valves, and "WATER" for water distribution valves.
- 2. 6-inch- and 10-inch-diameter valve boxes shall be per WSDOT Standard Specification Section 9-15.5.
- 3. Underground enclosures for valves assemblies shall be polymer concrete with open base. Size shall be sufficient to allow access to valves and assemblies for repair and/or removal without removing enclosure. Enclosures shall have Tier 22 load rated bolt down cover. Enclosures shall be as manufactured by "Synertech" or approved equivalent.

2.04 BOLTS AND NUTS

- A. Threads: ANSI B1.1 coarse thread series, Class 2A external and Class 2B internal.
- B. Length: In conformance with ANSI B16.5.
- C. Materials:
 - 1. Buried and Exposed in Vaults: AISI Type 304 Stainless Steel – In conformance with ASTM A193 and ASTM A194 Grade B8 Class 2, marking B8.
 - 2. Inside Wet Well: AISI Type 316 Stainless Steel – In conformance with ASTM F593 and ASTM F594 alloy group 2, markings F593F and F594F.
 - 3. Inside Buildings and Outside Exposed: Galvanized Steel – In conformance with ASTM A307, Grade B, 60,000 PSI minimum tensile strength, markings 307B. Hot dip galvanized per ASTM A153 after fabrication.
- D. Nuts and bolts, and gaskets for flanged fittings and blind flanges, shall be designed to withstand the design and test pressure rating for the pipe.

2.05 GASKET LUBRICANT

- A. All lubricant shall be supplied by pipe manufacturer.

2.06 FABRICATION

- A. Mark each pipe length on outside:
 - 1. Size or diameter and class.
 - 2. Manufacturer's identification and pipe serial number.
 - 3. Location number on laying Drawing.
 - 4. Date of manufacture.
- B. Code markings according to approved shop drawings.
- C. Flanged pipe shall be fabricated in the shop, not in the field, and delivered to the site with flanges in place and properly faced. Threaded flanges shall be individually fitted and machine tightened on matching threaded pipe by the manufacturer.

2.07 PIPE SLEEVES

- A. Steel Pipe Sleeve:
 - 1. Minimum Thickness: 3/16 inch.
 - 2. Seep Ring:
 - a. 3/16 inch minimum thickness center steel flange for water stoppage on sleeves in exterior or water-bearing walls.
 - b. Outside Diameter: 3 inches greater than pipe sleeve outside diameter.
 - c. Continuously fillet weld on each side all around.
 - 3. Factory Finish:
 - a. Galvanizing:
 - 1) Hot-dip applied, meeting requirements of ASTM A153.
 - 2) Electroplated zinc or cadmium plating is unacceptable.
- B. Plastic Pipe Sleeve:
 - 1. High density polyethylene.
 - 2. Integrally Formed Water Stop: 4 inches larger than sleeve outside diameter, minimum.
 - 3. Installation end caps to attach to concrete forms to locate sleeve and to prevent deformation of sleeve during concrete pour.

4. Manufacturers and Products:
 - a. Thunderline Link-Seal; CenturyLine Sleeves.
 - b. Or equal.

C. Modular Mechanical Seal:

1. Type: Interconnected synthetic rubber links shaped and sized to continuously fill annular space between pipe and wall sleeve opening.
2. Fabrication: Assemble interconnected rubber links with ASTM A276, Type 316 stainless steel bolts, nuts, and pressure plates.
3. Size: According to manufacturer's instructions for the size of pipes shown to provide a watertight seal between pipe and wall sleeve opening, and to withstand a hydrostatic head of 40 feet of water.
4. Manufacturer: Thunderline Link-Seal, or equal.

2.08 DIELECTRIC PIPE FITTINGS, UNIONS, AND BOLT INSULATORS

- A. General: Provide dielectric fittings, unions, and bolt insulators at all metallic piping connections where dis-similar metals come into contact to prevent galvanic corrosion. As these insulators are not shown on the Drawings, Contractor shall be solely responsible for determining their locations.
 1. Bolt insulators: Where bolt material differs from support/pipe.
 2. Unions: Where two dissimilar pipe materials are joined.
 3. Manufacturers: Dielectric unions shall be EPCO, Capitol Manufacturing, or equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Follow piping runs specified on the Drawings as closely as possible. Submit proposed deviations in accordance with the specifications.
- B. Make connections to existing structures and manholes so that the finished work will conform as nearly as practicable to the requirements specified for the new manholes, including necessary concrete work, cutting and shaping. Also specify concrete mortar shaping within any structure and manhole.
- C. Installation shall comply with the latest installation instructions published by the manufacturer and shall conform to all applicable plumbing, fire, and building code requirements. If there is a discrepancy between installation methods described below and the manufacturer's written instruction, follow the manufacturer's written instructions.

- D. Anchorage: Provide anchorage as specified. Submit calculations and Drawings for proposed alternative anchorage in accordance with the specifications.
- E. All piping specialties and appurtenances shall be installed in the location shown on the Drawings, unless approved otherwise, true to alignment and rigidly supported. All piping specialties shall be installed in strict accordance with the manufacturers' recommendations. Any piping specialty that is damaged during installation, startup and testing shall be repaired at no cost to the Owner.
- F. Install concrete inserts for pipe supports as soon as forms are erected and before concrete is poured. Before setting these items, the Contractor shall check all Plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these piping appurtenances during the construction of the structures.
- G. Restrained plugs, blind flanges, and caps installed for pressure testing shall be fully secured and blocked to withstand the test pressure.

3.02 INSTALLATION OF BURIED PIPE

- A. Excavating, Bedding and Backfilling for Utilities: Per WSDOT and Special Provisions.
- B. Lines and Grades:
 - 1. In position and to accurate lines, elevations, and grades as shown on Drawings.
 - 2. Slope to drain where possible.
 - 3. Slope pipe uniformly and continuously between control elevations shown on Drawings when slope is not indicated.
- C. Securing in Place: By blocking, brackets, clamps, or other approved methods to secure pipe in place to withstand test pressure without movement.
- D. Joint Assembly Installation:
 - 1. O-Ring Joints:
 - a. Wire brush clean the exposed ends of the joint surfaces.
 - b. Thoroughly lubricate the gasket with material provided by the pipe manufacturer.
 - c. Place the gasket in the grooved spigot and relieve tension by inserting a dull instrument under the gasket and completing two revolutions around the joint's circumference.
 - d. Insert the joint to full metal-to-metal contact prior to providing the maximum allowable 1 inch joint opening for any necessary deflection.

- e. Electrically bond the joint through the use of welded steel bars, clips, or copper wires thermite welded to the pipe in the field.
 - f. Complete the exterior and interior of the joints with appropriate coating and lining.
2. Field-Welded Joints:
- a. Wire brush the exposed ends of joint surfaces.
 - b. A single full-fillet weld shall be provided by certified welders in accordance with AWS D1.1.
 - c. Complete the exterior and interior of the joints with appropriate coating and lining.
- E. Inspect each pipe and fitting before lowering into the trench. Inspect the interior and exterior protective coatings. Patch damaged areas in the field. Clean the ends of the pipe thoroughly. Remove foreign matter and dirt from inside of the pipe and keep it clean during and after laying.
- F. Handle pipe in a manner to avoid any damage to the pipe. Do not drop or roll pipe into trenches.
- G. At the location of each joint, dig bell (joint) holes in the bottom of the trench and at the sides to permit completion and visual inspection of the entire joint.
- H. Trenching and Backfilling: All trenching and backfilling required in connection with the piping installations shall be done in accordance with the WSDOT Standard Specifications and Special Provisions. No piping shall be backfilled before inspection. Pressure piping shall not be backfilled until successfully tested and approved. Trenches shall be backfilled without delay after approval. All trenches shall be shored and braced according to OSHA requirements. Keep all trenches in a dewatered condition during pipe laying.

3.03 INSTALLATION OF EXPOSED PIPE

- A. Complete installation to present neat orderly appearance, following piping runs as shown on the Drawings. Submit proposed deviations in accordance with the specifications.
- B. Do not block openings or passageways with piping.
- C. Run piping parallel to walls of building.
- D. Keep piping free from contact with structure or installed items.
- E. Allow clearances for expansion and contraction of pipe.
- F. Anchor horizontal runs over 50 feet at midpoint to force expansion equally toward ends.

G. Placement of Vertical Piping:

1. Secure at sufficiently close intervals to keep pipe in alignment and to support weight of pipe and contents.
2. Install supports at each floor or vertically at intervals of not more than 10 feet.
3. If piping is to temporarily stand free of support, or if no structural element is available for support during construction, secure in position with wooden stakes or braces fastened to pipe.

H. Placement of Horizontal Piping:

1. Support at sufficiently close intervals to maintain alignment and prevent sagging.
2. Install hangers at ends of runs or branches and at each change of direction or alignment.
3. Support spacing shall not exceed the manufacturer's recommendations, nor 5 feet for pipe 4 inches in diameter and smaller or 10 feet for pipe larger than 4 inches in diameter, or as shown on the Drawings.

I. Support at Equipment: Install to not induce strain on equipment during or subsequent to the installation of pipe work.

J. Provide flexible connection or union at all connections to equipment to facilitate removal for maintenance.

3.04 INSTALLATION AT CONCRETE WALLS AND FOOTINGS

A. Install wall sleeves and wall spools in advance of pouring concrete.

B. Flexible Connections: At each exterior wall penetration and at excavation line.

3.05 INSTALLATION OF BELL AND SPIGOT, PUSH-ON, AND MECHANICAL JOINT PIPE

A. Push-On Joint Installation:

1. Clean hub and insert gasket.
2. Apply gasket lubricant to spigot and inside of gasket.
3. Drive spigot into gasketed hub with pulling tool or suitable device.

B. Mechanical Joint Installation:

1. Place gland on spigot end.
2. Slip on rubber gasket.
3. Slip on gasket and joint surfaces on the pipe.

4. Thoroughly wet gasket end joint surfaces with soapy solution as recommended by manufacturer.
5. Insert spigot end to full depth with gasket pressed firmly into place in the bell in order to obtain an even “set” all around the joint.
6. Move gland into place, insert bolts, and tighten with fingers.
7. Tighten nuts with wrench, a half turn at a time, moving from one nut to another repeating until all nuts are uniformly tight.
8. Final tightness with torque wrench to manufacturer’s requirements.

3.06 FLANGED PIPE INSTALLATION

- A. Tighten flange bolts so that gasket is uniformly compressed and sealed. Bolts shall be tightened in a progressively crisscrossed pattern.
- B. Adjoining flange faces shall be level and square. Do not distort flanges.
- C. Unless otherwise noted, flanged fittings shall be installed such that the top two holes in the flange are level (“two hole”).
- D. Leave flange bolts with ends projecting 1/8 to 3/8 inch beyond the face of nut after tightening.

3.07 THREADED JOINT INSTALLATION

- A. Pipe cutting, threading, and jointing shall conform to the requirements of ANSI B31.1.
- B. Threads: ANSI B2.1, NPT.
- C. Cut threads full and clean with sharp dies.
- D. Ream ends of pipe after threading and before assembly to remove burrs.
- E. Leave not more than three pipe threads exposed at each connection.
- F. Joint Sealer: Teflon thread tape.

3.08 SOLVENT WELDED JOINTS

- A. Cutting:
 1. Cut pipe with a knife or handsaw.
 2. Make cuts square with pipe.
 3. Remove burrs by smoothing edges with a knife, file, or sandpaper.

B. Joining:

1. Clean joint surfaces and apply manufacturer-recommended primer.
2. Coat with solvent cement and join.
3. Hold joint together until cement takes hold.
4. Use sufficient cement so that a bead of cement is formed between pipe and fitting at socket entrance.

3.09 SOLDER AND BRAZED JOINTS

- A. Ream or file pipe to remove burrs.
- B. Clean and polish contact surfaces of joint.
- C. Apply flux to both male and female ends.
- D. Insert end of tube into fittings full depth of socket.
- E. Bring joint to soldering temperature, in as short a time as possible.
- F. Form continuous solder bead around entire circumference of joint.

3.10 WELDED JOINT INSTALLATION

- A. Shop fabricated to maximum extent possible.
- B. Use welders certified in accordance with the latest requirements of the American Welding Society "Standard Qualifications Procedures."
- C. Repair coating and linings to a condition equivalent to the factory applied coating or lining.
- D. Install coupling at ends of pipe to be welded to provide access for replacing protective lining.
- E. Welded joints shall meet the following requirements:
 1. Field-welded joints shall be butt-welded joints, butt-strap joints, or lap-welded slip-on joints welded in accordance with AWWA C206 as revised herein. Butt-strap joints may be flared to facilitate field fitting. However, flaring of the butt strap shall not be performed in the field. Permissible variations in joint design are as follows:
 - a. Miter-cut butt-strap joints and bells (for lap-welded slip-on joints) formed on bevel cut ends.
 2. Lap-Welded Slip-On Joints: Where lap-welded slip-on joints are provided for welded joints, the bells shall be formed by expanding with segmental dies on a hydraulic expander, pressing on a plug die, or by rolling. The minimum radius of curvature of any formed surface shall be 15 times the nominal thickness of the steel shell. The bell

ends shall be formed in a manner that does not impair the physical properties of the steel shell.

3. Linings and Coatings: Shop-applied interior linings and exterior coatings shall be held back a minimum of 2-1/2 inches from the point at which the weld is to be made. Joints shall be grouted or mortared in the field using sailcloth diapers, or equal, and in accordance with the manufacturer's recommendations. The inside of the finished (welded and grouted) joint shall have a smooth flow surface across the joint.
4. Relative Bell Dimensions: Bell and spigot ends shall be sized to provide a difference in circumferential measurement between the outside circumference of the spigot and the inside circumference of the bell (or butt-strap) of not more than 0.4 inch. The clearance between the spigot and bell (or butt-strap) shall be equalized around the pipe circumference.

F. Field Welding:

1. Use couplings and prefabrication of pipe systems at the factory to minimize field welding to the greatest extent possible. Pipe butt welds may be performed at the job site, providing the butt welds are performed only with an inert gas shielded process and that other applicable specified welding requirements are rigidly adhered to.
2. Remove all residue, oxide, and heat stain from any type of field weld and the affected areas adjacent by the use of stainless steel wire brushes, followed by cleaning with an agent, followed by complete removal of the agent.

G. Preparation of Surfaces to Be Welded:

1. Make surfaces of joints to be welded free from mill scale, slag, grease, oil, paint, rust, and other foreign material.
2. Wire brush joints to be welded with stainless steel wire brushes and precisely fit before welding.

H. Weather Conditions:

1. Perform welding only when the surfaces are completely free of any moisture.
2. Do not weld the pipe during periods of high winds or rain unless the areas being welded are properly shielded.

I. Tack Welds, Clips, and Other Attachments:

1. Repair nicks, gouges, notches, and depressions in the base metal in the area of the before the joint weld is made.
2. Remove tack welds, clips, and other attachments and repair defects, except where the tack welds occur within the weld area and these tack welds do not exceed the size of the completed weld. Cracked tack welds shall be removed.
3. Grind those areas to be repaired down to clean metal and then repair by building up with weld metal. Grind the repaired areas smooth to form a plane surface with the base metal.

J. Defects and Repairs:

1. Remove welds with cracks, slag inclusions, porosity, undercutting, incomplete penetration, or which are otherwise deficient in quality or made contrary to any provisions of these specifications, by chipping or grinding throughout their depth to clean base metal.
2. Do not perform calking or peening of welds to correct defects.
3. Enlarge welds found deficient in dimension but not in quality by additional welding after thoroughly cleaning the surface of previously deposited metal and the adjoining plate.
4. Remove weld deposits, slag, weld spatter, and projections into the interior of the pipe by grinding.

K. Fabrication and Installation Requirements:

1. The piping supplier during manufacturing, fabricating and handling stages, and the Contractor during handling and installation stages, shall use extreme care to avoid the contact of any ferrous materials with the stainless steel piping. Contact with ferrous items may cause rusting of iron particles embedded in the piping walls.
 - a. Stainless steel saws, drills, files, wire brushes, etc. shall be used for stainless steel piping only.
 - b. Pipe storage and fabrication racks shall be nonferrous or stainless steel or rubber lined.
 - c. Use nylon slings or straps for handling stainless steel piping.
 - d. After installation, the Contractor shall wash and rinse all foreign matter from the piping surface.
 - e. Treat all welded joints with a pickling solution, brush with stainless steel wire brushes and rinse clean.
 - f. If rusting of embedded iron occurs, the Contractor shall pickle the affected surface, scrub with stainless steel brushes, and rinse clean.

3.11 VALVES

- A. General: Valves and accessories shall be installed in a manner and location as shown on the Drawings or as required for the application and in accordance with manufacturer's instructions. Size of valve is equal to line piping in which valve is installed unless otherwise noted on the Drawings. Support all valves where necessary. In case of conflict between these Specifications and a governing code, the higher standard shall prevail.
- B. Joints: Bolt holes of flanged valves shall straddle the horizontal and vertical centerlines of the pipe run to which the valves are attached. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing, lubricate threads

with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

1. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
- C. Exposed Valves: Unless otherwise indicated in the Drawings, install valves in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above the floor with their operating stems vertical. Install valves in horizontal runs of pipe having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above the floor with their operating stems horizontal.
1. Install valves on vertical runs of pipe that are next to walls with their stems horizontal, away from the wall. Valves on vertical runs of pipe that are not located next to walls shall be installed with their stems horizontal, oriented to facilitate valve operation.
- D. Buried Valves: Connect the valve, and place and compact the backfill to the height of the valve stem.
1. Place block pads under the extension pipe to maintain the valve box vertical during backfilling and repaving and to prevent the extension pipe from contacting the valve bonnet. Mount the upper slip pipe of the extension in mid position and secure with backfill around the extension pipe.
- E. Accessories:
1. Provide all accessories necessary for proper valve operation as specified or required for the application.
 2. Provide extension stems for buried valve service where indicated on the Plans or required for convenient operation. Provide sufficient number of adjustable cast iron stem guides such that the ratio of unsupported length of stem to radius of stem does not exceed 200. Small lever or handwheel operated valves may utilize handrails or other suitable structure for support of extension stems.
- F. Valve Operators: Valves shall be installed with the operator in a position for convenient operation. Particular care shall be taken to ensure that space is available for operation of lever or handwheel-operated valves without interference from walls, piping, or equipment. Any valve that is installed, in the opinion of the Owner, in a manner that operation is inconvenient, shall be modified or removed and reinstalled in a manner suitable to the Owner. Operators for manual valves shall be lever or handwheel as is standard with the manufacturer unless another type of operator is specified or required by the manufacturer.
- G. Adjustments: Check and adjust valves and accessories for smooth and optimum operation. Lubricate in accordance with manufacturer's recommendations. All globe, angle, and gate valves shall have their stuffing boxes packed with an excess of 30 percent of packing (for future adjustment).

3.12 WALL PENETRATIONS

- A. For wet to dry and ground to wet or dry concrete wall penetrations, provide ductile iron wall pipes with seep rings or modular seals with stainless steel type 316 bolts, nuts and washers, with ductile iron wall sleeves or core drilled holes.
- B. Modular seals shall be used on all wall or floor penetrations unless thickness of modular seal exceeds wall thickness. Center pipe in penetration and use non-shrink grout where modular seal cannot be installed. Modular seal is allowable in all locations as an alternative to ductile iron wall pipes with seep rings. Modular seal shall be used in core drilled or cast in-place modular seal type ductile iron wall sleeves, in strict accordance with manufacturer's recommendations. Grout wet and ground side of penetration with non-shrink grout, unless otherwise shown on the Drawings or directed by Engineer.
- C. Ductile iron wall pipes with seep rings of the proper diameter and with suitable ends for connection to adjacent pipes may be used where modular seals are not specifically called for on the Drawings. Seep rings shall be installed and shall be a minimum of 2 inches wide, extending at right angles and continuously welded or brazed to the pipe or cast integral with the pipe. Wall pipes shall be of a class equal to or greater than the remainder of the pipe in the line. Seep rings shall be installed by the pipe manufacturer at the time of fabrication, unless approved by Engineer for specific application. Wall pipes shall be lined per cast ductile pipe specifications. All wall sleeves in direct contact with concrete shall be ductile iron.

3.13 MODULAR SEALS

- A. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely watertight seal between the pipe and wall opening.

3.14 CLEANING

- A. General: Equipment, pipes, valves, fittings, fixtures, appliances, etc. shall be thoroughly cleaned of grease, dirt, metal cuttings, etc. and left in a satisfactory condition for use prior to testing or placing system in service.
- B. Piping: Drain and flush to remove grease and foreign matter. Thoroughly clean out valves, traps, and strainers.

3.15 LEAKAGE TESTING

- A. Preparation
 - 1. Notify Engineer in writing 5 days in advance of testing. Perform testing in presence of Engineer.

2. Pressure Piping:
 - a. Install temporary thrust blocking or other restraint as necessary to protect adjacent piping or equipment and make taps in piping prior to testing.
 - b. Prior to test, remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
 - c. Isolate new piping connected to existing piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to Engineer.
 - d. Test Pressure: As indicated on Pipe Schedule.
3. Gravity Piping:
 - a. Perform testing after service connections, manholes, and backfilling have been completed between stations to be tested.
 - b. Determine groundwater level at time of testing by exploratory holes or other method acceptable to Engineer.
4. Test section may be filled with water and allowed to stand under low pressure prior to testing.
5. Hydrostatic Testing for Pressure Piping:
 - a. Fluid: Clean water to prevent corrosion of materials in piping system.
 - b. Exposed Piping:
 - 1) Perform testing on installed piping prior to application of insulation.
 - 2) Maximum Filling Velocity: 0.25 foot per second, applied over full area of pipe.
 - 3) Vent Piping During Filling. Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to pump air pockets.
 - 4) Maintain hydrostatic test pressure continuously for 30 minutes minimum, and for such additional time as necessary to conduct examinations for leakage.
 - 5) Examine joints and connections for leakage.
 - 6) Correct visible leakage and retest.
 - c. Buried Piping:
 - 1) Test after backfilling has been completed unless otherwise approved by Engineer.
 - 2) Expel air from piping system during filling.

- 3) Apply and maintain specified test pressure with hydraulic force pump. Valve off piping system when test pressure is reached.
- 4) Maintain hydrostatic test pressure continuously for 2 hours minimum, reopening isolation valve only as necessary to restore test pressure.
- 5) Determine actual leakage by measuring quantity of water necessary to maintain specified test pressure for duration of test.

d. Maximum Allowable Leakage:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

Where:

L = Allowable leakage, in gallons per hours.

S = Length of pipe tested, in feet.

D = Nominal diameter of pipe, in inches.

P = Test pressure during leakage test, in pounds per square inch.

e. Correct leakage greater than allowable, and retest.

6. Pneumatic Test for Pressure Piping:

a. Do not perform on:

- 1) Plastic pipe.
- 2) Piping larger than 6 inches.
- 3) Buried and other non-exposed piping, unless otherwise indicated.
- 4) Specified test pressures above 25 psi.
- 5) Where hydrostatic test is possible.

b. Fluid: Oil-free, dry air.

c. Procedure:

- 1) Apply preliminary pneumatic test pressure of 25 psi maximum to piping system prior to final leak testing, to locate visible leaks. Apply soap bubble mixture to joints and connections, examine for leakage.
- 2) Correct visible leaks and repeat preliminary test until visible leaks are corrected.

- 3) Maintain pneumatic test pressure continuously for minimum of 10 minutes and for such additional time as necessary to conduct soap bubble examination for leakage.
- 4) Correct visible leakage and retest.

7. Hydrostatic Test for Gravity Piping:

- a. Testing Equipment Accuracy: Plus or minus 1/2 gallon of water leakage under specified conditions.
- b. Maximum Allowable Leakage: 0.16 gallons per hour per inch diameter per 100 feet. Include service connection footage in test section, subjected to minimum head specified.
- c. Hydrostatic Head:
 - 1) At least 6 feet above maximum estimated groundwater level in section being tested.
 - 2) No less than 6 feet above inside top of highest section of pipe in test section, including service connections.
- d. Defective Piping Sections: Replace or test and seal individual joints and retest.

B. Field Quality Control:

1. Test Report documentation follows:
 - a. Test date.
 - b. Description and identification of piping tested.
 - c. Test fluid.
 - d. Test pressure.
 - e. Remarks, including:
 - 1) Leaks (type, location).
 - 2) Repair/replacement performed to remedy excessive leakage.
 - f. Signed by Contractor and Engineer to represent that test has been satisfactorily completed.

3.16 PAINTING

- A. After installation, paint exposed interior and exterior and immersed pipe, valves, couplings, and appurtenances in accordance with Section 09 90 00, "Painting."
 - 1. Painting of the stainless steel pipe is not required.
 - a. The Contractor shall be responsible for supplying and installing the stainless steel piping with a consistently clean surface.
 - b. Remove identifying spool piece marks with paint thinner or solvents and wash the entire stainless steel surface with detergent and hot water and rinse clean.

3.17 PIPE IDENTIFICATION

- A. Provide pipe identification on all piping systems specified herein.

END OF SECTION

This Page Intentionally Left Blank

SECTION 22 05 29
PIPE HANGERS AND SUPPORTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies hangers and supports for all exposed piping systems.
- B. This specification section applies to the sewer facilities associated with this project.

1.02 PIPING SUPPORT DESIGN

- A. All details for pipe supports design are not shown on the Drawings. Final locations of pipe supports required are not shown or noted on the Drawings. Design, furnish, and install the pipe support sizes, types, locations, quantity, and mounting requirements and all other items necessary to provide fully-supported and restrained piping systems.

1.03 DEFINITIONS

- A. Ferrous Metal: Iron, steel, stainless steel, and alloys with iron as principal component.
- B. Exposed Area: Any area in contact with the atmosphere.
- C. Wetted and Submerged Area: Any surface within the wet well.

1.04 REFERENCED STANDARDS

- A. This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ASME B31.3	Process Piping
AISC M011-89	Manual of Steel Construction – 8th Edition
MSS SP-58-88	Pipe Hangers and Supports – Materials, Design and Manufacture
MSS SP-69-83	Pipe Hangers and Supports – Selection and Application
MSS-SP 89	Pipe Hangers and Supports – Fabrication and Installation Practices
FEDSPEC WW-H-171e-78	Hangers and Supports, Pipe
MFMA-1-84	Metal Framing Standards Publication

1.05 SUBMITTALS

A. Shop Drawings:

1. Layout drawings of piping supports shown on the Drawings. Drawings shall identify supports, braces, hangers, guides, anchor types, materials, and finish by catalog number and locations.
2. Supporting calculations of piping supports and seismic bracing systems.

B. Product data of all pipe supports, hangers, and anchoring systems.

1.06 DESIGN REQUIREMENTS

A. General:

1. Seismic Load: Seismic design shall be based on factors given in the Structural General Notes found on the Drawings.
2. Design, furnish, and install all piping supports, hangers, and seismic bracing systems inside the building and reservoir, regardless of whether these supports and systems are shown on the Drawings. Provide seismic bracing to prevent permanent displacement in any direction caused by lateral motion, overturning or uplift.
3. Supports are shown only where specific types and locations are required; additional pipe supports may be required at these locations.
4. Meet requirements of MSS SP58, MSS SP69, and MSS SP89.
5. Contractor may use the latest edition of SMACNA/PPIC, "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems" in lieu of engineering each application. Contractor shall use Hazard Level "A" as defined in the guidelines.

B. Pipe Support Systems:

1. Support Load: Dead loads imposed by weight of pipes filled with water, except air and gas pipes, plus insulation.
2. Safety Factor: Minimum of 5.
3. Maximum Support Spacing and Minimum Rod Size: Shall be in accordance with the Contractor's design calculations.

C. Framing Support System:

1. Beams: Size such that beam stress does not exceed 25,000 psi and maximum deflection does not exceed 1/240 of span.
2. Column Members: Size in accordance with manufacturer's recommended method.

3. Support Loads: Calculate using weight of pipes filled with water.
 4. Maximum Spans: As noted in the Standard Details or the Contractor's layout drawings. In case of conflict between these two, the most conservative span shall apply.
- D. Anchoring Devices: Design, size, and space support anchoring devices, including anchor bolts, inserts, and other devices used to anchor support, to withstand shear and pull-out loads imposed by loading and spacing on each particular support.
- E. Vertical Sway Bracing: 10-foot-maximum centers or as shown on the Drawings.

1.07 HANGER AND SUPPORT SELECTION

- A. Hanger and supports selection shall be based on the following:
1. Pipe support selections shall be based on the pipe support classifications specified in MSS SP 69.
 2. Contractor shall review the piping layout in relation to the surrounding structure and adjacent piping and equipment before selecting the type of supports to be used at each hanger or support location.
 3. Where a particular type of pipe support is generally shown on the Drawings, that particular design shall be used.
 4. Where a particular pipe support arrangement is shown the Drawings, that particular arrangement shall be used at that location(s).
 5. Pipe support design shall conform to ASME B31.3.
 6. Pipe hanger and support systems shall be coordinated with the seismic requirements shown on the Drawings.
 7. Hangers and supports shall withstand all static and dynamic conditions of loading to which the piping and associated equipment may be subjected to. As a minimum, the Contractor shall consider the following when designing and furnishing the pipe support and hanger systems:
 - a. Weights of pipe, valves, fittings, insulating materials, suspended hanger components, and normal fluid contents.
 - b. Weight of hydrostatic test fluid or cleaning fluid if normal operating fluid contents are lighter.
 - c. Reaction forces due to test and operational conditions.
 - d. Reaction forces due to operation of safety, relief, or other valves.
 - e. Wind, snow, or ice loading on all outdoor piping.

8. Supports shall be designed to prevent transfer of the weight of piping, valves, and piping appurtenances to equipment piping connections. All adjacent supports at equipment connections to piping systems shall have provisions for vertical and horizontal adjustment. Two flexible piping connections not less than one pipe diameter apart shall be provided between piping supports and any equipment piping connection.
9. Hangers and supports shall be sized to fit the outside diameter of pipe, tubing, or the outside diameter of piping insulation.
10. Where negligible movement occurs at hanger locations, rod hangers shall be used for suspended lines, wherever practical. For piping supported from below, bases, brackets, or structural cross members shall be used.
11. Hangers for the suspension of 2-1/2 inches and larger piping and tubing shall be capable of vertical adjustment under full load conditions.
12. Supporting systems shall provide for and control the free or intended movement of the piping including movement in relation to that of the connected equipment.
13. Where there is horizontal movement at a suspended type hanger location, hanger components shall be selected to allow for swing. The vertical angle of the hanger rod shall not, at any time, exceed four degrees.
14. There shall be no contact between a pipe, hanger, or support components of dissimilar metals.
15. Pump discharges shall have, as a minimum, a fixed anchor within five diameters from the discharge connection.

PART 2 – PRODUCTS

2.01 GENERAL

- A. When items specified or depicted in the Standard Details are not available, fabricate pipe supports material to the general configuration indicated by catalogs. All pipe supports shall include braces for seismic loadings.
- B. Materials:
 1. Wetted and Submerged Areas: Supports shall be AISI Type 316 stainless steel.
 2. Valve Vault: Supports shall be AISI Type 304 stainless steel.
 3. Non-Corrosive Areas: Supports shall be hot-dipped galvanized steel.

2.02 ANCHORING SYSTEMS

- A. Material:
 1. Shall be hot-dip galvanized steel or stainless steel, in accordance with Paragraph 2.01.

- B. Size: Sized in accordance with the Contractor's design calculations, 1/2-inch-minimum diameter as shown on the Drawings and specified in the Special Provisions.

2.03 CHANNEL TYPE SUPPORT SYSTEMS

A. Metallic Channel Strut and Support Materials:

1. Shall be hot-dip galvanized steel or stainless steel, in accordance with Paragraph 2.01.
2. Channel Size: 12-gauge, 1-5/8 inch by 1-5/8 inch series.
3. Members and Connections: Design for all loads with safety factor of 5.
4. Approved Manufacturers:
 - a. Unistrut, P1000.
 - b. Approved Equal.

B. Non-Metallic Channel Strut and Support Materials:

1. Shall be pultruded glass-reinforced polyester or premium grade vinylester resin fiberglass for excellent corrosion resistance.
2. Shall have a synthetic surfacing veil applied on exterior surfaces to improve weatherability and inhibit ultraviolet degradation.
3. Channel Size: 1-5/8 inch by 1-5/8 inch series.
4. Approved Manufacturers:
 - a. Unistrut, F20P-2000, unless otherwise shown on the Drawings.
 - b. Approved Equal.

C. Members and Connections (Metallic and Non-Metallic Struts): Design all supporting fittings, members and connections for the loads specified herein.

D. Strut Post Bases: Provide four-hole strut bases as specified below:

1. Metallic Struts: Shall be fabricated from galvanized steel and stainless steel, in accordance with Paragraph 2.01. Shall be Unistrut P2072A HG and P2072A SS or approved equal.
2. Non-Metallic Struts: Provide four-hole strut bases fabricated from glass-reinforced polyester resin, Unistrut F20PU-5853, or approved equal, unless otherwise shown on the Drawings.

E. Strut Pipe Straps:

1. Metallic: Shall be Standard Pipe Strap Model P2558 HG and P2558 SS series as manufactured by Unistrut, or approved equal, unless otherwise shown on the Drawings.
2. Non-Metallic: Provide two-hole pipe straps fabricated from glass-reinforced polyester resin, Unistrut FPS series, or approved equal, unless otherwise shown on the Drawings.
3. Tube Clamps: Shall be Unicushion Model P2600 EG and P2600 SS as manufactured by Unistrut, or approved equal.

F. General Strut Fittings: Contractor shall provide all additional fittings as required to fabricate the channel strut pipe support systems shown on the Drawings. All fitting materials provided for the metallic and non-metallic struts shall be in accordance with Paragraph 2.01.

G. Strut End Caps: Provide rubber end caps at the exposed ends of all channel struts, up to 7 feet above finished floor.

2.04 SHOP FINISHING

A. Prepare, prime, and finish coat all metallic piping supports in accordance with Section 09 90 00, "Painting." Stainless steel and non-metallic support components shall not be coated.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General:

1. Install support systems in accordance with MSS SP69, "Pipe Hangers and Supports Selection and Application", and MSS SP89, "Pipe Hangers and Supports Fabrication and Installation", unless shown otherwise.
2. Support piping connections to equipment by pipe support and not by the equipment. Pipe support components shall not be attached to pressure vessels.
3. Pipe support hangers, brackets, etc. shall be of suitable capacity and shall be appropriate to the individual structural member used to support the pipe.
4. The structural integrity of any new or existing members shall not be impacted by the placement of connections for pipe supports or any other embeds. For example, the tension reinforcement in reinforced concrete members shall not be impacted in any way by the placement of fasteners for pipe supports.

5. Pipe may be supported from the nearest structural element (floor, ceiling, wall) as long as these attachments shall not cause the structural member to exceed the design live load criteria shown on the Drawings.
6. Pipe supports shall not be placed at a location which will cause interference with the operation of valves, equipment, or other items that need to be accessed for regular operation and maintenance of the facility.
7. Support large or heavy valves, fittings, and appurtenances independently of connected piping.
8. Do not support any piping from any other piping segments above or adjacent.
9. Support pipe at changes in direction or in elevation, adjacent to flexible joints and couplings, and where shown.
10. Do not install pipe supports and hangers in equipment access areas.
11. Brace hanging pipes against horizontal movement by both longitudinal and lateral sway bracing.
12. Install lateral supports for seismic loads at all changes in direction and where pipe support does not provide adequate lateral support for tributary seismic loads.
13. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
14. Install pipe anchors where required to withstand expansion thrust loads and to direct and control thermal expansion.
15. Repair mounting surfaces to original condition after attachments are made.
16. Any pipe support connections welded to the pressure piping shall be performed so that the minimum design working pressure and thickness of the pressure piping is unaffected.

B. Intermediate and Pipe Alignment Guides:

1. Provide pipe alignment guides (or pipe supports that provide the same function) at all expansion joints and loops.
2. Guide piping on each side of an expansion joint or loop at 4 and 14 pipe-diameters from each joint or loop.
3. Install intermediate guides on metal-framing support systems not carrying a pipe anchor or alignment guide.

- C. Pipe Slopes: Install hangers and supports so as not to create any intermediate high or low points along each piping segment run, unless otherwise indicated on the Drawings. Pipe slopes shall not exceed the maximum pipe deflections allowed by ASME B31.9 (for building services piping).
- D. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment. Adjust hangers and supports as needed to distribute loads equally on attachments and to achieve indicated slope of pipe.
- E. Fiberglass Strut System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled fiberglass struts.
- F. Accessories:
 - 1. Vibration Isolation Pad: Install under base flange or pedestal-type pipe supports within 3 feet of any pump or filter equipment, and other locations as required to isolate vibration from the piping systems.
 - 2. Dielectric Barrier:
 - a. Install between all carbon steel supports (including those with hot-dipped galvanized surfaces) and copper or stainless steel pipe.
 - b. Install between stainless steel supports and dissimilar metal piping.
 - 3. Electrical Isolation: Install 1/4-inch by 3-inch neoprene-rubber wrap between submerged metal pipe and oversized clamps.

END OF SECTION

**SECTION 22 06 00
PIPE SCHEDULE**

Pipe schedule applies to process piping and plumbing. Pipe schedule is general. Specific details may require variations from table. Where the Drawings show piping that carries two or more service designations, the piping material shall conform to the requirement for the first service listed.

Piping System per Contract Drawings	Service	System Type	Size (In.)^a	Material	Installation	Joint Type	Lining/Coating^b	Test Pressure and Type (psig-x)	Remarks^c
CI	Chemical Injection	Chemical Injection	All	PVC	ALL	SW	Bare/Bare	G	
D	Drain	Drain, Waste, Vent	All	PVC	ALL	SW	Bare/Bare	UPC	
FM	Force Main	Sanitary Sewer	All	DI	EXP BUR	FLG/GR MJ	Cement/Paint Cement/Asph	150-H	Factory coat all ductile iron pipe and fittings located in wet well per Section 09 90 00
SS	Sanitary Sewer	Sanitary Sewer	All	PVC	BUR	HU	Bare/Bare	G	
V	Vent	Drain, Waste, Vent	All	SST PVC	ALL ALL	W SW	Bare/Bare Bare/Bare	UPC	
W, WP, WN	Water	Domestic Water	≤ 3"	COP PVC	EXP BUR	SB SW/THD	Bare/Bare Bare/Bare	125-H	Provide thrust restraint at all joints.

^a Unless noted, pipe schedule applies to all sizes for a particular service. All pipe sizes within pipe ranks may not be used. Reference Drawings for sizes used.

^b Coating systems per Spec Section 09 90 00, "Painting." "Asph" for ductile iron pipe denotes asphaltic coating per the Specifications.

^c Operating temperature is ambient or normal water temperature unless otherwise shown.

<u>Size</u>	<u>Material</u>	<u>Installation</u>	<u>Joint Type</u>	<u>Test Type</u>
">" Greater Than	"BPS" Black Steel Pipe	"All" All Installations	"FLG" Flanged	"G" Gravity Test
"<" Less Than	"CISP" Cast Iron Soil Pipe	"BUR" Buried	"FW" Fusion Welded	"H" Hydrostatic Test
"≥" Greater Than or Equal To	"COP" Copper	"EMB" Embedded (in concrete)	"GR" Grooved	"IS" In Service
"≤" Less Than or Equal To	"DI" Ductile Iron	"EXP" Exposed (interior or exterior)	"HL" Hubless	"P" Pneumatic Test
"All" All Sizes	"FRP" Fiberglass Reinforced Plastic	"SUB" Submerged	"HU" Hub and Spigot	"UPC" Test per Uniform Plumbing Code
	"GSP" Galvanized Steel Pipe		"MJ" Mechanical Joint	
	"PVC" Polyvinyl Chloride		"PO" Push-On	
	"SST" Stainless Steel		"SB" Solder/Braze	
	"STL" Mill Type Steel		"SW" Socket Welded	
			"THD" Threaded	
			"W" Welded	

END OF SECTION

This Page Is Intentionally Left Blank

SECTION 22 13 13

FACILITY SANITARY SEWER PIPING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section specifies pipe, fittings, and connections required for the installation of sanitary sewer discharge and force main. The actual pipe size and fittings shall be as shown on the Drawings and described in the Pipe Schedule.
- B. This specification section applies to the sewer pump station facilities associated with this project.

1.02 SUBMITTALS

- A. Prior to delivering the product to the job site, the following submittals shall be provided in accordance with the specifications:
 - 1. Shop Drawings and Product Data:
 - a. Provide a complete submittal package for items specified herein per Section 22 05 00 “General Requirements for Piping.” Submittal package shall include Manufacturer’s product data, catalog cuts, or shop drawings describing construction, dimensions, and materials.
 - 2. Operation and maintenance manuals.

PART 2 – PRODUCTS

2.01 DUCTILE IRON PRESSURE SEWER PIPE

- A. This Paragraph specifies sanitary sewer piping to be used in conjunction with pumps or other mechanical equipment for pressure applications, 3 inches and larger.
- B. Pipe: Centrifugally cast ductile iron pipe conforming to AWWA C151/A21.51. Design methods shall conform to ANSI/AWWA C150/A21.50. Flanged pipe shall be Special Thickness Class 53, Minimum Pressure Class 350, unless otherwise indicated on the Drawings.
- C. Fittings: As shown on the Drawings and in the Pipe Schedule.
- D. Lining:
 - 1. Cement per AWWA C151/A21.51.

E. Coating:

1. Buried Pipe: Asphaltic (bituminous) per AWWA C151/A21.51.
 - a. Fabricated spools that are half-buried and exposed shall be asphaltic coated through the penetration and coated in accordance with Section 09 90 00 thereafter.
2. Exposed, Embedded, and Submerged Pipe: Do not apply asphaltic coating. Bolts and nuts shall not be coated. Valve Vault piping and valves shall be factory coated and shall not be field coated. See Section 09 90 00, "Painting," for coating requirements.

F. Fittings:

1. All fittings shall be lined and coated to match pipe. All joints shall be rated for a minimum working pressure of 250 psi.
2. Push-On: AWWA C110/A21.10 and C111/A21.11, gray or ductile iron, 250 psi minimum working pressure.
3. Mechanical: AWWA C110/A21.10, C111/A21.11, and C153/A21.53, gray or ductile iron, 250 psi minimum working pressure.
4. Proprietary Restrained: AWWA C111/A21.11 and C153/A21.53, ductile iron, 250 psi minimum working pressure. Romac Industries; Style RFCA or approved equal.
5. Grooved End: AWWA C606 and C110/A21.10, ductile iron, 250 psi minimum working pressure. Victaulic or approved equal.
6. Flanged: AWWA C110/A21.10, ductile iron, faced and drilled, 125-pound flat face; or ANSI B16.1, 250-pound raised face. Gray cast iron will not be allowed.

G. Joints:

1. As shown on the Drawings and in the Pipe Schedule.

H. Bolting: Refer to Section 22 05 00, "General Requirements for Piping."

I. Gaskets:

1. All Gaskets shall have a pressure rating equal to or exceeding the system hydrostatic test pressure.
2. Push-On, Mechanical, and Proprietary Restrained Joints: Rubber conforming to AWWA C111/A21.11.
3. Grooved End Joints: Halogenated butyl conforming to ASTM D2000 and AWWA C606.
4. Flanged: 1/8-inch thick, red rubber (SBR), hardness 75 (Shore A), rated to 200°F, conforming to ANSI B16.21, AWWA C207, and ASTM D1330, Grades 1 and 2.

J. Joint Lubricant: Manufacturer's Standard.

PART 3 – EXECUTION

3.01 DUCTILE IRON PRESSURE SEWER PIPE

- A. Install all ductile iron pipe in accordance with the latest instructions published by the manufacturer.
- B. Field Cutting: Field cutting should be limited to one piece per run of pipe for closure purposes only.
- C. Field Repair: Repair the ends of all field-cut closure pieces with a field repair kit furnished by the pipe manufacturer. The area to be repaired should be free of any loose materials and should be cleaned with a standard solvent to remove any grease or dirt. Prepare repair product and apply per the manufacturer's recommendations. The Owner's Representative shall inspect each repaired end prior to installation by the Contractor.

3.02 FACTORY COATED DUCTILE IRON PIPE:

- A. Handling: All pipes shall be handled with belt slings and padded forks to avoid damage. All shipping timbers and straps shall be padded when shipping pipe.
- B. Jobsite Repair: Any areas where damage has occurred due to handling shall be repaired using a touch-up kit provided by the coating manufacturer prior to installation to equal the original coating.

3.03 INSPECTION AND TESTING

- A. All piping shall be subjected to Leakage Testing in accordance with Section 22 05 00, "General Requirements for Piping." All leaks shall be repaired and lines retested as approved by the Engineer. Prior to testing, all piping shall be supported and thrust restrained for forces in excess of the test pressure to prevent movement during tests.

END OF SECTION

This Page Intentionally Left Blank

SECTION 22 13 18
FACILITY SANITARY SEWERAGE VALVES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section specifies valves required for the installation on sanitary, waste, and vent services.

1.02 SUBMITTALS

- A. Prior to delivering the product to the job site, the following submittals shall be provided in accordance with the specifications.
- B. Shop Drawings and Product Data:
 - 1. Provide a complete submittal package for items specified herein per Section 22 05 00, "General Requirements for Piping." Submittal package shall include Manufacturer's product data, catalog cuts, or shop drawings describing construction, dimensions, and materials.
 - 2. Operation and maintenance manuals.

PART 2 – PRODUCTS

2.01 PLUG VALVES

- A. Size: 4 inch to 12 inch.
- B. Type: Eccentric plug valves, straight flow, non-lubricated, resilient plug type with port suitable for drip tight, bi-directional shutoff at the specified design pressure. In general valves must have a minimum of 100% of adjacent full pipe area in sizes up to 20 inches. The 8 inch plug valves in the bypass manhole shall have a full unobstructed opening in the fully open position to facilitate the launching of force main pigs.
- C. Rating: 175 psi.
- D. Body: Cast iron, ASTM A126, Class B.
- E. Plug: Cast iron, ASTM A126, Class B, or cast iron, ASTM A436 (Ni-resist), or Ductile iron, ASTM A536.
- F. Plug Facing: EPDM.
- G. No wetted parts of bronze, copper, or aluminum.
- H. Body Seats: Welded-in overlay seat of 1/8-inch thick of no less than 99% nickel content on all surfaces contacting the plug face, in accordance with AWWA C517-09.

- I. Packing: Buna V-flex or TFE adjustable.
- J. Ends: Flanged, grooved in accordance with AWWA C606 for rigid joints, or mechanical joint for buried valves, unless otherwise noted on the Drawings.
- K. Handwheel Operators: Provide handwheel operators at all exposed valve locations:
 - 1. Totally enclosed worm gear operators with handwheel or chainwheel as required.
 - 2. Handwheels shall not be smaller than 6 inches or larger than 18 inches.
 - 3. Operator shall be sized for the valve operating pressure in accordance with AWWA C504.
- L. Buried operators:
 - 1. See Section 22 05 00, "General Requirements for Piping," for buried operators.
- M. Manufacturers and Products:
 - 1. Milliken, 600/601 Series.
 - 2. DeZurik, PEF.
 - 3. Or equal.

2.02 BALL VALVES, (STAINLESS STEEL PIPING)

- A. General: Unless otherwise noted on the Drawings, all ball valves (1-1/4 inches to 3 inches in diameter) installed on metallic piping systems shall conform to the following design:
 - 1. Size: 1-inch and Smaller.
 - 2. Rating: 600 psi W.O.G., 150 psi SWP.
 - 3. Type: Three-piece, full port, stainless steel construction, same as line size.
 - 4. Body and Trim: CF8M stainless steel.
 - 5. Ball: Type 316 stainless steel.
 - 6. Ends: Threaded.
 - 7. Stem Seals: PTFE.
 - 8. Seats: Replaceable, 15% glass-filled reinforced PTFE seats suitable for water and air service.
 - 9. Operator: Lever with indicator stop.

B. Manufacturers and Products:

1. Milwaukee, 30SSOF.
2. Or equal.

2.03 SWING CHECK VALVES (4-INCH THROUGH 12-INCH)

- A. Type: Full operating, swing check-type, with outside lever with adjustable weights.
- B. Rating: 200 psi CWP.
- C. AWWA C508.
- D. Body and Trim: Iron body, stainless steel mounted.
- E. Ends: Flanged.
- F. Disc Facing: Stainless steel.
- G. Disc Seat Ring: Buna N.
- H. Hinge Shaft: Stainless steel.
- I. Outside Lever Position: Right-hand and left-hand side when facing the valve inlet, as shown on the Drawings.
- J. Lever Seal: Hinge pin extended through outside lubricated bronze bushing and O-ring seals.
- K. Lubrication: Grease fittings for outside lubrication of lever seals.
- L. Wetted parts of valve shall not contain copper or aluminum.
- M. For swing check valves with external lever arms adjacent to plug valves, coordinate swing check valve lever arm mounting position to avoid conflict with plug valve actuator.
- N. Manufacturers and Products:
 1. CCNE, 8000.
 2. APCO, 6000.
 3. Or equal.

2.04 DUCKBILL CHECK VALVES

- A. Type: Elastomer-type with flared top/bottom contoured to a duckbilled shaped exit.
- B. Sizes: 1 inch to 24 inches.

- C. Connections: Flanged or slip-on, round entry area to match pipe.
- D. Rating:
 - 1. Approximately 2 inches of line pressure to OPEN and return to CLOSED position under zero-flow condition.
 - 2. Flanged: Rated to 50 psi minimum operating pressure.
- E. Materials:
 - 1. Elastomer Material: Shall be EPDM.
 - 2. Retaining Rings: Shall be AISI Type 316 stainless steel.
- F. Ends:
 - 1. Flanged: Steel backing flange type, drilled to ANSI B16.1, Class 125.
 - 2. Slip-On: Attached with two Type 316 stainless steel adjustable bands.
- G. Manufacturers and Products:
 - 1. Red Valve, Tideflex® Check Valve Series 35 or TF-2.
 - 2. Or equal.

2.05 COMBINATION AIR VALVE FOR SEWAGE

- A. This paragraph specifies sewage air valves for the release of air from a pipeline during initial filling, intermittent release of smaller volumes of air during continuous operation, and admits air into the system under vacuum conditions. The valve shall be specifically designed to operate with liquids carrying solid particles found in wastewater. The valve shall be designed to keep the sewage separate from the sealing mechanism to help assure optimum working conditions.
 - 1. Connection Size: 2-inch NPT inlet, 2-inch NPT outlet.
 - 2. Rated Pressure: 150 psi minimum.
 - 3. Construction: Glass reinforced Nylon body. All wetted parts shall be made of corrosion-resistant composite materials, EPDM rubber, and/or 316 stainless steel. Float shall be made of composite material.
 - 4. Orifice Size: 1/8-inch and 1-1/2-inch.
 - 5. Attachments:
 - a. Valve shall be supplied with non-slam, discharge throttling attachment, which allows free air intake but throttles air discharge.

6. Manufacturer and Products:

- a. ARI D-26 2 THR.
- b. Or approved equal.

2.06 BACKFLOW PREVENTER

- A. Type: Reduced pressure principle backflow assembly (RPBA), automatic operation, dual diaphragm relief valve.
- B. Design: Two independently acting spring-loaded toggle-lever check valves separated by a spring-loaded differential-pressure relief valve. If either check valve should leak or fail to open, the differential-pressure relief valve will maintain a pressure differential of not less than 2 psi between the supply pressure and the zone between the two check valves by discharging water to the atmosphere.
- C. Accessories: Non-rising stem tight closing resilient seat isolation gate valves located at or near each end of the backflow preventer as shown on the Plans. Properly located test cocks.
- D. Head Loss: 10 psi maximum at rated flow through the complete backflow assembly.
- E. Working Pressure Rating: 175 psi maximum.
- F. Hydrostatic Test Pressure: 350 psi.
- G. AWWA C511.
- H. Body: Bronze ASTM B584.
- I. Relief Valve Body and Trim: Bronze ASTM B584.
- J. Internal Check Assembly: Stainless steel, 300 Series.
- K. Springs: Stainless steel, 300 Series.
- L. Ends: Threaded, ANSI B2.1.
- M. Servicing: All parts must be removable or replaceable without removal of the unit from the line.
- N. Approval: Must be approved by Washington Health Division (WHD) Drinking Water Program.
- O. Manufacturer: Febco Model 825Y, Watts LF909, Conbraco 40-200, or approved equal.
- P. RPBA backflow assembly shall be installed in a hinged fiberglass insulation enclosure outdoors and in accordance with WAC Standards. The enclosure shall be certified to ASSE 1060 and be a minimum of 1/8-inch-thick thixotropic polyester resin reinforced with fiberglass strand. Exterior shall be smooth and protected with a UV inhibitor gel coat.

Insulation shall be a minimum of R8 uni-cellular, non-wicking, polyisocyanate foam. The flip top shall be lockable with an overlapping lid seam for weatherproofing. Drains shall be discharged and designed for "one way" exit, preventing debris or vermin from entering. Enclosure shall be anchored to a concrete slab with galvanized steel anchors inside the enclosure. Enclosure shall be manufactured by HotBox or approved equal.

PART 3 – EXECUTION

3.01 PLUG VALVE

- A. Install seat end upstream of liquid flow.
- B. Valve stem shall be installed horizontal with plug rotation on the top of the valve.

3.02 BALL VALVE

- A. Apply thread sealant/lubricant as required by manufacturer.
- B. Hand-engage piping to each side of valve, and hand tighten.
- C. Tighten joint with pipe wrench as instructed by the manufacturer. DO NOT hold the body or opposite tailpiece while torquing pipe into tailpiece. DO NOT OVER-TORQUE.

3.03 SWING CHECK VALVES

- A. Remove any material used to restrain the flow control device, lever or pin during shipment and storage. Attach any outside closing mechanism in proper position manually.
- B. The flow control device and closing mechanism should be checked to insure freedom of motion and proper operation. Cover bolts shall be checked for any loose joints.
- C. When handling the valve, do not use the outside mechanisms for lifting.
- D. Confirm proper valve orientation with regard to flow direction prior to installation.

3.04 DUCKBILL CHECK VALVE

- A. Clean the exterior of the pipe, removing any material or debris from the surface.
- B. Orient the valve such that the duckbill is oriented vertically.

3.05 AIR RELEASE VALVE

- A. Provide drain piping from the discharge of the air release valve to the wet well, as shown on the Drawings. Contractor shall furnish all fittings and adapters required for the installation.

END OF SECTION

SECTION 22 13 29
SUBMERSIBLE SEWAGE PUMPS

PART 1 – GENERAL

1.01 EQUIPMENT NUMBERS

- A. Submersible Sewage Pump 1: P-1.
- B. Submersible Sewage Pump 2: P-2.

1.02 SUMMARY

- A. This section covers electric submersible type sewage pumps and accessories. The pumps shall be designed for handling raw unscreened sewage and wastewater containing solids, rags, and other fibrous materials without clogging. Pumps shall be designed for heavy-duty service.
- B. Furnish each pump complete with base elbow, submersible motor, power cable, guide rails, and accessories.
- C. The pump manufacturer shall warrant all equipment provided under this section, whether or not it is manufactured by the pump manufacturer, so that there is one source for warranty and product service. Technicians specifically trained and certified by the manufacturer to support the product and employed by the pump supplier shall service the pumps and motors.
- D. Coordination: Coordinate mounting/anchor bolt locations and requirement with wet well liner fabricator.

1.03 SUBMITTALS

- A. Shop drawings and product data prior to manufacture:
 - 1. Manufacturer, model, weight, and horsepower.
 - 2. Catalog information, descriptive literature, specifications, and identification of materials of construction.
 - 3. Manufacturer's published warranty documents.
 - 4. Pump performance curves demonstrating compliance with Pumping Conditions. Indicate all specified duty points and recommended limits of operation graphically on pump performance curves. Include curves for total head (feet), efficiency, brake horsepower, and net positive suction head required, each plotted against flow in gallons per minute (gpm).
 - 5. Impeller type, size, and identification for Pumping Conditions.

6. Motor Submittal Data:
 - a. Completed Motor Data Form.
 - b. Guaranteed minimum efficiency at rated load at rated voltage.
 - c. Guaranteed minimum power factor at rated load at rated voltage.
 - d. Expected efficiency at 1/2, 3/4, and full load at rated voltage.
 - e. Expected power factor at 1/2, 3/4, and full load at rated voltage.
 - f. Motor no-load current at rated voltage.
 - g. Full-load current at rated voltage.
 - h. Full-load current at 110% voltage.
 - i. Starting current at rated voltage.
 - j. Full-load speed.
 - k. Certified copy of test report for identical motor tested in accordance with NEMA MG 1 Part 31 and IEEE Standard 112, Test Method B.
7. Cable Assembly Data:
 - a. Insulation and conductor materials of each cable assembly.
 - b. Outer diameter dimensions of each cable assembly.
 - c. Cable manufacturer product data for cable.
8. Complete dimensional Drawings of equipment, including pumps, motors, piping connections, details of construction, and weights.
9. Guide system and discharge elbow base dimensions and materials.
10. Factory finishing system.
11. Mechanical seal information.
12. Weight of each pump.
13. Size and template for anchor bolts for discharge elbows.
14. Certificate of compliance with ISO 9001 Quality System.

- B. Prior to factory testing:
 - 1. Complete installation instructions.
 - 2. Procedure for factory testing.
- C. Prior to shipment to jobsite:
 - 1. Operations and Maintenance Manuals.
 - 2. Field testing procedure.
 - 3. Certified factory test results:
 - a. Hydrostatic and performance.
- D. Closeout Submittals:
 - 1. Manufacturer's Certificate of Proper Installation.
 - 2. Certified field test results.
 - 3. Spare parts.

1.04 QUALITY ASSURANCE

- A. Unit Responsibility: In order to ensure coordination, all pumps, motors, power cable, base elbows, and accessories shall be supplied by one pump manufacturer. Electrical equipment is to be supplied by the selected pump manufacturer and must conform to the electrical specifications.
- B. All pumping equipment furnished under this section shall be of a design and manufacture that has been used in similar applications and it shall be demonstrated as such to the satisfaction of the Owner.
- C. To ensure a consistent high standard of quality, the manufacturer of this pumping equipment shall comply with the requirements of the ISO 9001 Quality System, and such compliance shall be verified by an independent certification agency approved by the International Organization for Standardization. Documentation shall be submitted for approval showing compliance with this requirement, and the equipment will not be released for shipment until approved.

1.05 SPARE PARTS

- A. Provide one set of the manufacturer's recommended spare parts kit. The spare parts kit shall, at a minimum, include the following:
 - 1. Inner and outer mechanical seals.
 - 2. Upper and lower bearings.
 - 3. One set of O-rings for the entire pump.

1.06 SOURCE QUALITY CONTROL

- A. Each pump shall be factory tested and certified test results submitted prior to shipment of pumps. The Engineer shall be given notice of the factory pump testing a minimum of 14 days in advance of testing.
 - 1. Impeller, motor rating, and electrical connections shall be checked for compliance to the Specifications.
 - 2. A motor and cable insulation test for moisture content or insulation defects in accordance with ANSI/HI 11.6.
 - 3. Performance and Hydrostatic Testing: Each pump shall be operationally tested to demonstrate compliance with performance requirements. The pumps shall be tested at full speed with the minimum water depth specified. A minimum of eight test points shall be plotted on the full speed pump curve showing horsepower, efficiency, and head and flow from shut-off head to the specified run out condition plus 20%. Reduced speed performance criteria may be demonstrated by applying the affinity laws to the full speed test curve. During the testing, each pump shall be run continuously for a minimum of 30 minutes. Performance and hydrostatic testing shall conform to the most recent Hydraulic Institute Standards test codes, ANSI/HI 11.6, Acceptance Grade 1U.
 - 4. After performance and hydrostatic testing, the cable insulation shall be tested again for moisture content.
 - 5. Tabulated and graphical test results shall be certified by the manufacturer and submitted for approval by the Engineer prior to shipment of the pumps.

1.07 WARRANTY

- A. The submersible sewage pumps and associated equipment shall be warranted from the date of commissioning against defects in materials and workmanship.
- B. Manufacturer's warranty must meet or exceed the following coverage: 100% coverage for 18 months, with 50% coverage for 21 months, and 25% coverage for 21 months.
- C. The warranty shall be comprehensive. No deductibles shall be allowed for travel time, service hours, repair parts cost, etc.

1.08 PROTECTION

- A. Box, crate, or otherwise completely enclose and protect all equipment during shipment, handling, and storage.
- B. Protect equipment from exposure to elements, and keep all items thoroughly dry at all times.
- C. Store motors, electrical equipment, and other equipment with moving parts in weathertight warehouses at a maintained temperature of 60°F minimum.

- D. Painted Surfaces: Protect against impact, abrasion, discoloration, and other damage.
- E. Protect electrical equipment, controls, and insulation against moisture or water damage.

1.09 CRITICAL SPEED AND VIBRATION

- A. Each complete pump assembly shall have no critical or resonant frequencies or multiples of resonant frequencies within 30% above and 30% below the range of pump speeds and blade pass frequencies required to meet the Performance Requirements. Complete assemblies shall be free of objectionable or destructive vibration throughout the specified operating range.
- B. Vibration levels shall comply with the most recent edition of the Hydraulic Institute Standards.
- C. Verify that equipment is mutually compatible and free of resonance over the complete operating range.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

- A. Submersible Sewage Pumps:
 - 1. Flygt Model NP 3153 HT 3~ 464.
 - 2. No equals shall be considered.

2.02 PERFORMANCE REQUIREMENTS

- A. Pumps Guaranteed Performance:
 - 1. Pumping Condition A¹ – Rated Capacity at Full Speed:
 - a. Capacity: 631 gpm.
 - b. Total Head: 61 feet.
 - c. Approximate Pump Speed: 1,755 rpm.
 - 2. Pumping Condition B¹ – Approximate Capacity at Full Speed:
 - a. Capacity: 200 gpm.
 - b. Total Head: 97 feet.
 - c. Approximate Pump Speed: 1,755 rpm.

3. Pumping Condition C¹ – Approximate Capacity at Full Speed:
 - a. Capacity: 830 gpm.
 - b. Total Head: 45 feet.
 - c. Approximate Pump Speed: 1,755 rpm.
4. Minimum Shut-Off Head: 115 feet.
5. Minimum Hydraulic Efficiency at Best Efficiency Point: 69%.
6. Minimum Non-compressible Solids Passage: 1.5 inches.
7. Maximum Motor Nameplate²: 15 horsepower.
8. Minimum Inlet Diameter: 5-15/16 inches.
9. Minimum Discharge Diameter: 3-15/16 inches.
10. Maximum Value for NPSHr³: 23 feet.

NOTES

- ¹ Pumping conditions shall be as defined in the standards of the Hydraulic Institute and are exclusive of losses through the pump casing.
 - ² Nameplate motor horsepower shall not be exceeded at any point on the pump curve within the range of operation conditions specified above. Pump shall be driven from a Variable Frequency Drive configured to limit the power to the rating of the motor.
 - ³ NPSHr is net positive suction head required by the pump, as defined by the Hydraulic Institute Standards. The NPSHr of the pump shall not exceed the specified value at any point within the specified range of pump operation.
- B. Pumps shall operate without cavitation or undue vibration under all specified pumping conditions.
- C. Provide pump and motor units which are listed for explosion proof Class I, Division 1, Group D hazardous location in air or submersible in water and sewage.

2.03 PUMP

- A. General:
1. Submersible, wastewater pump, utilizing a semi-open impeller. The overall pump design shall combine high efficiency, low required NPSH, and the ability to handle raw sewage with rags and other fibrous material.
 2. Sealing: All matting surfaces in pump casing and in motor housing shall be machined and fitted with Nitrile or Viton rubber O-rings for watertight seal.

B. Impeller:

1. The impeller shall be of ASTM A532 25% chrome cast iron, semi-open, multi-vane, back swept, screw-shaped design. The leading edge shall be designed to be mechanically self-cleaned automatically upon each rotation. It shall be of one-piece construction, single suction, radial flow design for a circular flow pattern to prevent the accumulation of solids and stringy material.
2. Impeller shall be dynamically balanced and locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer static. The arrangement shall be such that the impeller cannot be loosened from torque in either forward or reverse rotation.
3. Impeller shall be trimmed to specifically meet the conditions of operation.

C. Volute/Suction Cover:

1. The pump volute shall be a single piece gray cast iron, ASTM A48, Class 35B, non-concentric design with smooth passages.
2. Minimum inlet and discharge size shall be as specified.
3. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be of ASTM A532 25% chrome cast iron and provide effective sealing between the multi-vane semi-open impeller and the volute housing.
4. Volute shall be provided with a guide-pin for increased clogging resistance.

D. Pump Shaft:

1. The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be stainless steel ASTM A479 S43100-T. Shaft sleeves will not be acceptable.
2. Sufficient diameter to carry the maximum loads imposed and to prevent vibration and fatigue.
3. Sufficient strength and stiffness to operate without distortion or vibration throughout the range of service specified.
4. Critical speeds of rotating assembly shall be in conformance with CRITICAL SPEED AND VIBRATION.
5. Capable of withstanding two times the expected peak motor torque from zero to maximum speed.

E. Materials of Construction:

1. Major Castings: Gray Cast Iron, ASTM 35B.
2. Pump Housing: Gray Cast Iron, ASTM 35B.
3. Impeller: Chrome Cast Iron, ASTM A532 (25%).
4. Insert Ring: Chrome Cast Iron, ASTM A532 (25%).
5. Shaft: Stainless Steel, ASTM A479 S43100-T
6. Screws and Nuts: Stainless Steel, A4, AISI 316L, 316, 316Ti.
7. O-rings: Nitrile (NBR) or Viton (FKM) rubber.

2.04 MOTOR

- A. The pump motor shall be an induction type with a squirrel cage rotor, shell type design, housed in an oil filled, watertight chamber.
- B. Designed, built, and tested in accordance with the latest revision of the following standards. In the case of conflict between the requirements of this section and those of the standards, the requirements of this section shall prevail:
 1. NEC.
 2. NEMA MG-1.
 3. ANSI/IEEE 112.
 4. UL 1004.
 5. UL 674.
- C. Provide submersible, FM approved, explosion-proof, air-filled motor suitable for continuous operation on 230 volts, 3-phase, 60 Hertz A.C.
- D. Motor starting method shall be variable frequency drive (VFD). Provide definite-purpose inverter-fed duty rating per NEMA MG-1 Part 31 requirements. The motor nameplate shall indicate that the motor is rated for inverter duty per NEMA MG-1 Part 31.
- E. Design motor to be non-overloading throughout the pump capacity-head curve for constant speed pumps.
- F. Minimum Full Load Efficiency: 87.8%.
- G. Minimum Full Load Power Factor: 0.82.
- H. Maximum Allowable Starts Per Hour: 30.

- I. Thrust Bearings: Designed to take the full axial load of the impeller.
- J. Dissipate excess heat directly from the exposed stator housing to surrounding pump liquid for adequate motor cooling at any continuous power output.
- K. Stator Windings and Leads: Insulated with moisture-resistant Class H (minimum) insulation for operation at temperatures up to 180°C (minimum).
- L. Protection Devices:
 - 1. Provide temperature actuated switches embedded in the stator windings (one per phase), wired in series that open a protective circuit and activate an alarm if winding temperature exceeds rated operating temperature. These sensors automatically reset when winding temperature has cooled to a safe operating temperature.
 - 2. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber occurs, signaling an alarm and stopping the motor.
 - 3. The thermal switches and float switch shall be connected to a Mini CAS control and status monitoring unit. The Mini CAS unit shall be designed to be mounted in the pump control panel.

2.05 ELECTRICAL POWER CORD AND SENSOR CABLES

- A. Provide suitable length of power cord and sensor cable, up to 65 feet, of extra hard usage, submersible, 600 V, UL listed and/or FM approved power cord and sensor cable(s). Power cable shall be sized according to NEC and ICEA standards. Provide cables for each pump with:
 - 1. Leak-proof, torque free seal at cable entry to motor.
 - 2. Sealing of the motor power cord and sensor cable(s) to prevent moisture entry into the motor due to wicking or capillary action through the cable.
 - 3. Corrosion-resistant cable supporting means.
 - 4. Free end of cable shall be sealed from moisture entry during shipping, storage, and prior to connection by a plastic sleeve securely clamped over the cable end.

2.06 SHAFT SEALS

- A. Independently-mounted, tandem mechanical seals contained in a lubricant chamber that allows the seals to be completely submerged in, and lubricated by, the lubricant media.
- B. Mechanical seals located between the lubricant chamber and the pump impeller shall utilize one stationary and one positively driven rotating, corrosion resistant carbide/tungsten carbide faces, and shall isolate the seal cooling oil from the motor frame.

C. Mechanical Seal between the lubricant chamber and the motor housing shall utilize one stationary and one positively driven rotating, corrosion resistant carbide/tungsten carbide faces, and shall isolate the seal cooling oil from the pump.

D. Lubrication chamber:

1. Shall be designed to prevent overfilling and to provide lubricant expansion capacity.
2. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside.
3. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.

2.07 BEARINGS

A. Bearings:

1. Antifriction-type AFBMA standard sizes.
2. Minimum (L-10) life of 50,000 hours.
3. Motor bearings shall be sealed and permanently grease lubricated.
4. Thrust ratings not less than the combined static and dynamic loads imposed.

2.08 MOUNTING

A. Guide Rail System:

1. 316L stainless steel dual guide rail fixture permanently mounted in the wet well as shown on the Drawings.
2. Fixture shall cantilever the entire pump and motor from the volute discharge flange, providing an unobstructed sump floor under the pump.
3. Support pump with a positive metal-to-metal interlocking flange that is sealed against the fixture flange by the weight of the pump.
4. A stainless steel upper rail guide bracket shall be furnished to support and align the rails at the top of the sump. For all rail lengths greater than 12 feet, a stainless steel intermediate rail guide bracket shall be included.

B. Discharge Base:

1. The installation shall include a rigid discharge base-elbow to support the total weight of the pumping unit.
2. The base is to be bolted directly to the floor with the 90-degree elbow having a 125-pound ANSI flange discharging vertically with mounts for two 316L stainless steel guide rails of standard schedule pipe.

2.09 LIFTING SYSTEM

- A. Provide components for using a grip eye to lift pumps:
 - 1. Provide a minimum a full length of stainless steel lifting chain from each pump to the top of the guide rails.
 - 2. Provide one grip eye for each pump.
 - 3. All metal components shall be AISI Type 316 stainless steel and rated for lifting the weight of the pump with a safety factor of 2.0.

2.10 SHOP/FACTORY FINISHING

- A. Pump and Motor: All metal surfaces coming into contact with the pumpage, other than stainless steel, shall be protected by a factory applied coating of amine epoxy, Sherwin Williams Sher-Glass FF, 8-12 mils per coat, two coats total, or approved equal on the exterior of the pump.
- B. Pump discharge elbow shall be considered immersed piping in the wet well and shall be coated as required in the painting specification.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install the pump as shown on the Drawings. Discharge elbow shall be mounted level. Follow manufacturer's recommendations to shim base plate as necessary to provide a level installation.
- B. Install guide rails as shown on the Drawings. Provide stainless steel upper attachment support as required and shown on the mechanical details. Coordinate dimensions with the pump manufacturer.
- C. Attach the lifting chain/rope to the side wall of the opening of the pump hatch above each pump. Lifting system attachment shall accommodate disassembly of the chain from the anchor to assist with removal of the pump. See Mechanical Drawings for detail.

3.02 FIELD QUALITY CONTROL

- A. Installation Certification: A manufacturer's authorized representative shall inspect and test each pump for proper installation, lubrication, alignment, and connection. Submit written certification of installation to the Engineer.
- B. Performance Testing: A manufacturer's authorized representative shall witness and assist with the performance testing of each pump to verify smooth operation and satisfactory performance. Hydraulic performance in the project wet well shall be adequate to demonstrate compliance with performance requirements.

- C. Pump Lift Test: Contractor must demonstrate successful removal of pump from wet well using manufacturer's guide rail.
- D. Test Results: Test results certified by the pump manufacturer's authorized representative shall be submitted to the Engineer for approval prior to the Owner's acceptance of the equipment.
- E. Coordination: All testing shall be coordinated with the Engineer, Owner, and installing Contractor prior to conducting the tests. Notify Engineer and Owner one week before schedule testing.
- F. Should tests indicate an unsatisfactory operation, such as noise, leaks, poor pump performance, the manufacturer's representative shall assist the Contractor in diagnosing the conditions. The malfunction shall be corrected at no cost to the Owner and the tests repeated as defined herein.

3.03 MANUFACTURER'S SERVICES

- A. Pump manufacturer shall provide a minimum of 10 hours of on-site service for certification of installation, start-up testing, and training. Training shall instruct operating personnel in the operation, maintenance, and adjustment of the system and installation.

END OF SECTION

Division 26

Electrical

SECTION 26 05 11
BASIC ELECTRICAL METHODS AND MATERIALS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Provide electrical materials and labor to satisfactorily complete electrical work shown on the Drawings, specified, or neither shown nor specified but necessary for a complete and fully operating facility.
- B. Mounting details of equipment, devices, light fixtures, raceways, junction boxes, etc., are not usually shown or specified, provide per industry standard practice and code requirements as necessary for proper installation and operation, shall be included in the Contractor's estimate, the same as if specified or shown.

1.02 SUBMITTALS

- A. Submittal package shall be organized by equipment type. Include separators and tabs or other means of identifying each item.
- B. Shop Drawings: Show dimensions, physical configurations, methods of connecting equipment, mounting details, and wiring schematics. Drawings shall be complete with device numbers, wire numbers, and terminal board numbers. Submit fabrication details and nameplate legends. Include material lists and/or bills of material. Submit manufacturer's catalog cuts for each item for which shop drawings are not required. Manufacturer's catalog cuts, specifications, or data sheets shall be clearly marked to delineate the options or styles to be furnished.
 - 1. Contractor shall submit shop drawings showing conduit installation and routing to Owner for review and approval prior to installing the conduit. Shop drawings shall show as a minimum but not limited to the following: conduit bodies, conduit type, pull boxes, wall penetrations, entry locations to electrical equipment.
 - 2. Contractor shall submit shop drawings for each concrete equipment pad as shown on the Drawings. The shop drawings for the concrete equipment pads shall also include dimensions and means to anchor to concrete foundation.
- C. Bill of Material (BOM): BOM shall include equipment item number, quantity, manufacturer, part number, model number, and descriptions.
- D. Nameplate schedule.
- E. Conduit tag schedule.
- F. Qualifications of testing organization and personnel meeting requirements of NETA ATS-2021, Section 3.

- G. Inspection and acceptance testing reports for new electrical equipment per NETA ATS-2021, Paragraph 5.4 for equipment for which tests are required in this and other Division 26 sections.
- H. Submit product information for surge protection device.
- I. Submit product information for phase loss relay.
- J. Submit field test results specified in Part 3 of this section.
- K. Applicable operation and maintenance information on an item-by-item basis. Operation and maintenance information shall be provided at the time of equipment, device, or material site delivery, or at a certain stage of project completion as agreed upon with Owner, whichever is the earlier. Full-size drawings shall be reduced to 11 by 17 inches. Provide electronic copy of all application software with the software comments on a memory stick.
- L. Description of functional checkout procedures, specified in this specification, 30 days prior to performing functional checkout tests.
- M. Nameplate abbreviations, if required.
- N. Submit operation and maintenance manuals in compliance with pertinent provisions of Division 1.
- O. Record Drawings:
 - 1. Contract Drawings – Upon completion of the work, transfer the Contractor maintained as-built drawings to a clean set of full-size drawings with red ink to indicate additions and green ink to indicate deletions. Submit these full-size drawing markups to the Engineer and copy to the Owner.
 - 2. Equipment manufacturer shop drawings – Upon completion of the work, submit the as-built drawings from the equipment manufacturer with any modifications performed in the field. Submit these drawings in both an Adobe Acrobat [* .PDF] format and an Autodesk AutoCAD [* .dwg] format.

1.03 QUALITY ASSURANCE

- A. Variances: In instances where two or more codes are at variance, the most restrictive requirements shall apply.
- B. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA). The revisions of these standards in effect on the date of issuance of the Contract Documents shall apply.

- C. Electrical equipment, materials, and installation methods shall conform to applicable local and state codes as well as the editions of the following in effect on the date of issuance of the Contract Documents:
 - 1. National Electrical Code (NEC).
 - 2. National Electrical Safety Code (NESC).
- D. Electrical equipment must be listed or labeled by a Nationally Recognized Testing Laboratory (NRTL). An NRTL is recognized by Occupational Safety and Health Administration (OSHA) as being capable of independently assessing equipment for compliance to safety requirements and applicable standards. UL is an example of an NRTL.
- E. Provide equipment with service entrance labels in those cases where the NEC requires such labels.
- F. Series short circuit ratings for protective devices are not allowed.
- G. For new equipment acceptance testing, studies, and reports per NETA ATS-2021 for equipment for which tests are required in this and other Division 26 sections.
 - 1. Testing organization and personnel performing tests shall meet the qualifications of ATS-2021, Section 3 and will be certified per ANSI/NETA ETT-2022, Standard for Certification of Electrical Testing Personnel.

1.04 DRAWINGS

- A. The Electrical Drawings are diagrammatic; exact locations of products shall be verified with the Engineer prior to installation. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the requirements or descriptions in this and other Division 26 sections shall take precedence in the event of conflict.
- B. Field-verify scaled dimensions on Drawings.
- C. Review the Drawings and Specification Divisions of other trades and perform the electrical work that will be required for the installations.
- D. Submit in writing to the Engineer details of any proposed changes in or departures from these Contract Documents along with the reasons, therefore. Make no changes or departures without the prior written favorable review of the Engineer.

1.05 JOB CONDITIONS

- A. Operations:
 - 1. The existing pump station operations shall remain functional as specified in Division 1. The existing power distribution system, including the existing standby power system, shall be available for use as temporary power and in support of operations specified

- in Division 1. Contractor shall provide material and labor to support temporary system as specified in Division 1.
2. The Contractor shall prepare and submit electrical outage plans for all electrical shutdowns as specified in Division 1.
 - a. The Contractor shall prepare and submit an electrical outage plan for the power transfer of existing pump station equipment to the temporary pumping equipment as specified in Division 1.
 - b. The contractor shall prepare and submit an electrical outage plan for the power transfer from the temporary equipment to the upgraded replacement pump station equipment.
 3. Contractor shall receive written approval prior to performing power shutdowns.
 4. Contractor shall provide a minimum of 1 week advance notification with Detailed Outage Plan to the Owner.
- B. Maintaining Power, Instrumentation, and Controls:
1. Contractor shall field verify wiring and conduit routing at the Marina Pump Station prior to demolition to ensure equipment required during construction work remain operational. Temporary wiring shall be provided to main equipment operational during construction. Temporary wiring shall be removed when permanent wiring is installed or when equipment is removed.
- C. Construction Power:
1. Contractor is responsible to provide construction power. Contractor shall make arrangements for construction power as follows:
 - a. Contractor can use the existing 120V receptacles for construction power.
 - b. Contractor shall not unplug/disconnect existing equipment from the 120V receptacles.
 - c. Contractor shall notify the Owner of tripped circuit breakers so Owner can confirm other equipment connected to branch circuit and the pump station operation has been restored when circuit breaker is reset.
 - d. Contractor's electrical loads shall not exceed the circuit capacity of the Owner's receptacles.
 - e. Contractor shall provide their own temporary power distribution system.
 - f. The Contractor shall supply any required temporary construction power electrical equipment (cords, circuit breakers, power boxes, etc.).
 - g. If construction power is not available, then the Contractor shall provide temporary construction power, portable engine generator source at no cost to the Owner.

2. When required, provide equipment, materials, and wiring in accordance with the applicable codes and regulations.
 3. Upon completion of the project, remove temporary construction power equipment, material, and wiring from the site as the property of the Contractor.
 4. Contractor provided temporary generators for construction power shall be in compliance with Tulalip Tribes noise ordinance.
- D. Storage: Provide conditioned storage for equipment and materials per manufacturer's requirements that will become part of the completed facility so that it is protected from weather, dust, water, and construction.

1.06 DAMAGED PRODUCTS

- A. Notify the Owner in writing in the event that any equipment or material is damaged.
- B. Obtain prior favorable review by the Owner before making repairs to damaged products.

1.07 MATERIALS

- A. Provide first quality, new materials, free from defects, and suitable for the intended use and space. Where two or more units of the same class of material are required, provide products of a single manufacturer.
- B. Unless otherwise indicated, provide materials and equipment that are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest standard design that conforms to these Specifications.

1.08 SEISMIC SUPPORT

- A. Mechanical, instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

1.09 WARRANTY

- A. The electrical equipment and installation shall begin after Substantial Completion of construction.
 1. This warranty is applicable for equipment installed, tested, and commissioned during that phase.
 2. Warranty period shall be a minimum of 1 year, unless otherwise specified.
 3. Warranty shall include repair parts, labor, and travel expenses.

1.10 LOCATIONS

- A. General: Use equipment, materials, and wiring methods suitable for the types of locations in which they are located, as defined in Paragraph B herein.
- B. Definitions of Types of Locations:
 - 1. Dry Locations: Indoor areas which do not fall within the definitions below for Wet, Damp, or Corrosive Locations and that are not otherwise designated on the Drawings.
 - 2. Wet Locations: Locations exposed to the weather, whether under a roof or not, or designated as Wet Locations by applicable codes and regulations, unless otherwise designated on the Drawings.
 - 3. Damp Locations: Location wholly or partially underground, or having a wall or ceiling forming part of a channel or tank, or designated as Damp Locations by applicable codes and regulations, unless otherwise designated on the Drawings.
 - 4. Corrosive Locations:
 - a. The space inside the Wet Well and immediately surrounding the cover is corrosive to metal. For this project, conduit and cable support hardware inside the wet well shall be PVC Sch 80 or stainless steel. Fastening hardware shall be stainless steel.
 - 5. Classified Locations: See the site plan for areas designated as classified spaces. Inside classified spaces, the Contractor shall use wiring methods and electrical equipment listed for use in designated classified spaces in accordance with the NEC.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and traffic.
- B. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 STANDARD OF QUALITY

- A. It is the intent of these Specifications and Drawings to secure high quality in materials, workmanship, and equipment in order to facilitate operation and maintenance of the facility. Equipment and materials shall be new and the products of reputable suppliers having adequate experience in the manufacture of these particular items. For uniformity, only one manufacturer will be accepted for each type of product. Equipment shall be designed for the service intended and shall be of rugged construction, of ample strength for stresses that may occur during fabrication, transportation, erection, and continuous or intermittent operation. Equipment shall be adequately stayed, braced, and anchored and shall be installed in a neat and workmanlike manner. Appearance, as well as utility, shall be given consideration in the design of details.

- B. Components and devices installed shall be standard items of industrial grade or better, unless otherwise noted, and shall be of sturdy and durable construction suitable for long, trouble-free service. Light-duty, fragile, and commercial grade devices of doubtful durability shall not be used.

2.02 PAINTING AND COATING

- A. Equipment: Refer to each electrical equipment section of these Specifications for painting and coating requirements of equipment and enclosures. Repair any final finish that has been damaged or is otherwise unsatisfactory using touchup materials approved by the manufacturers, to the satisfaction of the Owner.

2.03 POWER QUALITY ENCLOSURE

- A. Power quality enclosure (PQ-105A):
 1. Includes both a surge protection device and a phase loss relay for the panelboard (PBD-105).
 2. The Power quality enclosure shall be NEMA Type 3R with hinged cover/door. Cover/door shall have a means to lock in the closed position.
 3. Provide fuse block for power supply voltage input into the phase loss relay.
 4. Provide vent drain for power quality enclosure.
 5. Provide nameplate for power quality enclosure.
- B. Surge Protection Device (SPD):
 1. Surge protection is to protect equipment from damage caused by surge events.
 2. Shall be configured for three-phase high-leg delta (4W+G) with minimum surge current capacity 100kA per phase, 50kA Line-Neutral, 50A Line-Ground, 50kA Neutral-Ground.
 3. EMI Filtering design to protect sensitive equipment from electrical noise.
 4. LED light, Audible alarm, and Form C relay:
 - a. Alarm and Form C relay are tied to Phase LED. If protection to one or more phases is lost the green LED goes out, the alarm will sound, and the Form C contact will not be energized.
 5. SPD shall have a Form C output relay contact:
 - a. Rated: 2A at 30Vdc or 250Vac.
 - b. Logic: Power ON normal state – NO contact = Open and NC contact = Closed.
 6. Warranty 5 years standard.

7. UL Listed.
8. Acceptable Manufacturer Eaton model SPC100 240H 8 or approved equal.

C. Phase Loss Relay

1. Phase Loss Relay is a 3-phase voltage monitoring relay, with undervoltage, window monitoring, phase sequence, phase failure, asymmetry.
2. Monitoring Voltage: 240V, 3-phase, 60Hz.
 - a. Adjustable Voltage Sensing (Minimum): -30% to 20% (from Un).
 - b. Adjustable Voltage Sensing (Maximum): -20% to 30% (from Un).
 - c. Basic Accuracy: +/- 5%.
 - d. Adjustable Asymmetry: 5% to 25%/OFF.
 - e. Recovery Time: 500ms.
3. Adjustable Response Delay: 0.1S to 10S.
4. Power Supply Voltage: 24VDC.
 - a. Power Consumptions: 4.5VA.
5. Two output contacts (N.O./N.C.)
6. DIN rail mounting.
7. UL Listed.
8. Warranty 12 months from date of energizing.
9. Acceptable manufacturer Phoenix Contact Model EMD-FK-#V-230 or approved equal.

D. Finger-Safe Fuse Block:

1. Finger-Safe Fuse holder for Phase Loss Relay voltage sensing inputs:
 - a. DIN Rail mount.
 - b. 600V rated.
 - c. UL Class CC Fuse – rated 1Amp.s
 - d. Visual Indication of fuse blown.
 - e. Wire range: #18 AWG to #4 AWG.

- f. Provide identification label for each phase.
 - g. Acceptable manufacturer Bussman Catalog Number CHCC1DIU or approved equal.
2. Finger Safe Fuse holder for Phase Loss Relay control power input (24Vdc):
- a. DIN Rail mount.
 - b. 600V rated.
 - c. UL Class CC Fuse – rated 1Amp.
 - d. No visual indication of fuse blown.
 - e. Wire range: #18 AWG to #4 AWG.
 - f. Provide identification label for each phase.
 - g. Acceptable manufacturer Bussman Catalog Number CHCC1DU or approved equal.

PART 3 – EXECUTION

3.01 PERMITTING

- A. Electrical Permit: Contractor shall submit, apply, coordinate, and pay for electrical permit. Contractor shall arrange/schedule electrical inspections.

3.02 GENERAL

- A. Work shall be performed by craftsmen skilled in their trade. Work shall present a neat, finished appearance.
- B. Install equipment in strict accordance with the manufacturer's instructions unless directed otherwise. Wherever a conflict occurs between manufacturer's instructions, codes and regulations, or these Contract Documents, follow Engineer's direction. Keep a copy of manufacturer's installation instructions on the job site available for review at times.
- C. Provide protection for materials and equipment against loss or damage. Protect everything from the effects of weather. Prior to installation, store items in indoor locations. In addition, items subject to corrosion under damp conditions, and items containing insulation, such as transformers, motors, and control, shall be stored in indoor, heated, dry locations.
- D. Following installation, protect materials and equipment from corrosion, physical damage, and the effects of moisture on insulation. Cap conduit runs during construction with manufactured seals. Keep openings in boxes or equipment closed during construction.
- E. Do not cut or notch any structural member or building surface without specific approval of Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls,

partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical materials and equipment. Following such work, restore surfaces neatly to original condition using skilled craftsmen of the trades involved at no additional cost to the Owner.

- F. Keep the 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 devices and equipment. Touch up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, consistency, and type of surface of the original finish.
- G. Label electrical and control equipment, including electrical pump control panels, termination panels, panelboards, starter panels, generator, automatic transfer switches, equipment within electrical and control panels, disconnect switches, and instrument transmitters.
- H. Concrete Equipment Pads: Contractor shall prepare shop drawings detailing the construction method of the concrete equipment pad for the electrical equipment. The Electrical Drawings show the locations of the electrical equipment concrete equipment pads.
 - 1. Shop drawings for concrete equipment pads shall be submitted after the equipment submittals from the equipment manufacturers have been approved by the Owner. Construction for the equipment pads shall not begin until equipment submittals and shop drawings are approved.

3.03 GROUNDING

- A. Bond and ground equipment for which a ground connection is required per NEC whether not specifically shown on the Drawings.

3.04 START-UP FIELD SERVICE

- A. Contractor shall submit settings for selectable parameters of Phase Loss Relay.
- B. Contractor shall ensure manufacturer representative of new equipment and existing equipment support startup, testing, and commissioning.
- C. The following electrical equipment:
 - 1. Pump Control Panel including the VFDs.
 - 2. Generator and ATS.
 - a. Contractor shall provide diesel fuel for generator startup, testing, and commissioning.

3.05 FIELD TESTS

- A. Perform inspection and acceptance testing and submit test reports for the equipment specified in Section 26 08 00, "Electrical Testing and Commissioning," and as specified in all Division 26 sections.
- B. Give a 2-week notice to the Engineer and Owner prior to any test to permit witnessing the test.
- C. Retesting will be required for unsatisfactory tests after the equipment or system has been repaired. Retest related equipment and systems if required by the Engineer. Repair and retest equipment and systems that have been satisfactorily tested but later fail, until satisfactory performance is obtained.

3.06 FINAL CLEANING

- A. Contractor shall provide final cleaning of electrical equipment and workspaces and work areas.
- B. Contractor shall clean all items worked on under this Contract. Contractor shall leave work areas free of stains, damage, or other defects prior to final acceptance.
 - 1. Cleaning shall include wiping, sweeping, and vacuuming to leave work areas and equipment free of dust, debris, and moisture.
- C. Pump Control Panel
 - 1. Cleaning shall include vacuuming the interior and wiping clean the top of the enclosure of dust, dirt, construction debris.
- D. ATS
 - 1. Cleaning shall include vacuuming the interior and wiping clean the top of the enclosure of dust, dirt, construction debris.
- E. Standby Generator Enclosure:
 - 1. Contractor shall clean the generator interior enclosure of all construction dirt, dust, and debris.
 - 2. Prior to energizing, the Contractor shall wipe clean the interior of the of the output circuit breaker enclosure (including all the compartments behind covers and access doors) using a dry, clean cloth. Replace cloth frequently to prevent spreading of debris and lubricating oil.
 - 3. Contractor shall vacuum all sections of the electrical equipment prior to energizing.

3.07 RECORD DRAWINGS

- A. Maintain a set of as-built drawings on site that documents changes made to both the Contract Drawings and approved equipment manufacturer shop drawings.
- B. At the completion of the project, Contractor shall submit a set of as-built drawings which include the as-built redlines from the project. Contractor shall submit redlines to manufacturer's shop drawings.
 - 1. Non-legible redlines will be rejected and return to the Contractor to improve and re-submit.

END OF SECTION

SECTION 26 05 19
LOW-VOLTAGE WIRE AND CABLE

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide low-voltage wire and cable as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. UL listed.
 - 3. Local codes and ordinances.

1.03 SUBMITTALS

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit operation and maintenance manuals in compliance with pertinent provisions of Division 1.

1.04 WARRANTY

- A. Manufacturer warrants their product will be free from defects in material or workmanship for a 1-year period. The product warranty shall begin at time of equipment start-up.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and physical damage.
- B. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Comply with the following standards:
 - 1. UL 83 for thermoplastic insulated wire and cable.
 - 2. UL 44 for rubber or rubber-like and cross-linked thermosetting polyethylene insulated wire and cable.

- B. Provide copper wire only.
- C. No underground splices allowed unless approved by the Owner.

2.02 WIRE AND CABLE IN RACEWAY

A. Lighting, and general-purpose receptacles:

1. Insulation: Type XHHW-2 rated 600V.
 - a. Cross-Linked Polyethylene (XLPE) Insulation.
 - b. High-Heat and Moisture Resistant:
 - 1) Used in wet and dry locations at temperatures not to exceed 90°C.
 - c. Gas, Oil, and UV Resistant.
2. Use stranded wire for all conductors.
3. Control conductor wire size: #14 AWG - #10 AWG.

B. Power:

1. Insulation: Type XHHW-2 rated for 600V.
 - a. Cross-Linked Polyethylene (XLPE) Insulation.
 - b. High-Heat and Moisture Resistant:
 - 1) Used in wet and dry locations at temperatures not to exceed 90°C.
 - c. Gas, Oil, and UV Resistant.
2. Use stranded wire for all power conductors.
3. Use minimum #12 AWG conductors for receptacles and lighting.

2.03 JOINTS, TAPS, SPLICES, AND TERMINATIONS

- A. Conductors #10 AWG and Smaller: Use twist type insulated wire nut solderless connectors. The twist type insulated wire nut solderless connectors are only allowed for lighting and 120V receptacles branch circuits.
- B. Conductors #8 AWG and Larger: Use solderless compression type connectors that will not loosen under vibration or normal strains.
- C. Control and Instrumentation Conductors: Use crimp-type spade connectors where control wires are connected to screw terminals of equipment.

- D. Joints, Taps, and Splices Located in Enclosures Subject to Moisture: Use watertight splice kits.
 - 1. Contractor shall obtain written approval for each location where wiring splices are required.
- E. Contractor shall obtain written approval from Owner prior to splicing feeder conductors or instrumentation/control wiring.

2.04 COLOR CODING

- A. General:
 - 1. Multiconductor control cable colors shall be manufacturer’s standard.
- B. Control Conductors:
 - 1. Provide conductors with a minimum of five unique insulation colors for the installation of control conductors within the same raceway. Do not use brown, orange, and yellow for control conductor insulation colors. Provide equal distribution of colors.
- C. Power Conductors:
 - 1. Power conductors shall be color coded in accordance with the following table. For multiconductor cables, colored tape may be applied to the ends to provide the required color code.

Use	Cable	Color
Three-phase, 120/240 V power	Phase A	Black
	Phase B	Red
	Phase C	Blue
	Neutral	White
	Ground	Green, Green with Yellow stripe

- 2. Conductors sized #4 AWG and larger may be black with colored 3/4-inch vinyl plastic tape applied in 3-inch lengths around the cable at each end.
- 3. Mark the conductor cables at terminations and on cables in pull boxes.
- 4. Provide identification of the coding scheme at branch circuit distribution equipment in accordance with the requirements of NEC 210.5 and 215.12.

2.05 PERMANENT WIRE MARKERS

- A. Provide as specified in Section 26 05 53, “Identification for Electrical Systems.”

PART 3 – EXECUTION

3.01 CONTROLS CONDUCTORS

- A. Reference Section 26 05 23, “Signal Cable.”

3.02 INSTALLATION

- A. Install wiring and cable as specified in Conduit and Cable Schedules.
- B. Install wiring system in accordance with manufacturer’s recommendations.
- C. Install wire and cable in conduit unless otherwise shown on the Drawings.
- D. Maintain barrier, physical separation, or conduit separation between power conductors and instrumentation conductors to avoid magnetic interaction where such conductors enter and pass-through same manhole, handhole, casing pipe, box, electrical trough, or enclosure.
- E. Exercise care in pulling wires and cables into conduit or wireways so as to avoid kinking, putting undue stress on the cables, or otherwise abrading them. No grease will be permitted in pulling cables. Only listed pulling compound will be permitted. The raceway construction shall be complete and protected from the weather before cable is pulled into it. Swab conduits before installing cables and exercise care in pulling to avoid damage to conductors.
- F. Cable bending radius shall be per applicable code. Install feeder cables in one continuous length.
- G. Provide an equipment-grounding conductor, whether or not it is shown on the Drawings, inside any flexible conduit or any raceway in which all or any portion of a run consists of nonmetallic duct or conduit. External bonding jumpers are not acceptable.
- H. In panels, bundle incoming wire and cables, #6 AWG and smaller; lace at intervals not greater than 6 inches; neatly spread into trees and connect to respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Perform lacing with plastic cable ties or linen lacing twine. Where plastic panel wiring duct is provided for cable runs, lacing is not necessary when the cable is properly installed in the duct.
- I. For cables crossing hinges, utilize extra flexible stranded wire, make up into groups not exceeding 12, and arrange so that there will be protection from chafing and excess flexing when the hinged member is moved.

3.03 CONDUCTOR SPLICES AND TERMINATIONS

- A. Splices:
 - 1. Install conductors without splices unless necessary for installation, as determined by the Owner. Splices, when permitted, and terminations shall be in accordance with the splice or termination kit manufacturer’s instructions. Splice or terminate wire and cable as follows:

- a. Watertight Splices: Splices in concrete pull boxes, for any type of cable or wire, shall be watertight. Make splices in low-voltage cables using epoxy resin splicing kits rated for application up to 600V.
- B. Terminations: Terminate stranded #14 wire using crimp-type terminals where not terminated in a box lug-type terminal. Terminals must be coordinated with type of terminal board where provided.

3.04 CONDUCTOR IDENTIFICATION

- A. Install as specified in Section 26 05 53, "Identification for Electrical Systems."

3.05 FIXTURE OUTLETS

- A. Use minimum AWG #12 wire for conductors supplying power to single fixture.

3.06 FIELD TESTS

- A. Perform inspection and acceptance testing and submit test reports for the equipment specified in this section and other Division 26 sections.
- B. Give a 2-week notice to the Owner prior to any test to permit witnessing the test.
- C. Retesting will be required for all unsatisfactory tests after the equipment or system has been repaired. Retest all related equipment and systems if required by the Owner. Repair and retest equipment and systems that have been satisfactorily tested but later fail, until satisfactory performance is obtained.
- D. Field Test Report:
 - 1. A field test report shall be prepared and submitted as a single bound submittal package and shall include each test specified in this section and other Division 26 sections. Include separators and tabs, or other means of identification, for each individual test.
 - 2. The test data records shall include the following:
 - a. Identification of the testing technician and organization.
 - b. Equipment identification.
 - c. Description of test method and equipment, including test equipment calibration dates.
 - d. Identification of conditions that may affect the test results such as humidity and temperature.
 - e. Date and time.
 - f. Inspection and test results. For each test, include range of acceptable test values.
 - g. Indication of "as-found" and "as-left" results, as applicable.

- h. Comments and test summary.
- E. Conductor Insulation Test:
1. Perform an insulation resistance test for each conductor with a circuit voltage above 150V to ground.
 2. Test procedure shall conform to NETA ATS.
 3. Insulation-resistance test values shall not be less than 100 megohms.
- F. Phase Rotation: The phase rotation of all circuits shall be clockwise in sequence. The Contractor shall verify that each three-phase service, feeder, and branch circuits meet this requirement. A record shall be kept at each circuit tested and, on completion, submitted to the Owner for review.

END OF SECTION

SECTION 26 05 23
SIGNAL CABLE

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies products and procedures for furnishing, installing, and connection of conductors and cables for signal circuits.
- B. Provide low-voltage wire and cable as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. Local codes and ordinances.

1.03 SUBMITTALS

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Submit operation and maintenance manuals in compliance with pertinent provisions of Division 1.

1.04 WARRANTY

- A. Manufacturer warrants their product will be free from defects in material or workmanship for a 1-year period. The product warranty shall begin at time of equipment start-up.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and traffic.
- B. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 GENERAL

A. Comply with the following standards:

1. UL 83 and ICEA S-61-402 for thermoplastic insulated wire and cable.
2. UL 44, ICEA S-19-81 and ICEA S-66-524 for rubber or rubberlike and crosslinked thermosetting polyethylene insulated wire and cable.

B. Provide copper wire only.

2.02 WIRE AND CABLE

A. Multi-conductor Tray Cable (600V):

1. 600V Rated:

- a. Cable shall be a multi-conductor, tray rated, with minimum wire gauge #18 AWG unless specified on Drawings, UL Listed.
- b. Jacket Insulation: Jacket shall be suitable for installations in wet or dry locations, resistant to sunlight, moisture, and vapor penetration. cross-linked poly-ethylene compound or PVC per UL Standard 1277.
- c. Conductor: Soft bare annealed copper per ASTM B3, Class B stranding per ASTM B8.
- d. Conductor Insulations: Flame-retardant PVC per UL Standard 83 for Type THWN wire or Okoseal insulation with nylon jacket.
- e. Standards: UL Type TC per Article 336 of the NEC, IEEE 383 (70,000 BTU/hour) Flame Test, ICEA (210,000 BTU/hour) Flame Test.
- f. Suitable for Use: Indoors and outdoors, aerially, in conduits, ducts, cable trays, or direct burial in circuits not exceeding 600V, UL approved for use in continuous operation at 75°C in wet locations, 90°C in dry locations, 130°C for emergency overload conditions.
- g. Acceptable Manufacturers: Belden, Okonite, or approved equal.

B. Twisted Shielded Pairs Cable (TSP):

1. 600V Rated:

- a. Cable shall be single twisted, shielded pair, #16AWG, instrumentation cable, UL listed.
- b. Jacket: Jacket shall be suitable for installations in wet or dry locations, resistant to sunlight, moisture, and vapor penetration, PVC per UL Standard 1277.

- c. Conductor Insulations: PVC-nylon or XLP or Okoseal insulation with nylon jacket, 45-mil PVC, 600V rated.
 - d. Conductor: Bare annealed copper, stranded in accordance with ASTM B8.
 - e. Conductor Insulation: 15-mil, 90°C, polyvinylchloride (PVC).
 - f. Shield and drain wire integral to cable.
 - g. Standards: UL 1277, IEEE383, UL listed .
 - h. Approved for Use: Indoors or outdoors; wet or dry locations; in cable trays; in raceways; for direct burial; and in Class I, Division 2 location (NEC Article 501).
 - i. Acceptable Manufacturers: Belden, Okonite, or approved equal.
2. 300V Rated:
- a. Contractor shall obtain written approval from Owner prior to application of 300V rated TSP cable.
 - b. 300V rated instrumentation cable is allowed where routed in dedicated raceways, physically separated from 600V rated cable by means of cable management clamps, ducts, barriers, etc., which maintain a distance of 4 inches from 600V rated cable.
 - c. Cable shall be single twisted, shielded pair, #16 AWG, instrumentation cable, UL listed.
 - d. Jacket: 32-mil PVC, 300V rated.
 - e. Conductor: Bare annealed copper, stranded in accordance with ASTM B8.
 - f. Conductor Insulation: 31.5-mil, 80°C, polyethylene (PE).
 - g. Shield: Foil Shield with #18 AWG Drain wire, stranded.
 - h. Standards: UL 1277, UL listed.
 - i. Approved for Use: Indoors or outdoors, wet or dry locations, in cable trays, and in raceways.
 - j. Acceptable Manufacturers: Belden, General Cable, Southwire, or approved equal.

C. Twisted Shielded Triad Cable (TST):

- 1. 600V Rated (Preferred):
 - a. Cable shall be single twisted, shielded triads, 16 AWG, instrumentation cable, UL listed.

- b. Jacket: Jacket shall be suitable for installations in wet or dry locations, resistant to sunlight, moisture, and vapor penetration, PVC per UL Standard 1277.
 - c. Conductor Insulations: PVC-nylon or XLP or Okoseal insulation with nylon jacket, 45-mil PVC, 600V rated.
 - d. Conductor: Bare annealed copper or tinned copper, stranded in accordance with ASTM B8.
 - e. Conductor Insulation: 15-mil, 90°C, PVC.
 - f. Shield and drain wire integral to cable.
 - g. Standards: UL 1277, IEEE383, UL listed.
 - h. Approved for Use: Indoors or outdoors; wet or dry locations; in cable trays; in raceways; for direct burial; and in Class I, Division 2 location (NEC Article 501).
2. Acceptable Manufacturers: Belden, Okonite, Okonite or approved equal.
- D. Ethernet Cable:
- 1. CAT5e:
 - a. Cable shall exceed Category 5E component transmission requirements specified in ANSI/TIA/EIA-568-C.2 and shall be tested to 100 MHz.
 - b. UL Temp Rating: 75°C.
 - c. Cable shall exceed IEEE 802.3 DTE Power specification to the rated current limits with no degradation of performance or materials.
 - d. Cable shall be error free Gigabit Ethernet performance to IEEE 802.3.
 - e. Cable shall meet or exceed the 4-connector channel performance requirements of Category 5e, per the ANSI/TIA/EIA-568-C.2 standard.
 - f. Product: Construction shall be four twisted pairs of 22 – 24 AWG insulated solid conductors.
 - g. Conductor insulation: PO-Polyolefin.
 - h. Overall outer foil shield (100% coverage).
 - i. Overall Cable Insulation Voltage Rating: 300V RMS.
 - j. Overall outer jacket material – Industrial Grade PVC – Polyvinyl Chloride.
 - k. Connector: 50-micron gold plated RJ-45.
 - l. UL Listed – UL 444.

m. Warranty: Lifetime.

E. Singlemode Fiber Optic Cable (SMF):

1. Number of Fibers in Cable: 4 fibers (minimum).
2. Type of Fiber (optical): Singlemode non-dispersion shifted, 9/125 micrometer (core diameter/cladding diameter).
3. Jacket:
 - a. Polyvinyl chloride (PVC).
 - b. Color: Black.
4. Constructed with a central strength member/filler and optical fibers within Aramid Yarn strength member/WB with a ripcord and all enclosed with the PVC outer jacket.
5. Storage and Operating Properties: -40°C to +85°C.
6. Rated for both indoor and outdoor application and burial in conduit.
7. UV, water, and fungus resistant.
8. Flame resistance UL 1666.
9. Helically stranded core for flexibility and mechanical protection of the optical fibers.
10. Glass fiber core.
11. Installation minimum Bend Radius no smaller than 8 inches.
12. Fiber color code shall conform to TIA/EIA 598-C.
13. Acceptable Manufacturer:
 - a. Optical Cable Corporation.
 - b. Belden.
 - c. General Cable.
 - d. Or approved equal.

F. Fiber Optic Connector:

1. Provide fiber optic connector compatible with fiber optic cable the Ethernet to Fiber Converter located in Pump Control Panel.

2. Provide a 100% waterproof IP68 outdoor rated fiber optic connector connection in communication handhole shown on drawing. Connector shall be compatible with fiber optic cable and existing fiber optic cable for splice connection.
 - a. Connector shall be chemical/oil resistant, UV resistant, and rodentproof.

2.03 SPECIFIED CABLE

- A. The Contractor shall provide the cable specified in the Drawings and these specifications.

2.04 COPPER WIRE JOINTS, TAPS, SPLICES, AND TERMINATIONS

- A. Conductors #10 AWG and Smaller: For terminations, Contractor shall use crimp-type spade connectors where control wires are connected to screw terminals of equipment. Contractor shall obtain written approval from Owner prior to splicing instrumentation and control conductors.
- B. Control and Instrumentation Conductors: Use crimp-type spade connectors where control wires are connected to screw terminals of equipment.
- C. Joints, Taps, and Splices Located in Enclosures Subject to Moisture: Use watertight splice kits.

2.05 FIBER OPTICS SPLICES AND TERMINATIONS

- A. Connectors:
 1. Type ST, SMA, or as specified.
 2. Connectors shall be tool-affixed and listed for the specific application as recommended by the utilization equipment manufacturer.
 3. Single-fiber cables with factory installed connectors of suitable type are acceptable.
 4. Acceptable manufacturers: Amp, Amphenol, or approved equal.
- B. Breakout Kits:
 1. Shall consist of heat-shrinkable, polymeric insulating material over the connection area and a high dielectric strength mastic to seal the ends against ingress of moisture and contamination.
 2. Shall accommodate a range of cable sizes for both in-line and stub-type configurations.
 3. Shall be independent of cable manufacturer's tolerances.
 4. Acceptable manufacturers: Belden, Alpha, or approved equal.

2.06 PERMANENT WIRE MARKERS

- A. Provide as specified in Section 26 05 53, "Identification for Electrical Systems."

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install wiring and cable as specified in Conduit and Cable Schedules.
- B. Signal cable shall be installed by personnel who have had a minimum of 3 years of experience in terminating and splicing twisted shielded conductors.
- C. Adequate care shall be exercised by the installers to prevent cable damage or sheath distortion. Bending radius shall be per manufacturer's recommendations and not be less than 10 times the cable's overall diameter.
- D. Cables shall be continuous from initiation to termination without splices except where specifically indicated.
- E. Cable shielding shall be grounded at one end only of the cable. Bonding shall be to a single ground point only. Bonding from cable-to-cable in multiple-run installations shall not be permitted.
- F. Heat-shrinkable sleeves shall be installed on cables to insulate shielding at the ungrounded cable terminations.
- G. Where installed in control consoles containing power circuits, cables shall be routed a minimum of 2 inches distant. Color-coding shall be strictly observed throughout the installation.
 - 1. Maintain barrier, physical separation, or conduit separation between instrumentation conductors and power conductors to avoid magnetic interaction where such conductors enter and pass through the same electrical trough or enclosure.
- H. Manufacturer's cable-pulling tension shall not be exceeded.
- I. Fiber Optic Cable Pulling:
 - 1. Complete the pulling of optical fiber cable into conduit or trays without damaging or putting undue stress on the cable insulation.
 - 2. Soapstone, talc, or UL listed pulling compounds are acceptable lubricants for pulling optical fiber cable.
 - 3. Grease is not acceptable.
 - 4. Raceway construction shall be complete, cleaned, and protected from the weather before cable is placed.

5. Whenever a cable leaves a raceway, provide a cable support.

3.02 CONDUCTOR SPLICES AND TERMINATIONS

A. Copper Conductor Splices:

1. Install conductors without splices, unless necessary for installation, as determined and approved in writing by the Engineer. Splices, when permitted, and terminations shall be in accordance with the splice or termination kit manufacturer's instructions. Splice cables as follows:
 - a. Watertight Splices: Splices in concrete pull boxes, for any type of cable or wire, shall be watertight. Make splices in low-voltage cables using epoxy-resin splicing kits rated for application up to 600V.
 - b. Shields shall be handled as a separate conductor. Use manufacturer's compression sleeve and insulated pigtail. Keep pigtail as short as possible. Terminate pigtail with marker sleeve and tug.

B. Copper Conductor Terminations:

1. Crimp-type terminals shall be Listed, self-insulating, sleeve type with ring or rectangular tongue, suitable for size and material of the wire to be terminated and for use with stranded wire. Spade type lugs are acceptable with telephone cable (TC) systems only.
2. Crimp with manufacturer's recommended ratchet-type tool with calibrated dyes. Crimp shall follow manufacturer's termination instructions.

C. Fiber Optic Cables:

1. Lacing and Bundling:

- a. Lace and bundle individual optical fiber cables in panels and electrical equipment at intervals not greater than 6 inches, spread into trees and connected to their respective terminals.
- b. Lacing shall be made up with plastic cable ties.
- c. Lacing is not necessary in plastic panel wiring duct.
- d. Bundle individual optical fiber cables crossing hinges into groups not exceeding eight fibers and arrange so that they will be protected from chafing when the hinged member is moved.

2. Slack:

- a. Provide slack in junction and pull boxes, handholes, and manholes.
- b. Slack shall be sufficient to allow cables to be routed along the walls of the box.

- c. Amount of slack shall be equal to largest dimension of the box.
 - d. Where plastic panel wiring duct is provided for wire runs, lacing is not required.
 - e. Do not use plastic panel wiring duct in manholes and handholes.
3. Individual Fibers:
- a. Break out individual fibers from multi-fiber cables utilizing Breakout Kits as specified by cable manufacturer.
 - b. Terminate individual fibers with connectors as required by the utilization equipment.
 - c. Install connectors using manufacturer's recommended tools.
4. Raceway fill limitations shall be as defined by NEC and the following:
- a. Optical fiber cables may be run in the same raceway with electrical conductors provided derating requirements of the NEC are observed.
5. Unless otherwise indicated, bond armoring of multi-fiber cables to the chassis ground bus at the control panel or per NEC at other locations. Provide terminals for running grounding wires through junction boxes.
6. Terminal Boxes:
- a. Provide at optical fiber cable splices.
 - b. If cable is buried or in raceway below grade at splice, provide an instrument stand as specified with terminal box mounted approximately 3 feet above grade.
7. Install and terminate cable in compliance with the manufacturer's recommendations.

3.03 CONDUCTOR IDENTIFICATION

- A. Install as specified in Section 26 05 53, "Identification for Electrical Systems."

3.04 FIELD TESTS

- A. Perform inspection and acceptance testing and submit test reports for the equipment specified in this section and other Division 26 sections.
 - 1. A field test report shall be prepared and submitted as a single bound submittal package and shall include each test specified in this section and other Division 26 sections. Include separators and tabs, or other means of identification, for each individual test.
 - 2. The test data records shall include the following:
 - a. Identification of the testing technician and organization.

- b. Equipment identification.
 - c. Description of test method and equipment, including test equipment calibration dates.
 - d. Identification of conditions that may affect the test results, such as humidity and temperature.
 - e. Date and time.
 - f. Inspection and test results. For each test, include range of acceptable test values.
 - g. Indication of “as-found” and “as-left” results, as applicable.
 - h. Comments and test summary.
- B. Continuity Testing:
- 1. Perform a continuity test on control and signal copper wiring.
 - a. Verify single conductors are not accidentally shorted to ground or to each other.
 - b. Insulation resistance test for each conductor with a circuit voltage above 150V to ground.
 - 2. Verify shielded cables have the shield grounded.
- C. Fiber Optic Cable:
- 1. General: The Contractor shall test optical fibers and cable in accordance with the industry standards such as:
 - a. TIA/TSB 140 Optical Loss Test Set for attenuation.
 - b. Optical Time Domain Reflectometer (OTDR).
 - c. Fiber optic power meter.
 - d. Fiber optic light source.
 - e. Fiber fault locator.
 - 2. Individual fibers:
 - a. Test each individual fiber for end-to-end attenuation at the wavelength specified. Verify that the utilization equipment attenuation budget is not exceeded.
 - b. Test armoring sheath for continuity and resistance to ground at each end. Resistance to ground grid shall not exceed 1 ohm.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the system for grounding electrical equipment and for building/structure ground electrode systems.

1.02 REFERENCE STANDARDS

- A. Referenced Standards: This section incorporates by reference the latest revisions of the following documents. In case of conflict between the requirements of this section and the listed documents, the requirements of the Contract Specifications shall prevail.
 - 1. NFPA 70: National Electric Code (NEC).
 - 2. UL 467: Standard for Grounding and Bonding Equipment.

1.03 SUBMITTALS

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11, "Basic Electrical Methods and Materials," and Section 01 33 00, "Contractor Submittals."
- B. Submit product catalog cut sheets.
- C. Submit operation and maintenance manuals in compliance with pertinent provisions of Division 1.
- D. Test data.

1.04 QUALITY ASSURANCE

- A. Source Quality Control: Products shall be listed and labeled by an approved Nationally Recognized Testing Lab (NRTL) such as Underwriter's Laboratories, Inc. (UL), ETL, or Canadian Standards Association.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The grounding system shall consist of grounding conductors, ground bus, ground fittings and clamps, and bonding conductors to equipment and structural steel as shown on the Drawings or as required to meet the requirements of the NEC.

2.02 SYSTEM COMPONENTS

A. Ground Conductors:

1. Conductors shall be soft drawn copper.
2. Sizes over #6 AWG shall be stranded.
3. Coat ground connections with electrical joint compound, nonpetroleum type, listed for copper and aluminum applications.
4. Provide ground conductors with either green colored insulation or uninsulated bare copper unless noted otherwise in the Contract Documents.
 - a. Buried ground conductors shall be bare copper.
5. If cable sizes are not specified, the minimum sizes shall be as follows unless otherwise specified on the Drawings:
 - a. Service Entrance Disconnect Switch: 2 AWG
 - b. Lighting Panels: 4 AWG
 - c. Exposed Metal: 2 AWG
 - d. Control Panels: 12 AWG

B. Ground Connections:

1. Binding Post Connectors:
 - a. Lugs for attachment of cables to steel enclosures shall be of the binding post type with a 1/2-13 NC stud.
 - b. Each post shall accommodate cables from #4 AWG to #4/0 AWG.
2. Compression Connectors:
 - a. Material-pure wrought copper extrusions.
 - b. Irreversible compression connection.
 - c. Acceptable Manufacturer:
 - 1) Thomas and Betts.
 - 2) Burndy.
 - 3) Approved equal.

3. Bolted Connectors:

a. Acceptable Manufacturer:

- 1) Burndy.
- 2) O. Z. Gedney.
- 3) Approved equal.

4. Exothermic Welding:

- a. Exothermic welding for bonding connections is acceptable for below-grade connections.

C. Ground Rods:

1. Copper covered steel, 3/4-inch diameter and 10 feet long.
2. Rods shall have threaded type removable caps so that extension rods of the same diameter and length may be added where necessary.

D. Ground Rod Test Wells:

1. Test well shall be 12-inch diameter concrete well with cast iron cover.
2. Traffic rated for H-20 vehicle traffic.
3. Cover shall have the word "GROUND" visible and shall be permanent to the cover.

E. Ground Connector for Enclosure:

1. Ground dual-rated mechanical connector for two conductors and one-hole mount.
 - a. For copper and aluminum conductors.
 - b. Tin-plated for low contact resistance.
 - c. All aluminum bodies.
 - d. Conductor range (AWG): #14 to #2/0 str.
2. Ground Connector shall be UL Listed.
3. Manufacturer ABB-Blackburn Mechanical Connectors Cat. No. ADR21-21 or equal.

F. Ground Connector for Equipment Racks:

1. Long barrel, one-hole, and time plated ground lug.
2. Sized for #2/0 ground conductor.

3. For 3/8 inch ground stud.
4. Lug shall be UL Listed.
5. Manufacturer Burndy Cat, No. YA26 or equal.

G. Ground bar for Enclosure

1. Provide ground bar inside the following enclosures:
 - a. Pump Control Panel (PCP-106).
 - b. Pump Termination Panel (TP-1).
2. Copper or tin-plated copper.
3. Dimensions:
 - a. 4" L X 1"W X 0.25" D
4. Two fastening holes at each end for mounding.
5. Five paired holes for terminating grounds.
6. Acceptable manufacturer Saginaw Control and Engineering Part Number SCE-GB10 or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Connection methods:

1. Provide irreversible compression ground connectors for all ground bonding connections.
 - a. Buried ground conductors.
 - b. Equipment racks grounding conductor.
 - c. Pump Control Panel (PCP-106) chassis ground connection to buried ground conductors.
 - d. Generator frame grounding conductor.

B. Ground electrode conductor. Where grounding conductors pass through concrete floors, equipment pads, or wall, provide PVC conduits for grounding conductors to pass through.

1. Except where grounding conductors are bonding to reinforcement steel within the concrete.

- C. Ground equipment for which a ground connection is required per NEC whether or not the ground connection is specifically shown on the Drawings.
- D. Prior to making ground connections or bonds, clean metal surface at the point of connection.
- E. Ground rod spacing – ground rods shall not be located within 10 feet of each other.

3.02 RACEWAY GROUND

- A. Metallic Conduits:
 - 1. Assembled to provide a continuous ground path and bonded using insulated grounding bushings.
 - 2. Bond using insulated grounding bushings.
- B. Non-Metallic Conduits: Insulated ground conductor sized in compliance with the NEC.
- C. Grounding Bushings: Connected to the grounding system using conductors sized in compliance with NFPA 70.
- D. Provide a ground wire in every conduit carrying a circuit of over 50V to ground.

3.03 GROUND ELECTRODES

- A. Provide ground electrodes as specified in this section or on the Drawings.

3.04 EQUIPMENT AND ENCLOSURE GROUND

- A. Connect electrical and distribution equipment to the grounding system. Cables sized as shown on the Drawings or specified in this section.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section specifies the furnishing of installation of hangers and supports for electrical systems as indicated on the Contract Drawings and herein specified.

1.02 REFERENCE STANDARDS

- A. This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
 1. ASTM A123: Standard specification for zinc coatings on iron and steel.
 2. ASTM A193/A193M REV C: Alloy-steel and stainless-steel bolting materials for high-temperature service.
 3. NFPA 70: National Electrical Code (NEC).

1.03 SUBMITTALS

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Include manufacturer's product information including catalog cuts.
- C. Submit operation and maintenance manuals as specified in Section 26 05 11, "Basic Electrical Methods and Materials."
- D. Submit attachment details for any new support connections to the existing structure.

1.04 SEISMIC SUPPORT

- A. Mechanical, instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

1.05 WARRANTY

- A. Contractor shall ensure electrical equipment warranty shall begin after significant completion of construction.
- B. This warranty is applicable for hangers and supports of electrical equipment installed, tested, and commissioned during that phase.

PART 2 – PRODUCTS

2.01 GENERAL FASTENING AND SUPPORT HARDWARE

- A. Provide fasteners, anchors, clamps, supports, strut, rod, plates, posts, and brackets made of the following material in the identified area:
 - 1. Exterior areas – Hot dipped galvanized.
 - 2. Within the wet wells, vaults, corrosive, and underwater locations, unless otherwise specified, shall be minimum 304 Stainless Steel.
 - a. Bolts: shall be ASTM A193 Grade B8, Class 2 Stainless Steel, AISI 304.
 - b. Nuts: shall be ASTM A194 Grade 8 Stainless Steel, AISI 304.
- B. Expansion shield and tamperproof pin style anchors are not acceptable. Size anchors to meet load requirements. Minimum size anchor bolt is 3/8 inch.
- C. All equipment fasteners and anchors shall be reversible to allow equipment to be removed or replaced.
- D. All conduit supports shall include braces for seismic loadings.

2.02 RACEWAY SUPPORTS

- A. Conduit Supports:
 - 1. Provide strut channel with end caps to support groups of conduits.
 - 2. Individual conduit supports shall be one-hole pipe straps used with clamp backs and nesting backs where required.

PART 3 – EXECUTION

3.01 GENERAL

- A. Treat ferrous metal exposed male threads, cut surfaces, and damaged ends with corrosion-resistant coatings, such as “Zinc-It” prepared by CRC, “Crown Premium 7007” prepared by L. H. Dottie, or “Devcon Z” prepared by ITW Polymers & Fluids, or approved equal. Application shall follow manufacturer’s recommendation.

3.02 SUPPORT LOCATIONS

- A. Locate at least one support within 2 feet from a conduit change in direction, change in elevation, adjacent to flexible joints and couplings, and where shown on the Drawings.
- B. Locate a vertical conduit support within 1 foot above each floor/slab penetration or grade.

- C. Locate supports to ensure that connections to equipment, panels, etc., are substantially free from loads transmitted by the conduit.
- D. Conduit supports shall not be placed at a location which will cause interference with the operation of equipment or other items that need to be accessed for regular operation and maintenance of the facility. Do not install conduit supports and hangers in equipment access areas.
- E. Maximum Support spacing shall not exceed 4 feet for PVC and any other non-metallic piping systems. Support spacing shall not exceed 6 feet for metal conduit systems unless otherwise approved by the Engineer.

3.03 INSTALLATION

- A. Conduit support brackets, etc. shall be of suitable capacity and shall be appropriate to the individual structural member used to support the conduit.
- B. Conduit may be supported from the nearest structural element (ceiling, wall) as long as these attachments shall not cause the structural member to exceed the design live load criteria shown on the Drawings.
- C. Do not support any conduit from any piping supports.
- D. Brace hanging conduit against horizontal movement by both longitudinal and lateral sway bracing.
- E. Install lateral supports for seismic loads at all changes in direction and where conduit support does not provide adequate lateral support for tributary seismic loads.
- F. Install supports to allow controlled thermal and seismic movement of conduit systems, to permit freedom of movement between conduit support anchors, and to facilitate action of expansion joints and similar units.
- G. Repair mounting surfaces to original condition after attachments are made.
- H. Strut System Installation: Arrange for grouping of parallel runs of conduit and support together on field-assembled struts.
- I. Prior to grouting, rough finished floor beneath structural attachments and framing channel post bases. Grout between base plate and floor shall be free of voids and foreign material.
- J. Provide plastic or rubber end caps at the exposed ends of all framing channels that are located up to 7 feet above the floor or grade.

3.04 ANCHOR BOLTS

- A. Anchor bolt material and installation requirements shall conform to Specification Section 13 05 41.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide raceway and boxes as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. Local codes and ordinances.

1.03 SUBMITTALS

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Contractor shall submit shop drawings showing conduit routing of the numerous conduits within the upgraded Marina Pump Station.
 - 1. Conduit shop drawing shall be submitted for review and approval prior to the Contractor beginning installation of the conduits.
- C. Contractor to submit shop drawing depicting the internal components and spacing along with enclosure sizing for the pump termination panels (TP-1 and TP-2).
- D. Contractor to submit wire trough product data sheets for each wire trough use. Include the wire trough sizing for each location.
- E. Submit operation and maintenance manuals in compliance Section 26 05 11, “Basic Electrical Methods and Materials.
- F. Woven polyester pull tape product data.

1.04 WARRANTY

- A. Contractor shall ensure electrical equipment warranty shall begin after significant completion of construction.
 - 1. The warranty time is for a minimum of one year.
- B. This warranty is applicable for raceways, boxes, and equipment specified herein as installed, tested, and commissioned during that phase.

1.05 SHIPPING, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and physical damage.
- B. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide conduit system of the types of conduit as indicated in the Conduit Usage Schedule in Part 3 of this section.
- B. Provide minimum of 1-inch trade-size conduit.
- C. Both 90° short radius and 90° large radius adapter elbows are prohibited.
- D. Provide junction boxes as necessary to facilitate pulling and/or splicing of wires.
- E. All equipment fasteners and anchors shall be reversible to allow equipment to be removed or replaced.

2.02 METAL CONDUIT AND FITTINGS

- A. Galvanized Rigid Steel Conduit (GRS) and Fittings:
 - 1. Conduit: Comply with ANSI C80.1 and UL 6 standards.
 - 2. Fittings: Comply with UL 514B and NEMA FB1 and FB2.10 standards.
 - 3. Hot-dip galvanized steel.
 - 4. Couplings shall be threaded type. Setscrew-type and compression-type are not acceptable.
 - 5. Union couplings for conduits shall be the three-piece (Erickson) type. Threadless couplings shall not be used.

2.03 RIGID NONMETALLIC CONDUIT AND FITTINGS

- A. Polyvinyl Chloride Conduit (PVC) and Fittings:
 - 1. Conduit: Comply with NEMA TC2 and UL 651 standards.
 - 2. Fittings: Comply with NEMA TC3 and UL 641 standards.
 - 3. Joints shall be made with standard PVC Couplings.

4. Fittings shall be PVC solvent weld type.
5. PVC conduit shall have bell ends where terminated at walls and boxes.
6. PVC40 – Schedule 40, high-impact polyvinyl chloride conduit.
7. PVC80 – Schedule 80, high-impact polyvinyl chloride conduit.
8. No PVC conduit elbows, no PVC field bends; all elbows are factory RTRC.

2.04 FLEXIBLE CONDUIT AND FITTINGS

A. Liquidtight Flexible Metal Conduit and Fittings:

1. Conduit: Comply with UL 360 standards.
 - a. Galvanized flexible steel core.
 - b. Provide outer liquidtight, PVC sunlight resistant jacket.
2. Fittings: Comply with UL 514B and NEMA FB1 standards.
3. Liquidtight Flexible Metal Conduit shall not be used in corrosive locations.

B. Liquidtight Flexible Nonmetallic Conduit and Fittings:

1. Conduit: Comply with UL 1660 standards.
2. Fittings:
 - a. Shall comply with UL 514B and NEMA FB1 standards.
 - b. Shall be Arlington NMLT three-piece connectors.

2.05 CONDUIT BODIES

A. Metallic Conduit Bodies: Comply with ANSI C80.4 and C33.84, and UL 514 standards.

1. Use hot-dipped galvanized or cadmium plated malleable iron, or copper-free aluminum material.

B. Contractor shall provide conduit bodies which support the NEC conductor bend radius. Contractor shall provide large-bend radius conduit bodies or provide larger size conduit bodies to be in compliance with conductor bend radius.

C. Provide removable cover with gasket and corrosion-resistant screws.

D. Contractor shall show location for fiberglass conduit bodies on shop drawings and obtain Owner approval of location prior to installation.

2.06 CABLE GLAND CONNECTORS

- A. Cable gland shall be for nonarmored cables.
- B. Cable glands shall be:
 - 1. Metal glands list for area classification in which they are installed.
 - 2. Stainless Steel and NEMA 4X for process areas.
 - 3. UL Listed.
 - 4. Suitable for use in wet locations.
 - 5. Rugged, durable construction protection of cords and cables from damage.
 - a. Provide Stainless Steel wire mesh grips when needed for strain relief.
 - b. Standard neoprene bushing weatherproof seal on outer sheath of cable.
 - 6. Operating temperatures: -25°C to +40°C.
- C. Acceptable manufacturers:
 - 1. Eaton (Crouse Hinds).
 - 2. Emerson (Appleton).
 - 3. Or pre-approved equal.

2.07 INNERDUCT

- A. Provide fabric-type innerduct for fiber optic communication conduits.
- B. Fabric-type innerduct shall have a minimum number of cells:
 - 1. For 1-inch conduit, provide a minimum of two-cell fabric-type innerduct.
 - 2. For 1.5-inch to 2.5-inch conduit, provide a minimum of three-cell fabric-type innerduct.
 - 3. For 3.0-inch conduit and larger, provide a minimum of four-cell fabric-type innerduct.
- C. Fabric innerduct shall be:
 - 1. Halogen-Free.
 - 2. Resistant to ground chemicals and petroleum products.
 - 3. Constructed of PET (Polyethylene Terephthalate) and Nylon 6.
 - 4. Shall include pre-installed 600 lb. glide rope in each cell.

D. Acceptable manufacturers:

1. MaxCell.
2. Or pre-approved equal.

2.08 DRAINS AND BREATHERS

A. Automatic Drain-Breather:

1. Use Crouse-Hinds or Appleton Type ECD or approved equal.
2. Use Appleton Type CRN (non-hazardous locations) or approved equal.

B. Condensate Drain:

1. Use conduit outlet body, Type T.
 - a. Provide threaded, galvanized plug with 3/16-inch drilled hole through plug.

2.09 CONDUIT PENETRATIONS

A. Enclosures: Provide zinc Myers hub with Viton O-ring and Lexan insuliner (by Cooper Crouse-Hinds or approved equal) for termination of conduits to enclosures. Provide ground nut as required.

2.10 OUTLET BOXES AND JUNCTION BOXES

A. Junction boxes in process areas and as specified on Drawings shall be NEMA 4X.

B. Flush Mounted: Provide hot-dipped galvanized steel boxes and accessories suitable for application and type construction.

C. Surface Mounted: Provide corrosion-resistant single or multiple gang malleable iron Type FS or FD cast boxes with threaded hubs, or pressed steel boxes as permitted under Part 3 of this section.

1. Aluminum FS or FD boxes are not allowed.

D. Weatherproof Boxes: Provide gasketed covers and corrosion-proof fasteners.

E. Cast Metal Boxes:

1. Box bodies and cover shall be cast or malleable iron with a minimum wall thickness of 1/8 inch at every point, and not less than 1/4 inch at tapped holes for rigid conduit. Bosses are not acceptable.
2. Mounting lugs shall be provided at the back or bottom corners of the body.
3. Covers shall be secured to the box body with No. 6 or larger brass or bronze flathead screws.

4. Boxes shall be provided with neoprene cover gaskets.
5. Where only cast aluminum is available for certain types of fixture boxes, an epoxy finish shall be provided.
6. Outlet boxes shall be of the FS types. Boxes shall conform to FS W-C-586C, UL 514A, and UL 514C.

F. Pull Boxes and Junction Boxes:

1. Boxes shall be fabricated from carbon steel per UL 50 with the following exception:
 - a. Boxes specified on Drawings as NEMA 4X shall be stainless steel with hinged and padlock cover.
2. Boxes shall be welded construction with seams or joints closed and reinforced.
3. Galvanized boxes damaged during construction shall have shall be galvanized after construction.
4. Boxes intended for outdoor use shall be cast metal with threaded hubs and neoprene gasketed covers. Cover retention shall be by corrosion-resistant stainless-steel screws.
5. Boxes and cabinets shall be securely fastened to equipment rack structural members so as to prevent movement in any direction. Boxes shall not be supported by lighting fixtures, suspended ceiling support wires, or freely hanging rods.
 - a. Covers of boxes and cabinets mounted in horizontal plane (top or bottom) either shall weigh not more than 40 pounds or shall require not more than 40 pounds of force to open or close.
 - b. Covers of boxes and cabinets mounted in vertical plane (front, back, sides) either shall weigh not more than 60 pounds or shall require not more than 60 pounds of force to open or close. Covers over 30 pounds shall be furnished with angle support at bottom to carry weight of cover for assembly.
 - c. Covers of boxes and cabinets weighing more than 30 pounds shall be provided with lifting handles or some means of grasping other than edges.

G. Wiring Troughs:

1. Wire trough shall be used for cable management and to assist with wire pulling.
2. NEMA 4X stainless steel wire trough shall be:
 - a. Locations:
 - 1) Wet, damp, and moist locations.
 - 2) Outdoor wire troughs.

- 3) Classified spaces.
 - 4) Corrosive spaces.
 - 5) Where specified on Drawings.
- b. Seams continuously welded and ground smooth, exterior tabs for fastening to wall or equipment rack.
 - c. Captive stainless-steel screw threaded into sealed walls.
 - d. Oil-resistant gasket and adhesive.
 - e. No holes or knockouts.
3. Wire trough dimensions as shown on Drawings.
 4. Hoffman wire trough or approved equal.
- H. Terminal Box Enclosures (including Termination Panels):
1. Provide enclosure for terminal box as follows:
 - a. NEMA 4X rated enclosure fabricated from 14-gauge type 304 stainless steel with welded seams ground smooth.
 - b. Body and door stiffeners for added rigidity.
 - c. Continuous hinged door with gasket seal.
 - 1) Hinged door shall have provisions for padlocking closed.
 - d. Rolled lip around three sides of door and all sides of enclosure opening to exclude liquids and contaminants.
 - e. Door sealed with polyurethane gasket.
 - f. Collar studs for mounting back panel.
 - g. External mounting feet.
 - h. Grounding provisions provided including stud located on door.
 - i. Enclosure size as shown on the Drawings.
 - j. Back panel: type 304 stainless steel.
 - k. Provide Aluminum DIN Rail Mounts for Terminal Blocks.

- I. Contractor to provide shop drawings depicting the interior terminal box enclosure components and their layout arrangement.
 - 1) Terminal Box Enclosures which contain power wiring, control wiring, signal wiring shall have physical separation between the power, control, and signal wiring types. Contractor shall use wire management devices (clamps, troughs, and plastic ties, etc.) to physically separate wire types within enclosure.
 - 2) Contractor to depict the size of the enclosure to allow space for internal wiring while maintaining wire separations. Submit terminal box enclosure size.
 - 3) Contractor shall submit shop drawing depicting the interior components configuration and arrangement.
 - 4) Contractor shall size enclosure to fit space on wall as shown on the Drawings. Contractor shall re-work existing conduit/wiring if required to place new Terminal Box Enclosure on wall.
- m. Acceptable Manufacturers:
 - 1) Wiegmann.
 - 2) Saginaw Control and Engineering.
 - 3) Approved equal.
 - a) Example of a Wiegmann enclosure with back panel: catalog number SSN4363612, with Back Panel catalog number NP3636SS).

I. Terminal Blocks:

1. Provide terminal blocks for terminal box as follows:
 - a. Feed through terminal blocks, DIN Rail mounted.
 - b. Rating: 600 V, 30 A.
 - c. UL Listed.
 - d. Wire Size: 22-10 AWG.
 - e. Provide perforated jumper bar as follows:
 - 1) Current rating 32A.
 - 2) Perforated jumper bar rated for use with terminal blocks.
 - 3) Cut to length.
 - 4) Provide subassembly screw and post.

- f. Provide Separator, End Sections, and End Stops as required.

2.11 PULL BOXES AND SPECIAL PURPOSE OUTLET BOXES

- A. Provide pull boxes with covers held in place by corrosion-resistant machine screws, and of type or NEMA rating as shown on the Drawings.
- B. Provide special purpose outlet boxes furnished with fixtures and devices where standard outlets are not applicable.

2.12 ANTI-CORROSION PROTECTION TAPE

- A. Provide anti-corrosion protection tape around galvanized rigid steel conduit passes through concrete. Outdoors, no galvanized rigid steel conduit shall be in direct contact with concrete where conduit penetrates into concrete wall, floor, ceiling, slab, or etc.
- B. Anti-corrosion protection tape shall be:
 - 1. Minimum thickness of 10 mills.
 - 2. Minimum of 2 inches wide.
 - 3. Maximum temperature rating of 176°F.
 - 4. UV resistant.
 - 5. Listed for protecting conduits and fittings.
 - 6. Listed for impact and abrasion resistance.
 - 7. Used for early-warning protection of digging around reinforced concrete duct banks.
- C. Acceptable manufacturers: 3M Scotchrap All-Weather Corrosion Protection Tape or approved equal.

2.13 HAZARDOUS LOCATION SEALING FITTINGS

- A. Comply with UL 886 standard.
- B. Use malleable iron, zinc plated, or copper-free aluminum fittings.
- C. Fittings shall allow 40% wire fill.
- D. Provide fiber packing and sealing compound from same manufacturer as fittings.

PART 3 – EXECUTION

3.01 INSTALLATION – RACEWAY

- A. Provide furnishing for the installation of hangers and supports as specified in Section 26 05 29.
- B. Conduit routed into wet well, meter vault, and valve vault shall be PVC Schedule 80.
 - 1. Where manufacturer's cables are used, PVC conduit shall have PVC end bell fitting to protect wiring.
- C. Conduit stubbed-up 6 inches for air gap underneath termination panels shall be PVC Schedule 80. Stubbed-up conduit shall have PVC end bell fitting to protect wiring.
- D. Provide all spare raceways with 1/2-inch woven polyester pull tape with foot marks.
- E. Install conduit and fittings in accordance with manufacturer's recommendations.
- F. Run exposed conduits parallel to or at right angles with lines of building or structure.
- G. Keep conduit plugged, clean, and dry during construction.
- H. Conduit runs extending through areas of different temperature or atmospheric conditions, or partly indoors and partly outdoors must be sealed, drained, and installed in a manner preventing drainage of condensed or entrapped moisture into cabinets, boxes, fixtures, motors, or equipment enclosures. The wall, ceiling and/or floor penetrations associated with these conduit runs shall be sealed using a link-seal or equivalent sealing method approved by the Engineer.
- I. Conduits Run in Concrete Structures:
 - 1. Comply with applicable provisions of ACI 318 for conduits embedded in structural frame slab.
 - 2. Install conduits parallel to each other spaced on center of at least three times conduit trade diameter with minimum 2-inch concrete covering.
 - 3. Conduits over 1-1/2 inches may not be installed in slab without approval of Engineer.
 - 4. Apply anti-corrosion tape to galvanized rigid steel conduits run or penetrated into concrete.
 - a. Anti-corrosion tape shall be applied per the manufacturer instructions.
- J. Install bushings with ground lugs and integral plastic linings at equipment with open-bottom conduit entrances.
- K. Exterior Underground Conduit: Provide conduits or ducts terminating below grade with means to prevent entry of dirt or moisture. Provide conduit threaded coupling and threaded plug to protect conduit from debris.

- L. Immediately upon completion of pouring concrete, thoroughly swab conduits on the inside. After the concrete has set, and before backfilling, pull a mandrel having a diameter equal to the nominal conduit inside diameter minus 1/2 inch and not less than 4 inches long, through each conduit. If the mandrel shows signs of protrusions on the inside of the conduit, repair or replace the conduit.
- M. Outdoor underground conduit shall be sloped to drain toward manholes or vaults where applicable.
- N. Flexible conduit shall be limited to 36 inches in length and used for vibration isolation or where equipment requires flexible connections.
- O. Conduits from classified spaces (wet well, meter vault, valve vault, etc) do not require seal fittings if conductors from classified spaces pass through the Pump Termination Panel and air gap.
 - 1. If conduit and wiring from classified spaces do not pass through the Pump Termination Pump and air gap then seal fittings are required.

3.02 INSTALLATION – BOXES

- A. Install boxes in accordance with manufacturer's recommendations.
- B. Use weatherproof boxes for exterior locations exposed to weather or moisture.
- C. Do not install boxes back to back.
- D. Set outlet boxes parallel to construction.
- E. Thoroughly clean boxes prior to installing wiring devices.

3.03 CUTTING AND PATCHING

- A. Core drill through reinforced concrete with approval of Owner.
- B. Cut and patch in accordance with the following:
 - 1. Surface Conditions:
 - a. Inspection:
 - 1) Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling.
 - 2) After uncovering the work, inspect conditions affecting installation of new work.
 - b. Discrepancies:
 - 1) If uncovered conditions are not as anticipated, immediately notify the Owner and obtain needed directions.

- 2) Do not proceed until unsatisfactory conditions are corrected.
2. Preparation Prior to Cutting: Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.
3. Performance:
 - a. Perform required excavating and backfilling as required under pertinent other sections of these specifications.
 - b. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new work.
 - c. Perform fitting and adjusting of products to provide finished installation complying with the manufacturer's recommendations for specified equipment, products, tolerances, and finishes.
 - d. Perform slight alterations needed to make adjustable parts fit to fixed parts to provide a complete installation.
 - e. Refinish surfaces as necessary to match adjacent finishes.

3.04 RESTRICTIONS

- A. Do not route exposed conduit below and parallel to, or adjacent to water piping.
- B. Do not splice power wires, control/instrumentation wires/cables, or fiber optic cables except where otherwise permitted on Drawings.

3.05 EXISTING CONDUIT

- A. The Drawings do not show the location of existing conduit as indicated by available existing records. The proposed work may require crossing, relocating, and, in some cases, connecting to the existing conduits.
- B. Expose carefully the existing conduits throughout the area of proposed work.
 1. Existing conduits to remain undisturbed and in uninterrupted use until such time as a change is approved by the Engineer.
- C. Where the conduits are to cross or be connected to existing conduit, make a field check to determine whether any conflict will be encountered in laying the new conduit.
 1. Adjust the location of new conduits, if necessary, as authorized by the Engineer, to avoid conflict with existing conduits.
- D. Where new conduits are to connect to existing conduits, provide fittings required to complete the connection, and do the work as expeditiously and carefully as possible.
 1. Inspect and clean existing conduit prior to installing new wire.

- E. Remove and replace existing conduits, fittings, boxes, and appurtenances as shown on the Drawings.
 - 1. Do not remove and replace existing items shown to remain unless approved by the Engineer or specified on the Drawings.

3.06 CONDUIT USAGE SCHEDULE

- A. Install GRS in the following locations unless otherwise shown on the Drawings:
 - 1. Concealed in poured concrete walls and floor or roof slabs.
 - 2. Exposed.
- B. Install PVC in underground conduits are not exposed to physical damage and in the wet well and vaults.
- C. Install liquid-tight flexible conduit and fittings for connections to instrumentation and equipment subject to vibration and at locations shown on the Drawings.
 - 1. For corrosive or outdoor environments, install liquid-tight flexible nonmetallic conduit and fittings.
 - 2. Liquid-tight flexible nonmetallic conduit to be no greater than 36 inches in length in any situation unless prior written approval is provided by the Engineer.

3.07 EXPOSED OUTLET AND JUNCTION BOXES

- A. Use cast boxes unless noted otherwise on the Drawings.
- B. Install weatherproof outlet, switch, and junction boxes outdoors and in any area where Drawings show weatherproof (WP) wiring devices.

3.08 OUTLET BOX ACCESSORIES

- A. Provide outlet box accessories and mounting devices as required for each installation.

3.09 OUTLET BOX LOCATIONS

- A. Location of outlets and equipment is approximate. Exact location to be verified and determined by:
 - 1. Conflict with equipment of other trades.
 - 2. Equipment manufacturer's drawings.
 - 3. Owner in field.
- B. Minor modification in location of outlets and equipment is considered incidental up to distance of 10 feet with no additional compensation, providing necessary instructions are given prior to roughing-in of outlet boxes and equipment.
- C. Mounting Heights:

1. Locations of wall outlets shall be measured from the finished floor to the center of the outlet box. Boxes shall be adjusted so that the front edge of the box shall not be further back from the finished wall plane than 1/4 inch. Boxes shall be adjusted so that the box does not project beyond the finished wall. Height above finished floor (AFF) or above finished grade (AFG) shall be as follows unless noted otherwise:
 - a. Receptacles – Industrial Areas: 36 inches AFF or AFG.
 - b. Toggle or Timer Switches: 48 inches AFF or AFG.

3.10 INSTALLATION

A. Outlet Boxes:

1. Provide fixture outlets with proper fixture connectors.
2. Box mounting height shall be dictated by the wiring device enclosed.
3. Blanking covers shall be installed on unused openings.
4. Cast metal surface-mounted boxes shall be used in exterior and/or in wet locations.
5. Bonding jumpers shall be used around concentric or eccentric knockouts.
6. Boxes shall be securely mounted to structure (i.e. equipment racks) independent of conduits entering or exiting the boxes.

B. Junction Boxes and Pull Boxes:

1. Boxes shall be installed where required and where indicated on the Drawings.
2. Boxes shall be readily accessible.
3. Box dimensions shall be in accordance with size and quantity of conductors and conduits entering and leaving box per NEC Article 370 requirements.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section specifies products and procedures used to identify electrical system equipment and components.

1.02 REFERENCE STANDARDS

- A. None.

1.03 SUBMITTALS

- A. As specified in Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit under one submittal the following items:
 - 1. Nameplate schedules.
 - 2. Raceway/conduit schedules.
 - 3. Wire marker schedules.
- C. Submit operation and maintenance manuals as specified in Section 26 05 11, “Basic Electrical Methods and Materials” in compliance with pertinent provisions of Division 1.

PART 2 – PRODUCTS

2.01 EQUIPMENT NAMEPLATES

- A. Provide nameplates on equipment.
- B. Nameplates: For equipment such as automatic transfer switches, panelboards, control panels, electrical equipment enclosures, disconnect switches, and other electrical items requiring nameplates shall be:
 - 1. Located on the enclosure face.
 - 2. Rectangular screw-on type with self-tapping 316 stainless steel screws.
 - 3. Laminated engraving plastic nameplate.
 - a. White letters on black backgrounds.
 - b. 2.25-inch-tall.

- c. Length as required.
 - d. 1/16-inch thick.
 - e. UV and scratch resistant.
- 4. Lettering: 1/4-inch-high lettering for equipment name and tag number.
 - 5. Nameplate text shall include:
 - a. Line 1: Asset number (e.g., "P2-040").
 - b. Line 2: Descriptive tag (e.g., "Effluent Pump #1").
 - c. Line 3: Associated MCC (e.g., "MCC2A").
 - d. Line 4: Voltage (e.g., "480 volts").
- C. Nameplate schedule shall be included with equipment submittals.

2.02 RACEWAY/CONDUIT MARKERS

- A. Provide raceway/conduit markers for new and unlabeled raceways and conduits within the project boundary.
- B. Provide raceway/conduit markers.
 - 1. 316 Stainless steel.
 - 2. Minimum dimensions: 1-inch by 3-inch by 18-gauge thick.
 - 3. Two holes at each end for wire attachment.
 - 4. Lettering: 1/4-inch tall, laser etched with black fill.
 - 5. Attach with 316 stainless steel wire, 16 AWG minimum.

2.03 PERMANENT WIRE MARKERS

- A. Wire markers shall be heat shrink type (Raychem, T&B, or approved equal), or self-laminating where conductors are not spliced or terminated. Wire numbers shall be permanently imprinted on the markers.

PART 3 – EXECUTION

3.01 GENERAL

- A. Label electrical and control equipment associated within scope of work.
- B. Equipment containing power distribution equipment 120V and greater shall have nameplates identifying source of power equipment identification asset number and its location.

3.02 RACEWAY/CONDUIT MARKERS

- A. Neatly attach marker to the raceway with 316 stainless steel wire.
- B. Exposed Conduit:
 - 1. Marker shall be placed within 24 inches of termination or wall penetration.
 - 2. A single marker will be allowed when the entire length of conduit is clearly visible from one location.
- C. In concrete vaults with conduit flush with wall, attach markers to concrete with stainless steel hardware. Markers to be located within 6 inches of conduit. This applies to both existing and new conduits in vaults.
- D. Attach nameplate to equipment with mechanical fastening means.
- E. Locate label inside vault where easily seen from surface with cover removed.

3.03 LOW-VOLTAGE WIRE AND CABLE IDENTIFICATION

- A. Except for interior lighting and receptacle circuits, identify each wire or cable at each termination and in each pull box, junction box, handhole, and manhole using numbered and lettered wire markers. Electrically common conductors shall have the same number. Each electrically different conductor shall be uniquely numbered. Identify panelboard circuits using the panelboard identification and circuit number. Identify motor control circuits using the equipment identification number assigned to the control unit by the motor control center manufacturer and the motor control unit terminal number. Identify other circuits as shown in the circuit schedule or as favorably reviewed by the Engineer.
- B. Conductors between terminals of different numbers shall have both terminal numbers shown at each conductor end. The terminal number closest to the end of the wire shall be the same as the terminal number.
- C. Provide schedule identifying various power and lighting conductors from power source to equipment or device served.

D. Color Coding:

1. Provide color coding for circuit conductors. Conductors No. 6 and smaller shall be of appropriate color for the entire length. Insulation color shall be green for grounding conductors. Current carrying conductor colors shall be as follows:
 - a. 240/120V, Three-Phase, Power: (A) Black, (B) Orange, and (C) Blue, and (N) White.
 - b. 120V, Control: Multi-color.
2. Provide appropriate color-coding electrical tape at terminations on conductors without continuous color-coded insulation. Conductor colors shall be as listed above.

3.04 SIGNAL CABLE IDENTIFICATION

- A. Identify each wire or cable at each termination, in each pull box, and in each handhole using numbered and lettered wire markers. Electrically common conductors shall have the same number. Each electrically different conductor shall be uniquely numbered. Identify panelboard circuits using the panelboard identification and circuit number. Identify motor control circuits using the equipment identification number assigned to the control unit by the motor control center manufacturer and the motor control unit terminal number. Identify other circuits as shown in the circuit schedule or as favorably reviewed by the Engineer.
- B. Conductors between terminals of different numbers shall have both terminal numbers shown at each conductor end. The terminal number closest to the end of the wire shall be the same as the terminal number.

END OF SECTION

SECTION 26 05 73
SHORT CIRCUIT, COORDINATION, AND ARC FLASH REPORT

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Provide the services of a recognized independent testing laboratory or coordination analysis consultant (Consultant) to provide the following power study reports:
 - 1. Short Circuit Report.
 - 2. Protective Device Coordination Report.
 - 3. Arc Flash Report.
- B. Contractor shall use the electrical distribution and loads as specified on the Drawings to the electrical model to prepare the new reports.
- C. The work of the following sections is related to the work of this section. Other sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor's responsibility to perform all the work required by the Contract Documents.
 - 1. Section 26 05 11, "Basic Electrical Methods and Materials."

1.02 REFERENCE STANDARDS

- A. Institute of Electrical and Electronic Engineers (IEEE) Publications (most recent published version):
 - 1. IEEE 141 – Recommended Practice for Electric Power Distribution for Industrial Plants.
 - 2. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
 - 3. IEEE 1584 – IEEE Guide for Performing Arc-Flash Hazard Calculations (most recent publication).
 - 4. NFPA 70 – National Electric Code.
 - 5. NFPA 70E – Standard for Electrical Safety Requirements for Employee Workplaces.
 - 6. OSHA 29-CFR – Occupational Safety and Health Standards: Electrical Part 1910 Subpart S.

1.03 SUBMITTALS

- A. Procedures: As specified in Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Schedule:
 - 1. Submit Short Circuit, Coordination, and Arc Flash Reports with equipment submittals.
 - 2. Approved report required prior to energizing equipment.
 - 3. Provide and install arc flash labels prior to commissioning.
- C. Submit the name and the qualifications of the laboratory or consultant for review by the Owner. Qualifications must include professional registration of proposed personnel as electrical engineers.
- D. Certified Short Circuit, Coordination, and Arc Flash Reports:
 - 1. Preliminary Short Circuit, Coordination, and Arc Flash Report shall be submitted for each construction phase:
 - a. Arc flash warning labels.
 - b. Protective devices trip settings.
 - c. An electronic copy of the Preliminary Short Circuit, Coordination, and Arc Flash Report in PDF format.
 - d. Preliminary report shall use submitted information, existing equipment, and estimated circuit lengths.
 - 2. Final Power Study Report:
 - a. Arc flash warning labels.
 - b. Protective devices trip settings.
 - c. Two paper copies of the of the Short Circuit, Coordination, and Arc Flash Report.
 - d. An electronic copy of the Short Circuit, Coordination, and Arc Flash Report in PDF format.
- E. Electronic copy of model, settings, and report.
 - 1. Electronic copy shall be a copy of the software format used to produce the Short Circuit, Coordination, Arc Flash Report. The electronic copy shall include the SKM model used for preparing the study.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Prepared by recognized independent testing laboratory or coordination analysis consultant who is regularly engaged in power system studies.

B. Consultant Certification: Short Circuit, Coordination, and Arc Flash Reports to be stamped and signed by an electrical engineer registered in the State of Washington.

1.05 ENGINEERING SOFTWARE

A. Software used to perform the following power system study shall be SKM Systems Analysis, Inc.

1. Short Circuit Report.

2. Protective Device Coordination Report.

3. Arc Flash Report.

PART 2 – PRODUCTS

2.01 SHORT CIRCUIT, COORDINATION, AND ARC FLASH REPORTS

A. Scope of Effort:

1. Executive Summary:

a. The executive summary shall provide an overall evaluation of the three sections; Short Circuit Report, Coordination Study, and Arc Flash Study.

b. The executive summary shall list any concerns or problems stated within the individual reports and studies specified within this section.

2. The reports shall include all equipment shown on the one-line diagrams, including but not limited to the following major components:

a. Service Entrance Disconnect Switch (DISC-102).

b. Automatic Transfer Switch (ATS-103).

c. Standby Generator (GEN-104).

d. Panelboard (PBD-105).

e. Pump Control Panel (PCP-106).

3. Short Circuit Report:

- a. Prepare a report summarizing the short circuit and coordination study and conclusions or recommendations that may affect the integrity of the electric power distribution system.
- b. As a minimum, include the following in the report:
 - 1) Executive Summary.
 - 2) Equipment manufacturer's information used to prepare the study.
 - 3) Assumptions made during the study.
 - 4) Short circuit calculations listing short circuit levels at each bus.
 - 5) Evaluation of the electrical power system and the model numbers and settings of the protective devices associated with the system.
 - 6) Time-current curves, model numbers of the protective relays, and relay settings associated with each breaker.
 - 7) Comparison of short circuit duties of each bus to the interrupting capacity of the equipment connected to that bus.
 - 8) Tabulation of the circuit breaker, fuse, and other protective device ratings versus calculated short circuit duties.
 - 9) Recommendations for system improvements, where needed.
 - 10) Short circuit/coordination studies software for performing this task shall be PowerTools SKM software.

4. Short Circuit Study:

- a. One-Line Diagram:
 - 1) Location and function of each protective device in the system, such as relays, direct-acting trips, fuses, etc.
 - 2) Type designation, current rating, range or adjustment manufacturer's style, and catalog transformers.
 - 3) Power, voltage ratings, impedance, and primary and secondary connections of all transformers.
 - 4) Nameplate ratings of all motors and generators with their subtransient reactances.
 - 5) Transient reactances of generator and synchronous reactances of generator.

- 6) Sources of short circuit elements, such as utility, generator, and induction motors.
 - 7) All significant circuit elements, such as transformers, cables, breakers, fuses, reactors, etc.
 - 8) Standby as well as normal switching conditions
- b. Impedance Diagram:
- 1) Available MVA or impedance from the utility company, documented by letter from the utility company and included with the submitted report.
 - 2) Bus impedance.
 - 3) Transformer and/or reactor impedances.
 - 4) Cable impedances.
 - 5) Equipment impedances.
 - 6) System voltages.
 - 7) Grounding scheme (resistance grounding, solid grounding, and no grounding).
- c. Calculations:
- 1) Determine the paths and situations where short circuit currents are the greatest. Assume bolted faults and calculate the three-phase and line-to-ground short circuits of each case.
 - 2) Calculate the maximum and minimum ground-fault currents.
5. Coordination Study:
- a. Provide an evaluation of the electrical power system and the model numbers and settings of the protective devices associated with the system.
 - b. As a minimum, include the following on five-cycle, log-log graph paper:
 - 1) Time-current curve for each protective relay or fuse showing graphically that the settings will allow protection and selectively within Industry standards. Identify each curve and specify the tap and time dial setting.
 - 2) Time-current curves for each device to be positioned for maximum selectivity to minimize system disturbances during fault clearing. Where selectivity cannot be achieved, notify the Owner and Engineer as to the cause.
 - 3) Time-current curves and points for cable and equipment damage.
 - 4) Circuit interrupting device operating and interrupting times.

- 5) Indicate maximum fault values on the graph.
 - 6) Sketch of bus and breaker arrangement.
6. Arc Flash Report:
- a. Prepare a report summarizing the arc flash study and conclusions or recommendations that may affect the integrity of the electric power distribution system.
 - b. A qualified engineer shall perform arc flash calculations to determine the incident energy, arc flash boundary, and minimum PPE requirements for locations throughout the power system. Arc flash warning labels are produced and attached to the electrical equipment. These labels must indicate approach boundaries, incident energy level, and minimum PPE that is required when servicing the equipment within the arc flash boundary.
 - c. As a minimum, include the following in the report:
 - 1) Equipment manufacturer's information used to prepare the study.
 - 2) Assumptions made during the study.
 - 3) Reduced copy of the one-line drawing.
 - 4) Arc flash evaluations summary spreadsheet as specified within this section.
 - 5) Bus detail sheets as specified within this section.
 - 6) Arc flash analysis and calculations for all voltage levels of the electrical power system.
 - 7) Arc flash warning labels printed in color on adhesive-backed labels.
7. Arc Flash Study:
- a. Perform an arc flash hazard study after the short circuit and protective device coordination study has been completed.
 - b. For each major part of the electrical power system, determine the following:
 - 1) Flash hazard protection boundary.
 - 2) Limited approach boundary.
 - 3) Restricted approach boundary.
 - 4) Prohibited approach boundary.
 - 5) Incident energy level.

- 6) PPE hazard/risk category.
 - 7) Type of PPE required.
- c. Produce arc flash warning labels listing Items b.1) through b.7), above. Also include the bus name and voltage.
- 1) Provide labeling at each separately derived system indicating calculated available fault current per NEC Article 110.24.
 - 2) Arc flash labeling shall conform to the 2024 NFPA 70E and the National Electrical Code (NEC).
- d. Produce bus detail sheets that lists Items b.1) through b.7), above, and the following additional items:
- 1) Bus name.
 - 2) Upstream protective device name, type, and settings.
 - 3) Bus line to line voltage.
- e. Produce an arc flash evaluation summary sheet listing the following additional items:
- 1) Bus name.
 - 2) Upstream protective device name, type, settings.
 - 3) Bus line to line voltage.
 - 4) Bus bolted fault.
 - 5) Protective device bolted fault current.
 - 6) Arcing fault current.
 - 7) Protective device trip/delay time.
 - 8) Breaker opening time.
 - 9) Solidly grounded column.
 - 10) Equipment type.
 - 11) Gap.
 - 12) Arc flash boundary.
 - 13) Working distance.

14) Incident energy.

15) Required protective fire rated clothing type and class.

- f. Analyze the short circuit, protective device coordination, and arc flash calculations and highlight any equipment that is determined to be underrated or causes an abnormally high incident energy calculation. Propose approaches to reduce the energy levels.

PART 3 – EXECUTION

3.01 GENERAL

A. Perform the power study report in accordance with:

1. IEEE Standards 141, 242, and 1584.
2. NFPA 70E.
3. OSHA 29-CFR, Part 1910 Subpart S.

B. Perform the power studies using actual equipment data.

C. Provide on-site labor to collect field information and verify record information to prepare the reports.

3.02 PRELIMINARY AND FINAL POWER STUDY REPORTS

A. Contractor shall provide preliminary power study report:

1. Preliminary power study report shall be provided prior to the energizing of equipment and electrical power circuits.
2. Preliminary power study report shall provide trip settings to protect equipment and personnel during equipment installation, startup, functional testing, and commissioning.
 - a. Trip settings shall be provided for the circuit breakers with adjustable trip settings:

B. Contractor shall provide final power study report:

1. Final power study report shall be provided after the completion of the project construction.
2. Final power study report shall include equipment in the model which matches the final installed equipment and incorporate changes made during construction.
 - a. Final power study shall also include trip settings for the circuit breakers.

C. Contractor shall provide and apply arc flash warning labels for equipment.

3.03 CONFIRM EXISTING CONDITIONS

- A. Owner will provide available record information as requested by the Consultant/Contractor.
- B. Contractor shall provide information to the Consultant preparing the power study.
- C. Consultant preparing the report is responsible to field verify record information and collect additional information for performing the study. Provide a minimum of one 8-hour day to perform this field work.
- D. Contractor shall make field adjustments to the protection devices as specified in the short circuit, coordination, and arc flash study.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 08 00
ELECTRICAL TESTING AND COMMISSIONING

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the acceptance testing of electrical materials, equipment, and systems. It is intended to cover the testing of all electrical distribution equipment furnished under this Contract. Electrical tests shall be conducted per equipment manufacturer's testing requirements.
- B. The following existing electrical equipment shall be tested by the equipment manufacturer or authorized equipment manufacturer's representative:
 - 1. Standby Generator.
 - 2. Automatic Transfer Switch.
- C. Additional electrical equipment shall be tested per the equipment manufacturer's testing procedures:
 - 1. Service Entrance Disconnect Switch.
 - 2. Pump Control Panel assembly including the VFDs control of pumps as well as all level control devices.
- D. Test instruments shall be calibrated to references traceable to the National Institute of Standards and Testing and shall have a current sticker showing date of calibration per manufacturer's specifications, deviation from standard, name of calibration laboratory and technician, and date of recalibration.
- E. Where existing conductors are disconnected from existing equipment, salvaged, and connected to new equipment, electrical test shall be conducted on the existing conductors per the requirements specified in the NETA Maintenance Testing Specification (NETA MTS).

1.02 SUBMITTALS

- A. Procedures: In accordance with Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Proposed testing procedures, including proposed test report forms and listing of equipment that will be tested.
- C. Test report, including documentation for all tests performed.
- D. Execution plan, including schedule.

- E. Name and qualifications of the independent testing firm that will be performing the testing work. Submitted information shall confirm that qualifications are to NETA MTS requirements.
- F. Inspection and acceptance testing reports for new electrical equipment per ATS-2017, Paragraph 5.4 for equipment for which tests are required in this and other Division 26 sections.
- G. Field test results specified in this section.

1.03 QUALITY ASSURANCE

- A. Referenced Standards: This section incorporates by reference the latest revisions of the following documents. In case of conflict between the requirements of this section and the listed documents, the requirements of the Contract Specifications shall prevail.
 - 1. National Electrical Manufacturers Association (NEMA).
 - 2. International Electrical Testing Association Inc. Acceptance Testing Specifications (NETA).
 - 3. NFPA 70 – National Electrical Code (NEC).

1.04 DAMAGED PRODUCTS

- A. See Section 26 05 11 in the event that any equipment or material is damaged.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 CONSTRUCTION INSPECTIONS

- A. Commissioning of electrical systems will require inspection of individual elements of the electrical systems construction throughout the construction period. The Contractor shall coordinate with the Owner to schedule electrical systems inspections as required to support the commissioning process.

3.02 TESTING PROCEDURES

- A. General:
 - 1. Electrical testing requirements for existing equipment:
 - a. Service Entrance Disconnect Switch (DISC-102):
 - 1) Conduct the Siemens published Safety Switch Maintenance Instructions including inspection, cleaning, tightening connections, all lubricating, and cycling switch procedures.

- 2) Exercising blade switch handle and verify the three stabs rotate and completely disconnect from receiving contact stabs.
 - 3) Prepare test report describing testing performed and results. Submit test report.
 - 4) Submit certificate that equipment is fully operational and performing properly.
 - a) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - b) Sign, print name, and date certificate.
- b. Automatic Transfer Switch (ATS-103):
- 1) Kohler ATS equipment manufacturer or authorized equipment manufacturer representative shall test ATS per ATS Operation and Installation Manual, Functional Tests chapter.
 - 2) Clean interior and lubricate moving parts per Manufacturer's O&M manual instructions.
 - 3) Verify proper operation of ATS both loaded and unloaded.
 - 4) Verify communications between ATS and PLC.
 - 5) Prepare test report describing testing performed and results. Submit test report.
 - 6) Submit certificate that equipment is fully operational and performing properly.
 - a) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - b) Sign, print name, and date certificate.
- c. Standby Generator (GEN-104)
- 1) Kohler Generator equipment manufacturer or authorized equipment manufacturer representative shall replace all fluids (oils and antifreeze), all filters, and perform preventive maintenance on the generator. Diesel fuel in base tank shall be tested to determine if polishing or replacement is required. Polish or replace diesel fuel as recommend by fuel testing results.
 - 2) Kohler Generator equipment manufacturer or authorized equipment manufacturer representative shall test generator per the generator manufacturer's Operation and Maintenance Manual.
 - 3) Generator shall be load bank tested as follows:
 - a) 15 minutes at 50% load.
 - b) 20 minutes at 100% load.

- 4) Functional test electrical power and controls between generator and ATS.
 - 5) Verify communications between generator and PLC.
 - 6) Prepare test report describing testing performed and results. Submit test report.
 - 7) Submit certificate that equipment is fully operational and performing properly.
 - a) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - b) Sign, print name, and date certificate.
2. Electrical Testing requirement for new equipment:
- a. Panelboard (PBD-105):
 - 1) Exercise each breaker by moving handle from the CLOSED position to the OPEN position and then back to the CLOSED position.
 - a) Verify handle selection to each position operates properly and is smooth operation.
 - 2) Perform the tug test on each wire/conductor which is terminated within the panelboard.
 - a) Verify each termination is properly torqued to ensure conductor is properly terminated.
 - 3) Verify NEMA cover (door) can be fully closed and secured in the closed position.
 - 4) Inspect panelboard for physical and mechanical condition.
 - 5) Inspect anchorage, alignment, and grounding.
 - 6) Prepare test report describing testing performed and results. Submit test report.
 - 7) Submit certificate that equipment is fully operational and performing properly.
 - a) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - b) Sign, print name, and date certificate.
 - b. Power Quality Enclosure (PQ-105A):
 - 1) Test Surge Protection Device per manufacturer's instructions to verify it is operating properly.

- a) Confirm wiring connections between surge protection device and panelboard. Verify wiring is terminated per surge protection device wiring connection instructions.
 - b) Verify communication wiring termination between surge protection device and the PLC. Verify communications signal between surge protection device and PLC.
 - c) Prepare test report describing testing performed and results. Submit test report.
 - d) Submit certificate that equipment is fully operational and performing properly.
 - i. Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - ii. Sign, print name, and date certificate.
- 2) Test Phase Loss Monitor per manufacturer's instructions to verify it is operating properly.
- a) Confirm wiring connection between phase loss relay and panelboard, including tap terminations.
 - b) Verify communication wiring termination between phase loss relay and the PLC.
 - c) Verify phase loss relay is programmed/set to detect and signal phase loss (i.e. voltage below threshold value).
 - d) Prepare test report describing testing performed and results. Submit test report.
 - e) Submit certificate that equipment is fully operational and performing properly.
 - f) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - g) Sign, print name, and date certificate.
- c. Pump Control Panel (PCP-106):
- 1) Integrator and Panel Shop shall functionally test pump control panel and all devices within the pump control panel.
 - a) Test both manual and automatic operations of the VFDs control of the pumps.

- b) Testing shall include VFD manufacturer testing and commissioning VFDs for functional testing and commissioning.
 - c) Testing shall include pumping operations of Wet Well with varying liquid level heights from low to high-high.
 - d) Prepare test report describing testing performed and results. Submit test report.
 - e) Submit certificate that equipment is fully operational and performing properly.
 - f) Certificate shall include equipment name, manufacturer, equipment model number, equipment serial number.
 - g) Sign, print name, and date certificate.
3. Existing conductors disconnected from existing equipment, salvaged, and connected to new equipment or replacement equipment shall be electrically tested. Electrical test shall be conducted on the existing conductors per the requirements specified in the NETA Maintenance Testing Specification.

B. Division of Responsibility:

1. Contractor responsibilities for providing information required by the testing agency:
- a. The Contractor shall provide an approved copy of the short-circuit analysis, coordination study and protective device setting report that is specified in Section 26 05 73.
 - b. The Contractor shall provide the required equipment instruction manuals requested by the testing agency.
 - c. The Contractor shall provide a copy of the list of equipment that will be tested under this Contract.
 - d. The Contractor shall be responsible for providing suitable power for testing as required by the testing agency.
 - e. The Contractor shall be responsible for coordinating the scheduling of testing with the testing agency.
 - f. The Contractor shall be responsible for providing the site-specific hazard and safety training for the testing agency.
 - g. The Contractor shall notify the Owner 14 days ahead of planned testing.

- C. Testing agency responsibilities include testing procedures for equipment, testing forms to record testing results, signature, printed name, and date plus Contractor witnessing signature, printed name and date. Safety, Test Equipment Calibration and Reports:

1. Conform to the national, state, and Tulalip Tribes safety requirements.
 2. Test equipment shall be calibrated and the calibration information recorded on the submitted test reports.
 3. Test reports shall include all the testing requirements. Equipment identification shall include the equipment name and number per project Drawings.
- D. Communications and Controls: Testing of Modbus, Ethernet, DeviceNet, ControlNet, or Foundation Fieldbus circuits and communications is specified in Division 40.
- E. Test Reports:
1. Provide and submit test reports.
 2. Use the project full equipment name and equipment number for equipment identification.
 3. Provide a copy of the final test report in both electronic Microsoft Word format and PDF. Images in the report may be in JPEG or Adobe Acrobat PDF format.
- F. Testing organization shall perform acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated with the manufacturer's recommendations.
1. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed.
 2. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing.
 3. Owner shall be notified at least 14 days in advance of when tests will be conducted by the testing organization.
- G. Function testing of the process controls related to equipment is specified in Division 40 of these Specifications. Only those devices that are related to the protection of electrical equipment such as interlocks, alarms, fail safe devices will be tested.
- H. Electrical functional testing may be performed by qualified electricians (not required to be done by an independent test agency) or by the independent testing agency under this section.
- I. Perform the functional testing per equipment manufacturer's function tests requirements prior to energizing of the equipment.
- J. Application-specific electrical functional performance testing of equipment is described in the individual equipment specifications.
- K. System Functional Performance Testing:

1. The Functional Performance Testing Procedures approved by the Engineer will be used to document the inspection and testing of the equipment and systems. Provide all necessary manpower and have the appropriate subcontractor and/or manufacturer's representative present during the testing and demonstrate, to the Engineer's satisfaction, the full operation of all electrical and lighting systems. Coordinate the schedule of the testing so that the Engineer and Owner can be present.
2. Prior to starting the final testing of the systems, ensure that all equipment and systems were initially started up and initialized as prescribed by the manufacturer's instructions or by the manufacturer's representative and that the Contractor has performed a complete inspection and test of all electrical and lighting equipment and systems.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies low-voltage electrical panelboards with circuit breakers and fuses as specified in this section and on the Drawings.

1.02 REFERENCE STANDARDS

- A. Comply with the following requirements:
1. Federal Specifications W-P-115C.
 2. NEMA PB1.
 3. NFPA 70 National Electrical Code (NEC).
 4. UL 50 – Cabinets and boxes.
 5. UL 67 – Panelboards.
 6. UL 98 – Fusible Switches.
 7. NETA ATS – International Electrical Testing Association Acceptance Testing Specifications.
 8. Local codes and ordinances.

1.03 SUBMITTALS

- A. Procedures: Refer to Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Shop Drawings:
1. Submit product information/data shop drawings for materials.
 2. Provide the following information for each panelboard:
 - a. Manufacturer cut sheets (product data sheet).
 - b. Panelboard type.
 - c. Main bus and terminal connection sizes.
 - d. Location of line connections.

- e. Cabinet dimensions.
 - f. Gutter space.
 - g. Gauge of boxes and fronts.
 - h. Finish data.
 - i. Voltage and amp ratings.
 - j. Panel schedule including breaker types, trip ratings, and interrupting ratings.
 - k. Cable terminal sizes.
 - l. Surge Protection Device (SPD) product information.
 - m. Seismic Certification and equipment anchoring details.
 - n. Factory Test Plan.
 - o. Field Test Plan.
 - p. Certified production test reports.
 - q. Field Test Reports: Indicate test results compared with specified performance requirements and provide justification and resolution of differences if values do not agree.
3. Submit operation and maintenance manuals as specified in Section 26 05 11, "Basic Electrical Methods and Materials."

1.04 SEISMIC ANCHORAGE AND STRUCTURAL DATA

- A. Mechanical instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

1.05 WARRANTY

- A. In addition to the warranty specified in Division 1, the manufacturer's warranty to Owner shall in no event be for a period of less than 1 year starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, and travel expenses.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and physical damage. Storage and handling shall be per the manufacturer's requirements.
 - 1. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 PANELBOARDS

A. General:

- 1. Panelboards shall be the automatic-circuit-breaker type, as indicated on the Drawings. The number and arrangement of circuits, trip ratings, spares, and blank spaces for future circuit breakers shall be as shown on the Drawings.
- 2. Each panelboard shall have a nameplate as specified in Section 26 05 53 and giving the panel identification as shown on the Drawings.
 - a. In addition, each panelboard shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases and wires, frequency, and manufactured month/year date.
- 3. Where specified, panelboards enclosures shall be as follows:
 - a. NEMA 3R for outdoor, wet, and damp locations.
- 4. Panelboards and enclosures shall conform to NEMA PB1 and 250, UL 50, and requirements of relevant codes. Panelboards used as service equipment shall conform to UL 869A, and panelboard shall be UL labeled.
- 5. Circuit breakers shall be bolt-on type, heavy duty, quick make, quick break, single- and multi-pole circuit breakers of types specified herein; shall be provided for each circuit with toggle handles that indicate when unit has tripped.

B. Construction:

- 1. Interiors shall be completely factory assembled. They shall be designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.
- 2. Trims for branch circuit panelboards shall be supplied with a hinged door over all circuit breaker handles. Doors shall have a means to lock hinged door preferable padlock hasp. If padlock hasp is not available, then keyed cylinder lock shall be provided. Hinged door shall utilize three-point latching. Equip locking tab with provision for a screw such that removal of trim requires a tool, at the Owner's option. Installation shall be tamper-resistant.

3. Distribution panelboard trims shall cover all live parts. Switching device handles shall be accessible.
4. Surface trims shall be same height and width as box.
5. A directory card with a clear plastic cover shall be supplied and mounted on the inside of each door.

C. Bus:

1. Main bus bars shall be tin-plated copper sized in accordance with UL standards to limit temperature rise on any current carrying part to a maximum of 65° C above an ambient of 40°C maximum.
2. A system ground bus shall be included in all panels. Ground bus shall be copper.
3. Full-size (100% rated) insulated stand-off neutral bus shall be included for panelboards shown with neutral. Bus bar taps for panels with single-pole branches shall be arranged for sequence phasing of the branch circuit devices. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection. Two-Hundred-percent-rated neutrals shall be supplied for panels designated on drawings with oversized neutral conductors. Neutral bus bar shall be copper.

D. Lighting Panelboards – Circuit Breaker Type:

1. Lighting panelboards shall be rated 240 Y/120V, four-wire, with bus ratings as shown on the Drawings. Main circuit breaker and branch circuit breakers shall have minimum interrupting ratings of 22,000 rms symmetrical amperes at 240V unless otherwise specified on Drawings. Series rated interruption rating shall not be used.
2. Provide permanently installed lockout means for each individual circuit breaker handle for lockout/tagout procedures.
3. Current ratings, configuration of poles, and number of circuits shall be indicated on Drawings.

E. Enclosure:

1. Enclosures shall be at least 20 inches wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electrical Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided.

F. Surge Protection Device:

1. Surge protection devices (SPD) shall be provided for external mounting, outside of the panelboard. The Panelboard shall provide a 3 pole circuit breaker for the external mounted surge protection device as shown on the panelboard schedule.
 - a. Panelboards shall provide branch fuses or circuit breaker to connect the bus to SPD.
 - 1) Provide protection device sized per the manufacturer's recommendation.

2. SPDs shall have indicator LED to indicate protection status.
3. SPDs shall have surge counters.
4. SPDs shall be configured to support the panelboard voltage rating and wiring configuration.

G. Acceptable Manufacturers:

1. Eaton.
2. Schneider Electric.
3. Or approved equal.
4. The design was based upon Eaton Panelboards and the space as shown on the Drawings. Other manufacturer's panelboards shall meet the requirements specified within this section and shown on the Drawings.

PART 3 – EXECUTION

3.01 FACTORY TESTING

- A. The standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of ANSI, NEMA, and UL standards.
- B. The manufacturer shall submit three certified copies of factory test reports.

3.02 MANUFACTURER'S CERTIFICATION

- A. A certified test report of all standard production tests shall be submitted.

3.03 INSTALLATION

- A. The Contractor shall install all equipment per the manufacturer's instructions, as indicated on the Drawings and in accordance with the NEC.
- B. Seismic anchorage and bracing as specified in Section 13 05 41.
- C. A directory card shall be typed completed, identifying every circuit. Handwritten not acceptable.
- D. The current transformers for the Power Monitor shall be in the panelboard gutters. Phase loss relay shall monitor the three power in the panelboard, see panelboard schedule. Note the Power monitor is in the adjacent power quality enclosure (PQ-105A).
- E. The surge protection device for the panelboard shall be in the adjacent power quality enclosure (PQ-105A).

3.04 MOUNTING HEIGHTS

- A. Lighting and distribution panelboards shall be mounted with the top of the box 6 feet 6 inches above the floor. Panelboards shall be plumb within 1/8 inch. The highest breaker operating handle shall not be higher than 72 inches above the floor.

3.05 FIELD ADJUSTMENTS

- A. The Contractor shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The settings shall be in accordance with the approved short-circuit, coordination, and arc flash study per Section 26 05 73.
- B. Necessary field settings of devices, adjustments and minor modifications to equipment to accomplish conformance with an approved short circuit and protective device coordination study shall be carried out by the Contractor at no additional cost to the Owner.

3.06 FIELD TESTS

- A. Contractor shall perform manufacturer-submitted Field Test Plan.
- B. Contractor shall perform Visual and Mechanical Inspection as specified in NETA ATS – Section 7.5 for switches and Section 7.6 for molded case circuit breakers.
- C. Contractor shall include the following inspections and related work:
 - 1. Inspect for defects and physical damage, labeling, and nameplate compliance with requirements of up-to-date drawings and panelboard schedules.
 - 2. Exercise and perform operational tests of all mechanical components and other operable devices in accordance with manufacturer's instruction manual.
 - 3. Check panelboard mounting, area clearances, and alignment and fit of components.
 - 4. Check tightness of bolted electrical connections with calibrated torque wrench. Refer to manufacturer's instructions for proper torque values.
- D. Insulation-Resistance Tests: Perform insulation-resistance tests on circuits to be energized with a line-to-neutral voltage of 120V or more. Make these tests after equipment has been connected, except that equipment that may be damaged by the test voltage shall not be connected. Test the insulation with a 500Vdc insulation-resistance tester with a scale reading 100 megohms. The insulation resistance shall be 20 megohms or more. Submit results for review.
- E. Continuity: Panelboard circuits shall be tested for continuity prior to energizing. Continuity tests shall be conducted using a dc device with a bell or buzzer.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Work Included:
1. Installation, connection, and furnishing of all single, duplex, GFI, and special purpose receptacles complete with wall plates and/or covers as shown on the Drawings.
 2. Installation, connection, and furnishing of all single-pole, three-way, pilot lights, and rotary timer switches complete with wall plates and/or handle operators as shown on the Drawings.
- B. Refer to Section 26 05 11, “Basic Electrical Methods and Materials.” For quality assurance submittal procedures, and other requirements.

1.02 REFERENCE STANDARDS

- A. ANSI C73: Plugs and Receptacles.
- B. ANSI C73a: Plugs and Receptacles.
- C. FS W-C-596 D and E: General Specifications for Cable Outlet Electrical Connector.
- D. FS W-S-896 D and E: General Specifications for Flush Mounted Toggle and Lock Switches.
- E. NEMA WD 1: General Requirements for Wiring Devices.
- F. NEMA WD 6: Wiring Devices – Dimensional Requirements.
- G. NEMA KS-1: Heavy Duty and Dead-Front Switches (600V Maximum).
- H. UL 20-11, 20-12: General-Use Snap Switches.
- I. UL 98: Standard for Safety for Enclosed and Dead-Front Switches.
- J. UL 498: Electrical Attachment Plugs and Receptacles.
- K. UL 514A: Metallic Outlet Boxes.
- L. UL 514B: Fittings for Cable and Conduit.
- M. UL 514C: Nonmetallic Outlet Boxes, Flush Device Boxes, and Covers.
- N. UL 514D: Cover Plates for Flush-Mounted Wiring Devices.

- O. UL 943: Ground Fault Circuit Interrupters.
- P. UL 943A, 943B: Leakage Current Protection.
- Q. UL 98: Enclosed and Dead-Front Switches.
- R. UL 1682: Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type.
- S. UL 1686: UL Standard for Safety Pin and Sleeve Configurations.

1.03 SUBMITTALS

- A. Procedures: Refer to Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Shop Drawings: Provide shop drawings showing the locations and bill of material for the equipment specified in this section.
- C. Submit the manufacturer's product information and manufacturer's detailed specifications for the equipment specified in this section.
- A. Submit operation and maintenance manuals as specified in Section 26 05 11, "Basic Electrical Methods and Materials."

1.04 QUALITY ASSURANCE

- A. Source Quality Control:
 - 1. Products shall be listed and labeled by an approved Nationally Recognized Testing Lab (NRTL) such as Underwriter's Laboratories, Inc. (UL), Energy Technology List (ETL), or Canadian Standards Association.

1.05 WARRANTY

- A. The manufacturer's warranty to Owner shall in no event be for a period of less than 1 year starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, and travel expenses.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Individual device types shall be provided from a single manufacturer.
- B. Acceptable Manufacturers:
 - 1. Hubbell.
 - 2. Leviton.
 - 3. Pass & Seymour.

4. Or approved equal.

2.02 RECEPTACLES

- A. General: Receptacles shall be specification grade, heavy-duty, high-abuse, grounding type conforming to NEMA configurations, NEMA WD1, and UL 498 Standards.
- B. Single and Duplex Receptacles:
 1. Receptacles shall be of back and side wire design utilizing screw-type terminals. Receptacles shall be rated 20A, two-pole, three-wire, 120V, NEMA 5-20 configuration, self-grounding. Power contacts shall be a T-type design and shall be brass. Ground contacts shall be brass. Color shall be as follows:
 - a. Ivory in industrial areas:
 - 1) Ivory for receptacles supplied by normal power source.
 - b. Ivory or white in office and laboratory areas.
 - c. Blue for receptacles supplied by UPS power source.
 - d. Red for receptacles supplied by generator power source.
 2. Devices shall have a nylon or polycarbonate composition face with a nylon or melamine body. Units shall comply with Federal Specification W-C-596E and meet UL 498 test requirements.
- C. Special Purpose Receptacles: Receptacles shall be of the amperage, voltage, and NEMA configuration indicated on the Drawings. Compliance to standards and tests shall be as listed in Item B above.
- D. GFI Receptacles:
 1. Device shall be rated 20A, two-pole, three-wire, 120V, conforming to NEMA WD1.10 configuration. Face shall be nylon or polycarbonate composition meeting UL 498 test standards. Unit shall have test and reset push buttons and LED indicator.
 2. GFCI component shall meet UL 943 Class A standards with a tripping time of 1/40 second at 5 mA current unbalance. Operating range shall extend from 31°F to 158°F. Unit shall have transient voltage protection and shall be ceramic encapsulated for protection against moisture.
- E. Corrosion-Resistant Receptacles: Units shall comply with standards listed in Item B above but shall also have tin-nickel-plated brass connecting equipment and stainless-steel hardware. Receptacle face color shall be yellow to identify the device as having these special qualities.

2.03 SWITCHES

- A. Line-Voltage Types: Switches shall be rated 20A at 120V, ac only. Units shall be flush-mounted, self-grounding, quiet-operating toggle devices. The handle color shall be ivory in industrial areas and white or ivory in office and laboratory areas. Units shall conform to Federal Specifications W-S-896 D and E, UL 20-11 and UL 20-2, and NEMA WD1 Standards.
- B. 120 V instrumentation and controls snap type switches:
 - 1. Provide locking switch position covers so the switch can be locked in either the ON position or OFF position.
 - a. Cantix Part Number 513330.
 - b. Eaton Crouse-Hinds Catalog Number DS185.
 - c. Hubbell Catalog Number HBL1372D.
 - d. Or approved equal.
- C. Commercial Rotary Auto-OFF Timer Switch:
 - 1. Time Cycle: 12 Hour.
 - 2. Switch: SPST.
 - 3. Hold: No.
 - 4. Color: Brushed Metal Finish.
 - 5. Rating:
 - a. Resistive: 20Amp, 125VAC.
 - b. Motor: 1HP, 120V, 60HZ.
 - 6. Sized to fit inside a single gang electrical box.
 - 7. Manufacturer: Intermatic FF Series Auto-Off Timer or equal.

2.04 PLATES AND COVERS

- A. General: Plates shall be of the style and color to match the wiring devices, and of the required number of gangs. Plates shall conform to NEMA WD1, UL 514, and ANSI C73. Plates on unfinished walls and on fittings shall be of zinc-plated steel or cast metal having rounded corners and beveled edges.
- B. Nonmetallic: Plates shall be smooth finish with contoured edges and shall be nylon or fiberglass.

- C. Stainless Steel: Plates shall be 0.035 inches thick with beveled edges and shall be manufactured from No. 302 alloy having a brushed or satin finish.
- D. Galvanized: Plates shall be galvanized sheet steel raised 1/2 inch, with rounded corners.
- E. Cast Metal: Plates shall be cast or malleable iron covers with gaskets so as to be moisture resistant or weatherproof.
- F. Damp or Wet and Corrosive Locations: Plates shall have weather protective doors. Material of manufacture shall be die-cast aluminum for metallic plates or nylon for nonmetallic plates.
- G. Outdoor Locations:
 - 1. Receptacles: While-in-use style weatherproof cover, cast metal, while-in-use cover, padlockable in the closed position.
 - 2. Switches: Locking weatherproof, cast metal, padlockable toggle switch cover.
 - 3. Commercial Auto-OFF Timer Switch:
 - a. Weatherproof non-metallic covers, extra-duty non-metallic weatherproof while-in-use cover.
 - 1) Clear cover.
 - b. Compliant with NEC requirements for wet locations.
 - c. Stainless steel hinge pin for rugged cover attachment.
 - d. Locking cover for compliance with OSHA lockout/tagout (LOTO) requirements.
 - e. Adapter plate and pre-mounted gaskets.
 - f. Single gang for support commercial Auto-OFF Timer switch weatherproof metallic electrical box.

PART 3 – EXECUTION

3.01 INSTALLATION OF WIRING DEVICES

- A. Damp or Wet Exterior Locations: Install only wiring devices approved for outdoor service in these locations.
- B. Receptacles:
 - 1. Receptacles shall be grounded by a grounding conductor, not by a yoke or screw contact.
 - 2. Receptacles shall be installed with connections pigtailed (spliced) to the branch circuit wiring so that removal of the receptacle will not lose neutral continuity and branch circuit power will not be lost to other receptacles on the same circuit.

C. Switch-rated Plugs and Receptacles:

1. Coordinate with Owner on the installation of the new plug/receptacles.
2. Replace the existing plugs on the existing equipment with the new plugs.
3. Provide Owner with the spare plug assembly.

3.02 INSTALLATION OF COVER PLATES

- A. General: Plates shall match the style of the device and shall be plumb within 1/16 inch of the vertical or horizontal.
- B. Exterior and/or Wet Locations: Install plates with gaskets on wiring devices in such a manner as to provide a rain-tight in-use weatherproof installation. Cover type shall match box type.
- C. Contractor shall label each new cover plate with power source electrical circuit identification. Example: "PDB-105, CKT 17."

3.03 TESTS

A. Receptacles:

1. Receptacles shall be tested for blade and ground-plug tension prior to installation. Do not install any receptacle having less than 16-ounce individual blade retention.
 2. After installation of receptacles, circuits shall be energized and each receptacle tested for proper ground continuity, reversed polarity, and/or open neutral condition.
- B. GFI receptacles shall be tested with the circuits energized. Devices shall be tested with a portable GFI receptacle tester capable of circulating 7.5 mA of current, when plugged in, between the "hot" line and "ground" to produce tripping of the receptacle. Resetting and tripping shall be checked at least twice at each GFI receptacle.
- C. Rotary Timer Switch: Verify rotary timer switch function properly and control the lighting. Verify auto-OFF functions correctly after time expires.

END OF SECTION

SECTION 26 28 00
LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies overcurrent protective devices as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 SUBMITTALS

- A. Procedures: Refer to Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit shop drawings, including electrical ratings, physical size, interrupt ratings, trip curves, I²t curves, and manufacturer’s detailed specifications.
- C. Submit operation and maintenance manuals as specified in Section 26 05 11, “Basic Electrical Methods and Materials.”

1.03 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. Local codes and ordinances.
 - 3. Provide overcurrent protective devices by same manufacturer for each type of device.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and physical damage. Storage and handling shall be per the manufacturer’s requirements.
- B. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

1.05 SPARE PARTS

- A. Provide the following spare parts to the Owner that match items specified:
 - 1. In Three-Phase Circuits: Three fuses of each type and rating for the Service Entrance Disconnect Switch as well as the finger safe fuse holders in the Power Quality Panel.
 - 2. In Single-Phase Circuits: Two fuses of each type and rating for any fuse located in the Pump Control Panel.

1.06 WARRANTY

- A. Warranty shall include repair parts, labor, and travel expenses.
- B. In addition to the Warranty specified in Division 1, the manufacturer's warranty to Owner shall in no event be for a period of less than 1 year starting from when the equipment and installation are substantially complete.

PART 2 – PRODUCTS

2.01 FUSES

- A. General purpose fuses for protection of motors, transformers, feeders, and main service:
 - 1. Use UL Class RK5.
 - a. Single end rejection or to fit mountings specified.
 - b. 0 to 600A rating.
 - 1) As specified on the Drawings.
 - c. 200,000A interrupting capacity.
 - d. Dual element, time delay.
 - e. Use Ferraz Shawmut, or approved equal: 250V rating.
- B. General purpose fuses for protection of motor control circuits, lighting ballasts, control transformers, and street lighting fixtures:
 - 1. Use UL Class CC, fast acting, single element fuses.
 - 2. Rated for 0 to 30A.
 - a. As specified in specification sections or on Drawings.
 - 3. Provide 200,000A interrupting capacity.
 - 4. Use Bussman Limitron KTK-R, or approved equal: 600V rating.

2.02 MOLDED CASE CIRCUIT BREAKERS

- A. General:
 - 1. Comply with UL 489 requirements.
 - 2. Provide thermal and magnetic protection.
- B. Provide permanent trip power panel circuit breakers as follows:
 - 1. Adjustable electronic trip.

2. Ground fault trip functions shall be applied as required by the NEC.
 3. Bolt-on type.
 4. 240V or less Short circuit rating (integrated equipment rating):
 - a. Main: 22,000 RMS symmetrical amps minimum.
 - b. Feeder: 22,000 RMS symmetrical amps minimum.
- C. DIN rail Mounted Circuit Breakers.
1. Use UL 1077 recognized DIN rail mounted circuit breakers up to 63A current rating.
 - a. Breakers are installed on standard DIN rail.
 2. Standard ratings of 10kAIC up to 277/480V.
 3. Available in single pole, two pole, three pole configurations.
 4. Available in varying current ratings for response time of instantaneous trip current ratings.
 5. Suitable for supplementary protection.
 6. Thermal-magnetic overcurrent protection.
 7. Trip-free design – breaker can not be defeated by holding the handle in the ON position.
 8. Captive screws cannot be lost.
 9. Contact position indicator (red/green).
 10. Breaker information printed on the front of the device for quick identification.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install overcurrent protective devices in accordance with manufacturer's recommendations.
- B. Ground/bond protection device enclosure to comply with NEC.

3.02 ADJUSTMENT

- A. Set and record adjustable settings on circuit breakers per coordination study report to provide selective coordination and proper operation.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 29 23
VARIABLE FREQUENCY DRIVES (VFD)

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. The ultra-low harmonic variable frequency drives (VFDs) are required to control pumps. The VFDs shall be located inside an outdoor enclosure as specified in this section and on the Drawings.

1.02 REFERENCE STANDARDS

- A. National Electrical Manufacturers Association (NEMA) Publications:
 - 1. ICS 1 – General Standards for Industrial Controls and Systems.
 - 2. ICS 2 – Standards for Industrial Control Devices, Controllers, and Assemblies.
 - 3. ICS 3 – Industrial Systems.
 - 4. ICS 3.1 – Safety Standards for Construction and Guide for Selection, Installation, and Operation of Variable-speed Drive Systems.
 - 5. ICS 4 – Terminal Blocks for Industrial Control Equipment and Systems.
 - 6. ICS 6 – Enclosures for Industrial Controls and Systems.
- B. National Fire Protection Association:
 - 1. National Electrical Code (NEC).
- C. American National Standards Institute (ANSI) Publication:
 - 1. C37.90 – Relays and Relay Systems Associated with Electric Power Apparatus.
- D. Institute of Electrical and Electronic Engineers (IEEE) Publication:
 - 1. 519 – Harmonic Control and Reactive Compensation of Static Power Converters.
- E. Underwriters Laboratories:
 - 1. UL 508 – Standard for Industrial Control Equipment.

1.03 SUBMITTALS

- A. Procedures: Refer to Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit product information/data shop drawings for materials.

- C. Certification letter from the VFD manufacturer stating the VFD is compliant with IEEE 519 standard and THD voltage is less than 5%.
- D. Submit cooling calculations with one VFDs operating at a time. Cooling calculations shall identify the heat loads within the enclosure as well as ambient environmental temperature.
- E. Submit Prior to Manufacture:
 - 1. Product Data and Shop Drawings:
 - a. Enclosure layout drawings showing base dimensions, foundation/anchor details, weight and conduit penetration space at bottom of enclosure.
 - 1) Include in layout drawing components within enclosure and bill of material (BOM).
 - b. Front, side, and inner doors elevation showing device arrangement. Include front door details such as handles, inner doors details switches, pilot lights, electronic displays Human Interface Module (HIM), meters, etc. And back panel details with equipment mounted.
 - c. Motor elementary diagrams for field wiring connections.
 - d. Comprehensive interconnection diagrams for VFD, motor, external control devices and controllers, and other pertinent external devices.
 - e. Drawings showing physical arrangement of internal components.
 - f. Drawings showing maintenance access locations and required clearances in front of and to the side of these locations.
 - g. Bill of Materials.
 - h. Nameplate list.
 - i. VFD sizing calculations which verify the VFD's ability to operate the electrical load (i.e., pump) assembly over the required speed range under continuous full load conditions at maximum service factor and maximum ambient temperature.
 - j. Written description of VFD operation and control features.
 - k. Efficiency over entire speed range.
 - l. Seismic anchorage requirements and installation details per Section 13 05 41.
 - 2. Quality Control:
 - a. Detailed description of factory testing program, testing equipment, reporting procedure, and pass/fail criteria.
 - b. Warranty information.

- c. Submit certification that VFD and motor are compatible.
 - d. Submit field test procedure and test plan to be conducted after VFD assembly is installed.
- F. Submit Prior to Shipment:
- 1. Certified factory test report.
 - 2. Detailed description of field-testing program, including description of tests, testing equipment, reporting procedure, and pass/fail criteria.
 - 3. Manufacturer's preliminary operation and maintenance manuals.
 - 4. Complete test procedures for testing the VFDs once they have been installed.
- G. Submit Prior to Substantial Completion:
- 1. Field test report.
 - 2. Submit VFD programmable settings and field settings including record drawing documents.
 - 3. Manufacturer's certificate of proper installation.
 - 4. Submit operation and maintenance manuals as specified in Section 26 05 11, "Basic Electrical Methods and Materials."
 - 5. Include complete listing of the final configuration parameter settings and programming software application. Include hardcopy and electronic copy.

1.04 QUALITY ASSURANCE

- A. Qualifications:
- 1. The submitted VFDs shall have been in production for a minimum of 1 year and shall have an installed base of at least 50 units.
 - 2. There shall be a factory authorized service facility within 200 miles of the site that shall stock commonly needed parts.
 - 3. The VFDs shall be UL labeled.

1.05 SEISMIC ANCHORAGE AND STRUCTURAL DATA

- A. Mechanical instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

1.06 WARRANTY

- A. Minimum warranty period (parts and labor) shall be 1 year starting from date of successful project demonstration.
- B. Warranty shall be comprehensive, no deductibles shall be allowed for travel time, service hours, repair parts cost, etc.

1.07 EXTRA MATERIALS

- A. Spare Parts: Furnish two sets of spare power fuses for each size and type of fuse used; furnish a minimum of five fuses of each size and type of control circuit fuse.

1.08 PANEL MANUFACTURER QUALIFICATIONS

- A. The Panel Manufacturer shall be a single firm that shall be responsible for engineering and furnishing, technically advising on installation, documenting, testing, and start-up of the complete VFD system.
 - 1. The testing, start-up, and commissioning of the VFD shall be performed by a factory-trained engineer or technician who was trained by the VFD manufacturer.
- B. The Panel Manufacturer shall be certified for custom control panel construction and labeling under UL 508. Assemblies produced by the Panel Manufacturer shall be affixed with a UL 508 label prior to shipment to the jobsite. Any control panel delivered to the jobsite without a UL 508 label shall be rejected and sent back to the Panel Manufacturer.
- C. The Panel Manufacturer shall have been regularly engaged for a period greater than 3 years in performing all aspects of the type of work specified in this section and shown on the Drawings. The Panel Manufacturer shall have experience in purchasing, calibrating, fabricating, installing, and testing the I&C products listed in this specification section. The Panel Manufacturer shall be a systems house regularly engaged in the business of panel fabrication and control component procurement in the process control industry.
- D. The Panel Manufacturer shall be located within a 250-mile radius of the site.

1.09 COORDINATION

- A. Motor:
 - 1. Obtain and review the appropriate data for the driven motor and load with service factor over the required speed and torque range for a complete system analysis. Determine the size of the VFD required for the driven load and submit data to substantiate the sizing determination. It is the manufacturer's responsibility to provide drives sized for continuous operation of the driven equipment at full load.
 - 2. Verify that equipment is mutually compatible and free of resonance over the complete operating range.

B. Standby Generator:

1. Obtain and review the appropriate data from the generator manufacturer (Kohler) that the generator will start, operate, and run the two VFD controlled motors when started as a stepped load and not both motors starting simultaneously.
2. Submit confirmation that the existing standby generator will start, operate, and run the two VFD controlled motors when started as a stepped load.
 - a. Submit generator sizing report showing the two motors along with the other panelboard loads.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected for water, rain, dirt, construction debris, and traffic. Equipment shall be handled per the manufacturer's requirements.
1. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Unit Responsibility: The Panel Manufacturer shall have Unit Responsibility for the complete VFD enclosure as specified in this section.
- B. Reference Specification Section 40 61 13, Process Control System General Provisions.
- C. Reference "I" Drawings for Pump Control Panel conceptual layout, wiring diagrams, control system block diagram, and motor wiring elementary diagram.
- D. Acceptable VFD Manufacturers:
1. Yaskawa, U1000 Drive.
 2. No exceptions.

2.02 SERVICE CONDITIONS

- A. The pump control panel enclosure containing the VFDs will be located outdoors, where exposed to ambient temperatures.
1. The pump control panel will be located under a lean-to weather shelter where it is protected from direct sunlight during the hottest periods of the day.
- B. The outdoor ambient temperature ranges from 5°F to 95°F.
- C. Humidity: Noncondensing relative humidity to 95%.
- D. Altitude: 50 feet.

2.03 VARIABLE FREQUENCY DRIVE (VFD)

A. Provide VFD as follows:

1. VFDs shall control the following:
 - a. Wet Well Pump 1.
 - b. Wet Well Pump 2.
2. See Electrical One-line diagram and Electrical Motor Elementary Drawings for additional VFD requirements.
3. Design for variable torque motor application. The drive shall be rated heavy duty rated for pump HP size.
4. Harmonics Mitigation: The VFD shall be compliant with the most recent version of IEEE 519.
5. Efficiency: 95% or higher at full load. Efficiency calculations shall include the losses associated with VFD devices including input transformers, reactors, fans, control devices, and power electronics.
6. VFD integrated circuit boards shall be conformal coated.

B. Pump Control Panel (PCP-106) Enclosure:

1. NEMA 4X Stainless Steel, 2 door enclosure.
 - a. Minimum size 72" W x 72" H X 24" D.
2. Back panel with standoffs for back panel.
3. Heavy-duty lifting eyes.
4. Ground stud installed on both door (cover) and frame.
5. Hinged Door.
6. Three-point lock mechanism to secure and lock door in the CLOSED position.
7. Enclosure/Cabinet Interior Lighting:
 - a. LED light fixture for each door opening.
 - b. Door activated with limit switch. Motion sensor types are prohibited.
 - c. Magnetic or hardware fastener mounting style.
 - d. Maintain enclosure UL listing.

- e. Light output of 900LM with 6500K color temperature.
 - f. Manufacturer: Hoffman or approved equal.
8. Enclosure conduit entry shall be bottom entry.
 9. Enclosure Manufacturer: Hoffman, Saginaw Control & Engineering (SCE), or approved equal.
 10. The pump control panel shall not have selector switches, HMI, displays, indicating lights on the pump control panel exterior cover with the exception of the of the alarm horn/strobe indicating pump station failure.
 11. The VFD keypad shall be mounted to the pump control panel inner door along with other selector switches and indicating lights.
 12. The pump control panel with VFDs and other control equipment have thermostat-controlled internal air exhaust fans for internal air ventilation. The fans shall be configured as a push-pull system.
 - 1) One fan shall be located on the side, near the top, to push warm air out of the enclosure.
 - 2) A second fan shall be located on the opposite diagonal side, near the bottom, to draw ambient air into the enclosure.
 - 3) Provide adjustable line voltage thermostat shall control both fans simultaneously.
 - 4) The exhaust fans shall Turn ON when the internal temperature reaches 65° F or greater.
 - 5) Acceptable manufacturer (Fans): nVent Hoffman Catalog Number FH1326424 and HF1326424R or approved equal.
 13. The pump control panel with VFDs and other control equipment shall have an adjustable line voltage thermostat for controlling a heater to minimize condensation with the enclosure.
 - a. The heater shall be a 100W, 120V, and fan driven heater.
 - b. The heater shall have a built in thermostat.
 - c. The heater shall turn ON when the interior temperature is 45°F or less.
 - d. Acceptable manufacturer: nVent Hoffman Catalog Number DAH1001A or approved equal.
 14. Pump control panel shall have an exterior horn/strobe to signal when a pump station failure has occurred at the pump station.

- a. Horn/strobe shall have a silencing push button located on inner door of pump control panel.

15. Line Voltage Thermostats:

- a. The line voltage thermostats shall be for heat or cool application.
- b. NEMA Rating NEMA 1.
- c. Minimum Control Temperature 30°F.
- d. Maximum Control Temperature 110°F.
- e. Switch type SPDT:
 - 1) Contact Rating 22A at 120V.
 - 2) Contact Type Snap Action.
 - 3) Control Type Exposed Dial.
 - 4) Display Type Analog.
- f. Temperature Scale – Fahrenheit.
- g. Voltage 120VAC.
- h. Acceptable manufacturer: DAYTON Model No. 1UHH2 or approved equal.

16. Input Power:

- a. The pump control panel shall have multiple power entries as follows:
- b. 240V, 3-Phase, for pump #1 power source.
- c. 240V, 3-Phase, for pump #2 power source
- d. 120V, Single phase, for pump control panel miscellaneous control power.

17. Motor current limit adjustable from 20% to 100% of motor full load current.

18. Door-mount the following devices:

- a. Operator accessible and removable Human Interface Module (HIM) with keypad and LCD display to be used for setup, operation, parameter adjustment, and monitoring. Mount on door a minimum of 60 inches from bottom of the HIM to the bottom of the enclosure.
- b. Push-to-Test LED pilot lights for drive status and alarms as shown on the Drawings.
- c. Selector switches as shown on the Drawings.

- d. RUN Time hour meter, electromechanical, hours/tenths displaced units, number of digits: six.
19. Control Interface:
- a. Form C dry contacts as follow:
 - 1) Four each Form C dry contact for drive run status. Rated for 120 Vac.
 - 2) Two each Form C dry contacts for VFD fault. Rated for 120 Vac.
 - 3) One Form C dry contacts for moisture detected in the motor.
 - 4) One Form C dry contact for motor overtemperature.
 - b. Provisions to accept the following control signals for automatic and manual operation:
 - 1) "Run" and "Fault Reset" signal from a single remote contact closure.
 - 2) A 4 to 20 mA dc signal for speed control. The VFD shall provide linear speed control of the motor from minimum speed to maximum speed as the adjustable speed input signal varies from its minimum to maximum. Input impedance shall be 250 or 500 ohms resistive.
 - c. Provide 4 to 20 mA output signal for:
 - 1) VFD Speed (rpm).
20. Control Power Transformer: 480 to 120 Vac with primary and secondary fuse protection. VFD shall provide internal voltage requirements.
21. Independent acceleration and deceleration controls, adjustable from 2 to 30 Hz per second.
22. Critical frequency lockout over a minimum of three bands. Bands shall be independently adjustable over the operating range of the VFD.
23. User adjustable carrier frequency to minimize motor noise.
24. Programmable time delay to restart the drive when power is restored.
25. The VFD shall be programmable for automatic restart attempts, zero to nine attempts, on selected trips. There shall be a programmable delay after fault recovery before the restart occurs adjustable between 1 and 300 seconds.
26. Flying Start: The VFD shall be capable of determining the speed and direction of a spinning motor and adjust its output to "pick-up" the motor at the rotation speed. The flying start feature shall be operable without encoder feedback.
27. VFD shall be capable of immediate automatic restart following power interruption.

28. Protection:

- a. The disconnecting circuit breakers in the VFD control panels shall be thermal magnetic-type circuit breakers.
 - 1) Disconnecting means, such as a handle or rotary knob with lock-out provisions, shall be accessible from the exterior of the VFD enclosure/cabinet.
- b. Provide motor overload protection that complies with NEC Article 430.
- c. Protect VFD against the following conditions:
 - 1) Reverse phase sequence and single phasing of input power.
 - 2) Input power failure.
 - 3) Input transient voltages, including peak suppression and snubbers, in accordance with ANSI C37.90.
 - 4) Radio and television interference.
 - 5) Output overcurrent.

2.04 MOTOR OVERTEMPERATURE AND SEAL LEAKAGE RELAY

- A. For the following equipment, provide a pump monitoring relay for each submersible pump motor:
 1. Pump 1.
 2. Pump 2.
- B. Pump monitoring relay shall:
 1. Monitor motor overtemperature.
 2. Monitor motor seal leakage.
- C. Pump monitoring relay shall be mounted in the same enclosure (cabinet) along with the VFDs.
- D. Monitoring relay operating power: internal CPT.
- E. Operating Temperature -20°C to +65°C.
- F. Signal outputs:
 1. Motor overtemperature alarm.
 2. Motor overtemperature interlock.

3. Motor leakage alarm.

G. Front of relay:

1. Indicating annunciation (overtemp, seal leakage, power ON).
2. Selector switch Auto Reset or Manual Reset.
3. Overtemperature Reset push button.
4. Leakage adjustment resistance value

H. Acceptable manufacturer: Flygt MiniCAS Pump Sensor Monitor.

2.05 FACTORY TEST

- A. Standard factory tests shall be performed on the equipment provided under this section. Tests shall be in accordance with the latest version of UL and NEMA Standards.
- B. Final assemblies shall be tested with application of line-to-line and line-to-ground bolted faults. The VFD shall trip electronically without device failure.
- C. After tests have been performed, each VFD shall undergo the following burn-in tests.
 1. The VFD assembly shall be operated at continuously varying motor load in an ambient temperature maintained at 90°F for 2 hours continuous without an unscheduled shutdown. Test data shall include the following data recorded at a maximum of 5-minute intervals:
 - a. VFD frequency.
 - b. Motor amps.
 - c. Ambient air temperature.
 - d. Internal VFD enclosure temperature.
 - e. Harmonic content at line side of VFD.
 2. The VFD assembly shall be operated at 100% motor load in an ambient temperature maintained at 90°F for 2 hours continuous without an unscheduled shutdown. Test data shall include the following data recorded at a maximum of 5-minute intervals:
 - a. VFD frequency.
 - b. Motor amps.
 - c. Ambient air temperature.
 - d. Internal VFD enclosure temperature.
 - e. Harmonic content at line side of VFD.

D. Inspected and Witnessed Factory Testing:

1. Factory testing shall be witnessed by the Owner, the Owner's representatives, and the installing Contractor.
2. The manufacturer shall provide factory test schedule to the Owner no later than 15 calendar days prior to the start of factory testing.
3. The complete Local Control Panel enclosures shall be assembled at the manufacturer's facility for inspection and Factory Testing.
4. A standard factory test shall be performed on the equipment provided under this section including automatic controls and manual controls. All tests shall be in accordance with the latest applicable ANSI and NEMA Standards.

E. Submit certified test report to the Owner before equipment is shipped.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Mount the enclosure and anchor to the concrete pad as shown on Drawings and per manufacturer's requirements.
- B. Properly level and plumb enclosures so that enclosure doors will open and close freely.
- C. Install conduit and conductors. Lace power conductors to resist short circuit forces. Follow VFD manufacturer's instructions for VFD cable terminations at VFD and at Motor.
 1. Qualified factory-trained VFD engineer or VFD Technician shall inspect VFD Cable installation and termination at both the VFD and the Motor. Notify Owner if VFD wiring and terminations are not installed per the VFD manufacturer's recommendations.
- D. Clean enclosures inside and out and install nameplates.
- E. Any defects in, or damage to an enclosure or its finish shall be made good to the satisfaction of the Owner.

3.02 FIELD TESTING

- A. Provide minimum of three site visits and a minimum of eight hours, per site visit, of services at the job site by a factory-trained service technician to certify installation, make final adjustments to equipment, and carry out a full operational test in the presence of the Owner on each site visit.
- B. Coordinate initial VFD parameter settings with the equipment supplier prior to field startup/testing. Document VFD programmable settings and field settings for submittal along with record drawings documents.
 1. Submit the final VFD settings after successful startup of equipment.

- C. Following installation and manufacturer's field test, perform a field test under utility operating conditions. Operate the drive from no load to full load.
- D. Submit a complete Certified Test Report for review by the Engineer.
- E. Replace any failed or damaged parts at no cost to Owner.

3.03 START-UP FIELD SERVICE

- A. The Contractor shall support start-up field services.
 - 1. Start-up Field Services are specified within this section and Section 26 08 00 Electrical Testing and Commissioning.

3.04 OWNER ORIENTATION AND TRAINING

- A. A manufacturer's service technician for the equipment specified herein shall be present at the jobsite or classroom designated by the Owner.
 - 1. The service technician shall provide a minimum of 8 hours of on-site training (minimum of 2 separate days with 4 hours on each day) to instruct operating personnel in the operation, maintenance, and adjustment of the system and installation.
- B. Orientation and training services shall be held at date and time scheduled by the Owner (during work week business hours: Monday through Friday, 8:00 a.m. to 5:00 p.m.).

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 33 53
UNINTERRUPTIBLE POWER SUPPLIES (UPS)

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies uninterruptible power supplies (UPS) for maintaining continuity of power supplies to vital control equipment during power system brief outages.

1.02 QUALITY ASSURANCE

- A. Referenced Standards: This section incorporates by reference the latest revision of the following document. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and that of the listed document, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
ANSI/NEMA ICS 6	Enclosures for Industrial Controls and Systems.
UL 508	Industrial Control Equipment.
ANSI C62.41 (IEEE 587)	Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits FCC Part 15 Class A.
NEMA PE-1	Uninterruptible Power Systems.
NFPA 70	(National Fire Protection Association) – National Electrical Code.
NFPA 75	Electronic Computer/Data Processing Equipment.
UL 1778	Uninterruptible Power Supply Equipment.
IEEE 1184	Guide for Selection and Sizing of Batteries for Uninterruptible Power Systems.
NEMA 250	Enclosures for Electrical Equipment.
NETA ATS	International Electrical Testing Association Electrical Testing Specifications.

- B. Control Panel assembly shall conform to UL 508.
- C. Source Limitations: Obtain the UPS and associated components specified in this section from a single manufacturer with responsibility for the entire UPS installation.
- D. Listing and Labeling: Provide electrical components, devices, and accessories that are Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to the Authority Having Jurisdiction, and marked for intended use for the location and environment in which they are installed:
1. UPS Units: Listed and labeled under UL 1778.

1.03 SUBMITTALS

- A. Procedures: Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Catalog cut sheets.
- C. Shop drawings including but not limited to:
 - 1. Layout drawings of the UPS control panels indicating the front door and rear panel equipment arrangement, dimensions, and required working clearances. A list of materials and components shall accompany the layout drawings.
 - 2. Elementary and internal connection diagrams.
 - 3. Layout drawings of the associated power supplies showing dimensions.
 - 4. List of recommended standby components.
- D. UPS sizing calculations and battery run time graphics (Runtime (Minutes) vs. Load (Watts)).
- E. Operation and Maintenance manuals.
- F. Factory Test Reports: Comply with specified requirements.
- G. Field Test Reports: Indicate test results compared with specified performance requirements, and provide justification and resolution of differences if values do not agree. Include manufacturer’s written certification verifying proper installation.
- H. Maintenance Data: For UPS units to include in maintenance manuals. Include the following:
 - 1. Lists of spare parts and replacement components recommended being stored at project site for ready access.
 - 2. Detailed operating instructions covering operation under both normal and abnormal conditions.
- I. Warranties: Special warranties specified in this section.

1.04 SPARE PARTS

- A. None.

1.05 WARRANTY

- A. The manufacturer’s warranty to the Owner shall in no event be for a period of less than 2 years starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, shipping, and travel expenses.

1.06 SEISMIC ANCHORAGE AND STRUCTURAL DATA

- A. Refer to Section 13 05 41 for seismic requirements.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One copy of these instructions shall be included with the equipment at time of shipment.
- B. Contractor shall store UPS in dry, temperature-controlled location and provide protection from dust, debris, and moisture while electrical equipment is stored before installation.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Phoenix Contact, APC, Eaton or Approved Equal: 24Vdc input and output. Contractor to verify and coordinate voltage with control panel power supply and what is required on the Drawings for power distribution and compatibility.

2.02 GENERAL

- A. Provide a UPS at locations shown on the Drawings.
- B. UPSs shall be sized to maintain operation of communication equipment, instrumentation equipment, and control equipment located at each of the respective locations shown on the Drawings and provided under this Contract, plus an allowance of 20% for future power growth.
- C. UPS will be sized for the loads being serviced. Contractor shall provide calculations of designed loads and any change orders that may affect the loading of the UPS.
- D. Battery sizing shall be calculated based on total load as defined in Paragraph 2.02, B. for a period of not less than 1 hour without UPS input power and shall have sufficient battery charging capacity to restore the batteries to 90% charge within 5 hours after return of UPS input power.
- E. Functional Description:
 - 1. Normal: In normal operation, incoming power shall also be derived from the 24Vdc power supply for the battery charger. The battery shall be charged once the unit is connected to supply power, regardless of whether the UPS is ON or OFF. In the event of a utility outage or severe abnormality (sag or swell), the UPS shall support the connected load from battery power until the battery is discharged or the utility returns, whichever occurs first.
 - 2. Battery: Upon failure of utility/main AC power, the critical DC load shall be supplied by the battery. There shall be no interruption in power to the critical load upon failure or restoration of the utility/mains AC source:
 - a. Batteries shall be hot-swappable.

3. Recharge: Upon restoration of utility/main AC power, after a utility/main AC power outage, the input shall automatically restart and assume supplying power to the battery charger to recharge the battery.
 4. Internal Bypass: The integral bypass shall perform an automatic transfer of the critical DC load from the battery to the bypass source, in the event of an overload, internal over temperature, or overvoltage.
 5. Automatic Restart: Upon restoration of utility/main AC power, after a utility/main AC power outage and complete battery discharge, the UPS shall automatically restart and assume supplying power to the critical load and the battery charger automatically recharges the battery. This feature shall be capable of being disabled by the user.
- F. If battery is disconnected, the UPS continues to supply power to the load with no degradation of its regulation of voltage and frequency of the output bus.

2.03 DESIGN REQUIREMENTS

- A. Voltage – The UPS nominal operating voltage shall be as follows:
1. Input Voltage: 24Vdc.
 2. Output Voltage: 24Vdc.
- B. UPS shall be DIN rail-mounted configuration.
- C. Environmental Conditions:
1. Ambient temperature range, when UPS is operational, shall be 10°C to 35°C.
 2. Relative Humidity:
 - a. Operating: 0% to 95% noncondensing.
 - b. Storage: 0% to 95% percent noncondensing.
 3. Audible Noise generated by the UPS under normal operation shall not exceed 55 dBA when measured at 1 meter from the surface of the UPS.
 4. The UPS shall be able to withstand an electrostatic discharge compliant to ENC61000 4-2.

2.04 FABRICATION

- A. Materials and components making up the UPS shall be new, of current manufacture and shall not have been in prior service except as required during factory testing.
- B. Relays shall be provided with dust covers.
- C. Wiring:

1. Wiring practices, materials and coding shall be in accordance with the requirements and standards listed in Section 1.03 and other applicable codes and standards.
 2. Wiring shall be copper.
- D. The UPS unit shall be comprised of:
1. Battery charger, input filter and internal bypass circuit.
 2. Batteries consisting of the appropriate number of sealed battery cells.
 3. The internal battery shall be shipped separately and installed during the UPS installation process.
- E. The UPS shall be forced air cooled by internally mounted, continuous fans. Fan power shall be provided from the internal DC supply. Air intake shall be through the front of the unit, and air exhaust shall be out of the rear of the unit.

2.05 COMPONENTS

A. Battery Charger:

1. The UPS shall contain a three-stage battery charger designed to prolong battery life.
2. Recharge time for the internal battery shall be 5 hours to 90% capacity (full discharge rate).
3. There shall be DC overvoltage protection so that if the DC voltage exceeds the preset limit, the inverter shall shut down automatically and the critical load shall be transferred to internal bypass.

B. Display and Controls:

1. General:

- a. The UPS shall be provided with a microprocessor-based unit status display and controls section designed user operation. The monitoring functions such as voltages, currents, UPS status, and alarm indicators shall be displayed on an LCD display.

2. System Indicators:

- a. The UPS display shall also include LED based system indicators.
- b. The system level indicators shall be:
 - 1) Fault.
 - 2) Battery.
 - 3) Inverter.
 - 4) ECO mode.

3. Controls:

- a. UPS startup and shutdown operations shall be accomplished by using push buttons on the front panel of the UPS. The display shall be menu driven navigation.
- b. The UPS shall feature an automatic battery test. If the battery fails the test, the UPS shall display a warning message to indicate the batteries need to be replaced.

C. Bypass Circuit:

1. General:

- a. A bypass circuit shall be provided as an integral part of the UPS. The bypass control logic shall contain an automatic transfer control circuit that senses the status of the inverter logic signals and operating and alarm conditions. This control circuit shall provide a transfer of the load to the bypass source if available and if the inverter is capable of powering the load.

2. Automatic Transfers:

- a. The transfer control logic shall activate the bypass automatically, transferring the critical load to the bypass source, after the transfer logic senses one of the following conditions:
 - 1) UPS overload.
 - 2) UPS over temperature.
 - 3) DC overvoltage.
- b. Once the overload condition is reduced, the load will be automatically transferred back to UPS power.
- c. An over temperature requires manual transfer back to inverter power after cooling.

D. Battery:

1. Valve-regulated, nonspillable, lead acid cells shall be used as a stored-energy source for the specified UPS system.
2. Shall be housed internal to the UPS cabinet, with additional batteries housed in matching cabinets.
3. Sized to support the inverter at rated load and power factor, with ambient temperature of 25°C for a minimum of 3 minutes reserve time.
4. The expected life of the battery shall be 3 to 5 years or a minimum 260 complete discharge cycles.
5. The UPS units have the capability to allow the operator to replace the internal battery.

6. All UPS models shall allow connection of up to six external battery cabinets to provide extended run time capability.

E. Output Distribution:

1. Output distribution shall be hard wired to terminals at the rear of the unit.

2.06 LABELING AND NAMEPLATES

A. Nameplates: Identify external door-mounted components and the UPS description with plastic nameplates provided in accordance with Section 26 05 11, "Basic Electrical Methods and Materials."

2.07 GROUNDING

A. Provide a grounding lug for Size #2 AWG bare copper conductor.

2.08 FACTORY TESTS

A. Provide standard factory tests.

B. Run each unit through two complete charge-discharge cycles and certify as to having met the applicable criteria.

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall install all equipment per the manufacturer's recommendations and the Drawings.

B. Hardware to secure the assembly in place shall be provided by the Contractor.

C. Equipment locations, termination of ground connection, input, output and alarm leads shall be as specified.

D. Provide ventilation as specified.

3.02 FIELD TESTS

A. Provide a factory-authorized service representative to test and commission the UPS and maintenance bypass switch.

B. Provide manufacturer's written certification verifying proper installation.

C. After installation, run each unit through one complete charge-discharge cycle utilizing a load bank to verify UPS capability.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 36 13
ENGINE GENERATOR

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the disconnection, relocation, and new connections of the existing standby generator with its base tank.
- B. This section specifies startup, testing, and commissioning of the relocated standby generator.

1.02 RELATED DOCUMENTS

- A. Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Section 26 05 53, “Identification for Electrical Systems.”

1.03 QUALITY ASSURANCE

- A. Installer Qualifications (disconnecting, relocation, and new connections): Manufacturer’s authorized representative who is trained and approved for installation of units required for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer sales and service center within 60 miles of project construction site, a service center capable of providing training, parts, and emergency maintenance repairs.
- C. Comply with NFPA 70 (National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 702 “Optional Standby Systems”).
- D. Comply with UL 2200, Stationary Engine Generator Assemblies, listed and labeled.

1.04 SUBMITTALS

- A. Contractor shall submit plan for disconnecting, relocating, and new connections for the existing generator.
 - 1. Contractor shall provide detailed method for lifting and relocating generator and its base tank from present location to the new location.
 - a. Steps and actions the Contractor is taking to protect the base tank and generator from damage during the equipment move.
- B. Prior to moving Contactor shall submit an as-built wiring diagram of the electrical connections between the generator and the existing ATS as well as between the generator and the panelboard.

1. The wiring diagram shall include wire type, wire size, and termination locations at both ends of the conductors.
 2. The wiring diagram shall identify the conduit entry locations/stub-out locations including dimensions.
 3. Grounding and bonding locations.
 4. Structural anchorage locations and mounting to concrete equipment pad locations.
 5. Engine jacket heater electrical connection location.
 6. Battery charging system electrical connection location.
 - a. Number of batteries and their locations.
 - b. Battery rating of complete bank, in amp-hours.
 7. Shop drawing showing concrete equipment pad dimensions, conduit penetrations and edge protrusion around the base tank perimeter.
 8. Field Test Report including information from startup, testing (including load bank testing), and commissioning.
- C. Record drawings showing changes made during construction including as-builts.

PART 2 – PRODUCTS

2.01 PART 2 IS NOT APPLICABLE

PART 3 – EXECUTION

3.01 GENERAL

- A. All existing equipment shall be physically inspected for damage. Any damage shall be documented and photographed prior to disconnecting, relocating and installing.

3.02 DISCONNECTING

- A. Submit construction plan for disconnecting generator from existing ATS and from existing panelboard. Include the removal of existing wiring.
- B. Submit schedule of disconnecting existing generator from existing ATS and from existing panelboard.

3.03 RELOCATIONS

- A. Submit construction plan for relocation of generator and base tank without damaging generator and its base tank to the new location.

1. Submitted construction plan shall identify lifting method and equipment that shall be used for lifting generator to new location.
- B. Submit schedule for relocating existing generator from existing concrete pad to new concrete pad.

3.04 INSTALLATION

- A. Submit construction plan for connecting existing generator to existing ATS and to new panelboard. Include wiring type, quantity, and size, plus termination locations.
- B. See Conduit and cable schedule for wiring between:
 1. Existing Generator and Existing ATS.
 2. Existing Generator and new panelboard.
 3. Existing Generator and Pump Control Panel.
- C. Generator and base tank assembly shall be anchored to the concrete equipment as specified on the Drawings.

3.05 TESTING

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in startup, testing, and commissioning.
- B. Upon installation of electrical connection of the existing generator, generator start-up and testing shall be performed.
- C. Provide diesel fuel as required to support startup, testing, and commissioning.
 1. Generator start-up shall include the generator manufacturer or factory authorized representative to perform the start-up as if the generator was a newly delivered generator to the site:
 - a. The manufacturer's checklist for new installations shall be performed.
 - b. Replace engine coolant/antifreeze.
 - c. Replace engine oil and oil filters.
 - d. Replace engine fuel system filters.
 - e. Replace engine air filters.
 - f. Replace engine starter batteries.
 - g. Perform the generator manufacturer startup procedures.

- h. Submit results from start-up procedures.
 2. Conduct a load bank testing on the generator as follows:
 - a. 50% load bank testing for 30 minutes.
 - b. 100% load bank testing for 30 minutes.
 - c. Notify customer and engineering one week before conducting load bank testing witnessing.
 3. Commissioning:
 - a. Demonstrate to Customer and Engineering proper operation of the generator.
 - b. Contactor to submit a Commissioning plan for demonstrating proper operation of the standby generator and ATS.
 - c. Simulate a utility power outage by OPENING the Service Entrance Disconnect Switch.
 - d. Demonstrate the ATS starts the generator, and the load is transferred to the generator power source.
 - e. Demonstrate Pump Station (Pump Control Panel) powers ON from the generator power source.
 - f. Demonstrate the Pump Control Panel powers on one pump and pump performs properly while powered by the generator.
 - g. Demonstrate the Pump Control Panel powers on the second pumps and the second pump performs properly while powered by the generator. Two pumps shall operate properly when powered by the generator.
 - h. Power ON the Service Entrance Disconnect Switch. Demonstrate the pump station power is transferred back to utility when utility power is restored and reached steady state.
 - i. Demonstrate generator continues to run until engine cool down is completed.

3.06 TRAINING

- A. The equipment supplier shall provide training for the facility operating personnel covering operation and maintenance of the equipment provided. The training program shall not be less than two separate 4-hour training classes in duration and each class size shall be limited to five persons. The training classes shall be held separate days determined by the Owner.

END OF SECTION

SECTION 26 50 00
LIGHTING

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies luminaires.
- B. Provide luminaires as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. WAC 51-11C-40500, Electrical power and lighting systems.
 - 3. WAC 296-800-210, Workplace lighting.
 - 4. UL Standard 1598, Luminaires.
 - 5. UL Standard 8750, Light Emitting Diode (LED) Equipment for use in Lighting Products.

1.03 SUBMITTALS

- A. Procedures: Refer to Section 26 05 11, “Basic Electrical Methods and Materials
- B. Submit product data for type of luminaire indicated in this specification. Submittal data shall be in compliance with this specification section. Submit the following product data for type of luminaire:
 - 1. Manufacturer’s printed data, including photometric data on luminaires.
 - 2. Mounting brackets and hardware.
 - 3. Fasteners.
 - 4. Seismic restraint system.
- C. Submit shop drawings showing proposed methods for mounting luminaires.
- D. Submit bird deterrent spikes product information and means to secure bird deterrent in place.
- E. Submit manufacturer’s product data for lighting contactor. Submittal data shall be in compliance with this specification section.
 - 1. Submit operation and maintenance manuals as specified in Section 26 05 11, “Basic Electrical Methods and Materials.”

1.04 DELIVERY, STORAGE AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One copy of these instructions shall be included with the equipment at time of shipment.
- B. Contractor shall store luminaires in dry, temperature-controlled location and provided protection from dust, debris, and moisture while electrical equipment is stored before installation.

1.05 WARRANTY

- A. LED luminaire shall come with 5-year manufacturer's warranty.
- B. Contractor shall complete and provide documentation required for 5-year manufacturer's warranty coverage.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide luminaires of type, size, and rating listed in the lighting fixture schedules, complete with, but not necessarily limited to, lamps, lamp holders, drivers, reflectors, starters, wiring, and any other details required for a complete working installation.

2.02 MANUFACTURERS

- A. The use of a luminaire manufacturer's name, model, size, or catalog number is for the sole purpose of establishing the standard of quality and general configuration desired.
 - 1. See Drawing for specified Lighting Fixture Schedule.
- B. Acceptable Manufacturers:
 - 1. Lithonia.
 - 2. Or pre-approved equal.

2.03 LED LUMINAIRES

- A. Stainless steel latches.
- B. Stainless steel surface mounting brackets.
- C. Unit packaged.
- D. 5-year warranty.

2.04 LED DRIVER

- A. 0–10V dimming unless otherwise noted.
- B. MVOLT (120-277V).

2.05 LED

- A. Color temperature of 4000 K unless otherwise noted.

2.06 LIGHTING CONTROL

- A. Provide commercial Auto-Off timer switch for lighting control.
 - 1. See Section 26 27 26 Wiring Devices for Auto-Off timer switch specifications and weatherproof cover.

PART 3 – EXECUTION

3.01 GENERAL

- A. The location, type, and number of luminaires are shown on the Drawings.

3.02 INSTALLATION

- A. General:
 - 1. Provide conduit, wiring, and fittings as required.
 - 2. Luminaires shall be clean and operable at the time of acceptance.
 - 3. Align, mount, and level the luminaires uniformly.
- B. Coordinate with other trades so luminaires are properly aligned.
- C. Mounting and Supports:
 - 1. Mounting heights shall be as shown on the Drawings.
 - a. See the Structural Drawing S3 for lighting mounting brackets underneath the canopy for mounting the two L1 lighting fixtures.
 - b. The flood light, L2 lighting fixture, with yoke bracket shall be mounted to the front canopy structural member so the flood light can be aimed at the wet well.
 - 2. Provide bird deterrent spikes on top of light fixtures and mounting brackets to deter birds from roosting.

3.03 TESTING

- A. Demonstrate lighting controls to Owner. Demonstrate the Auto-Off timer switch controls the lighting and the lighting is automatically turned OFF after the time interval is complete.

END OF SECTION

This Page Intentionally Left Blank

SECTION 26 95 92
RELAYS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies general purpose relays and time delay relays.
- B. Provide relays as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 REFERENCE STANDARDS

- A. The relays shall be designed, manufactured and tested in accordance with the latest applicable following standards:
 - 1. UL Listed.
 - 2. UL Standard 508, Industrial Control Equipment.
 - 3. UL Standard 916, Energy Management Equipment.
 - 4. UL Standard 864, Control Units and Accessories for Fire Alarm Systems.

1.03 SUBMITTALS

- A. Procedures: Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit shop drawings including but not limited to:
 - 1. Catalog cuts for all materials.
 - 2. Product Data:
 - a. General features and dimensions of relays.
 - 3. Test results for all specified testing.
 - 4. Submit operation and maintenance manuals as specified in Section 26 05 11, “Basic Electrical Methods and Materials.”

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer’s instructions. One copy of these instructions shall be included with the equipment at time of shipment.
- B. Contractor shall store relays in dry, temperature-controlled location and provide protection from dust, debris, and moisture while electrical equipment is stored before installation.

1.05 SPARE MATERIALS

- A. Provide one spare relay for each type of relay installed. Package all spare parts and label all packages with quantity, item description, and part number.

1.06 WARRANTY

- A. In addition to the warranty specified in Division 1, the manufacturer's warranty to Owner shall in no event be for a period of less than 2 years starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, and travel expenses.

PART 2 – PRODUCTS

2.01 GENERAL PURPOSE RELAYS

- A. Design general purpose relays to operate as follows:
 - 1. On application of control power to relay coil, contacts reverse state.
 - 2. Contacts return to de-energized state on removal of control power.
- B. Provide general purpose relays with the following requirements:
 - 1. Plug-in blade type.
 - 2. Contacts:
 - a. Material: Silver cadmium oxide.
 - b. Rating: Minimum of 10A at 120Vac.
 - c. Two Form C, minimum. Provide number of contacts for each relay as required for application.
 - 3. Duty Cycle: Continuous.
 - 4. Relay sockets with barrier-type screw terminal connections for external wiring:
 - a. Surface or DIN rail mount.
 - b. Relay hold-down clips.
 - 5. Lamp indication when relay is energized.
 - 6. Acceptable Manufacturers:
 - a. IDEC, RH Series.
 - b. Or approved equal.

2.02 DELAY-ON-MAKE (ON-DELAY) TIME DELAY RELAYS

- A. Design delay-on-make time delay relays to operate as follows: On application of voltage to the coil, the relay contacts remain in the “off state” and timing cycle begins. When the set time has elapsed, the relay contacts transfer to the “on state.” The contacts remain in the “on state” until the timer is reset. The timer is reset upon removing the coil voltage. Timer is then ready for the next operation.
- B. Provide delay-on-make time delay relays with the following requirements:
 - 1. Plug-in blade type.
 - 2. Repeat Timing Accuracy: Plus or minus 1.5%.
 - 3. Minimum Setting: 10% of full range.
 - 4. Duty Cycle: Continuous.
 - 5. Timing Range: 0.1 seconds–10 minutes.
 - 6. Contacts:
 - a. Material: Silver cadmium oxide.
 - b. Rating: 10A at 120Vac.
 - c. Two Form C.
 - 7. Relay sockets with barrier-type screw terminal connections for external wiring:
 - a. Surface or DIN rail mount.
 - b. Relay hold-down clips.
 - 8. Acceptable Manufacturers:
 - a. IDEC, RTE Series.
 - b. Or approved equal.

2.03 DELAY-ON-BREAK (OFF-DELAY) TIME DELAY RELAYS

- A. Design delay-on-break time delay relays to operate as follows: Voltage is applied to the coil at all times. When a momentary or maintained start signal is supplied the contacts immediately transfer to “on state.” The set time begins when the start signal is removed. When the set time has elapsed, the contacts transfer to the “off state.” The contacts remain in the “off state” until the next start signal is supplied. The timer can be reset by application of a reset input or by removing coil voltage.

- B. Provide delay-on-energize time delay relays with the following requirements:
1. Plug-in blade type.
 2. Repeat Timing Accuracy: Plus or minus 1.5%.
 3. Minimum Setting: 10% of full range.
 4. Duty Cycle: Continuous.
 5. Timing Range: 0.1 seconds–10 minutes.
 6. Contacts:
 - a. Material: Silver cadmium oxide.
 - b. Rating: 10A at 120Vac.
 - c. Two Form C.
 7. Relay sockets with barrier-type screw terminal connections for external wiring.
 - a. Surface or DIN rail mount.
 - b. Relay hold-down clips.
 8. Acceptable Manufacturers:
 - a. IDEC, RTE Series.
 - b. Or approved equal.

2.04 POWER CONTROL RELAYS

- A. Design power control relays to operate as follows:
1. On application of control power to relay coil, contacts reverse state.
 2. Contacts return to de-energized state on removal of control power.
- B. Provide power control relay for heavy-duty switching operation with the following requirements:
1. Screw-mounted type with screw type terminals.
 2. Contacts:
 - a. Material: Silver cadmium oxide.
 - b. Rating: 25A at 277Vac, 1 hp per movable arm at 120Vac.
 - c. Two Form C, minimum.

3. Duty Cycle: Continuous.
4. Coil Operating Voltage: 120Vac.
5. Acceptable Manufacturers:
 - a. Potter and Brumfield.
 - b. Or approved equal.

2.05 THERMOSTAT CONTROL RELAYS

- A. Separate adjustable thermostat control relay shall be used to control the exhaust fans. The heater shall have an integrated adjustable thermostat. The exhaust fans are used to keep the equipment temperature below maximum operating temperature and is only ON when the heater is OFF and the internal enclosure temperature threshold has been reached:
 1. Thermostat shall have adjustable range from 32°F to 120°F.
 2. Thermostat shall have bimetallic sensor element.
 3. Electrical connection shall be Normally CLOSED so if thermostat fails the exhaust fans continue to run.
 - a. Switching capacity (NC) 10A resistive/2A inductive at 250Vac (minimum).
 4. Thermostat shall be capable of DIN rail mounting.
- B. Acceptable manufacturers:
 1. Dayton Catalog No. 1UHH2.
 2. Or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install relays in accordance with manufacturer's recommendations.

3.02 CALIBRATION

- A. Calibrate and program equipment to meet system requirements.

3.03 START-UP AND TESTING

- A. Comply with the manufacturer's recommended testing procedures.

- B. Contractor shall confirm and demonstrate to Owner the performance of thermostat with supplier of heater and exhaust fans.

END OF SECTION

Division 32

Exterior Improvements

SECTION 32 31 13
CHAIN LINK FENCE AND GATES

PART 1 – GENERAL

1.01 SCOPE

- A. This section covers supply and installation of chain link fence and gates.

1.02 SUBMITTALS

- A. Manufacturer's data, including installation instructions, shall be submitted for the Engineer's review and approval.

1.03 QUALITY ASSURANCE

- A. Chain link fences and gates including necessary erection accessories, fittings, and fastenings shall be supplied by a single manufacturer.

PART 2 – PRODUCTS

2.01 MATERIALS AND FABRICATION

- A. General:

1. All items shall be galvanized (zinc-coated) by the hot dip process. Weight of zinc coating shall be determined in accordance with ASTM A90. All items shall include thermal fusion coating of 15 mils of black (color) PVC coated and the fence shall contain black PVC slats in the fabric mesh.
2. Pipe for posts, rails, braces, and gate frames shall be Schedule 40 and shall conform to ASTM A120, except the hydrostatic testing requirement is waived. Pipe sizes specified are nominal pipe sizes.
3. Hardware and accessories shall conform to ASTM A153.
4. Fencing shall be 8 feet high above grade.

- B. Chain Link Fabric: Fabric shall be 9-gauge steel wire woven in a 2-inch-square mesh with 15 mils of black PVC coating over 0.3 ounces zinc substrate with an 850-pound breaking strength. Fabric shall be 96 inches in height and shall be furnished in one-piece widths. Fabric shall be knuckled on the bottom selvage and twisted on the top selvage. Fabric shall conform to ASTM A392 and shall be galvanized after fabrication. The zinc coating shall be applied in a continuous process and shall not be applied to the fabric in roll form. The weight of zinc coating shall not be less than 1.2 ounces per square foot of actual surface covered. Use 9-gauge black PVC coated tie wires at not more than 24-inch spacing.

- C. Line Posts: Line posts shall be 2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. The weight of the zinc coating shall not be less than 1.8 ounces per square foot of actual surface covered.
- D. End, Corner, and Pull Posts: End, corner, and pull posts shall be 3-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. The weight of zinc coating shall not be less than 1.8 ounces per square foot of actual surface covered.
- E. Gate Posts: Gate posts shall be 3-1/2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. The weight of zinc coating shall not be less than 1.8 ounces per square foot of actual surface covered.
- F. Top Rails: Top rails shall be 1-1/2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. Weight of zinc coating shall not be less than 1.8 ounces per square foot of actual surface covered. Top rails shall be in lengths not less than twice the line post spacing and shall be fitted with sleeve-type couplings for connecting the lengths into a continuous run. Couplings shall be a minimum of 6 inches long, with a 0.070 minimum wall thickness, and shall allow for expansion and contraction of the rail. The top rail shall pass through the line posts, forming a continuous brace for each stretch of fence. The top rail shall be secured to end, pull, corner, and gate posts with suitable fittings.
- G. Post Braces:
 - 1. Post braces shall be 1-1/2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. Weight of zinc coating shall not be less than 1.8 ounces per square foot of actual surface covered. Post braces shall be provided for each end, pull, corner, and gatepost, and shall extend to each adjacent line post at approximately mid-height of the fabric. A truss consisting of a steel rod not less than 3/8-inch nominal diameter with a turnbuckle or other adjustable tightener shall extend from the line post back to the gate, corner, pull, or end post.
 - 2. Truss rods may be eliminated in any line of fence where there is a continuous center rail.
- H. Post Tops: Weather-tight closure tops shall be provided for each post. Post tops shall fit over the outside of posts and shall have openings suitable for the through passage of the top rail. Post tops shall be steel with galvanized and black PVC coating.
- I. Tension Bars: Tension bars shall be steel with galvanized and black PVC coating with a minimum cross section of 3/16 inch by 3/4 inch and shall be one-piece lengths equal to the full height of the fabric. One tension bar shall be provided for each end and gatepost; two tension bars shall be provided for each corner and pull post.
- J. Tension Bands: Bands shall be provided for securing tension bars and fabric to end, corner, pull, and gateposts. Bands shall be spaced not more than 15 inches on centers. Bands shall be fabricated from steel with galvanized and black PVC coating.
- K. Ties and Clips: Ties or clips shall be provided for attaching the fabric to line posts, rails, and braces. Ties shall be spaced 12 inches on center for attaching fabric to line posts; ties shall be spaced 24 inches on center for attaching fabric to rails and braces. Ties shall be black PVC coated.

L. Tension Wires: Tension wire shall be 7-gauge steel coil wire with galvanized and black PVC coating. Weight of zinc coating shall not be less than 0.80 ounces per square foot of uncoated wire surface.

M. Gates:

1. Slide gate perimeter frames shall be fabricated from 2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. Swing (man) gate perimeter frames shall be fabricated from 1-1/2-inch-diameter schedule 40 steel pipe with galvanized and black PVC coating. Gate frames shall be welded at all corners or assembled with fittings. Welds shall be painted with zinc-based paint prior to applying the black PVC coating.
2. Gate fabric shall be the same as that used for fence. Fabric shall be attached securely to the gate frame at intervals not exceeding 15 inches. Fabric shall be installed with stretcher bars at all four edges. Gates shall have 3/8-inch-diameter diagonal, galvanized steel with black PVC coating adjustable truss rods to prevent sag or twist.
3. End members of the gate frames shall extend to the top horizontal member.
4. Slide gate shall include double wheel carrier, rear wheels with brackets, pipe track brackets, tubing for track, horizontal and vertical bracing, and all other accessories required for functional gate. Materials shall be steel with galvanized and black PVC coating.
5. Gate shall have lockable latches.

N. Gate Hardware:

1. Gate hardware shall be galvanized steel with black PVC coat. Field coat moveable parts (e.g., hinges, latch, keeper, and drop bar) with touch up PVC paint, provided by manufacturer, to match adjacent finishes.
2. Each swing gate leaf shall have one and one-half pair of hinges. Non-lift-off type hinges shall permit gate to be opened 180 degrees.
3. Latches shall be forked type or plunger-bar type to permit operation from either side of gate. Latches shall have a padlock eye as an integral part.
4. Gate stops shall be provided for the slide gates. Gate stops shall be set in concrete and shall stop the gate in both the open and closed positions.

O. Plastic Slats:

1. Black plastic slats shall be installed in all portions of the fence including gates.
2. Plastic slats shall be 3/8-inch by 2-3/8-inch by the height designation of the fence. They shall be manufactured from tubular polyethylene color pigmented material consisting of high-density virgin polyethylene and color pigments, designed to retard ultraviolet penetration. The material shall have a minimum wall thickness of

0.0030-inch plus or minus 0.0003-inch and shall remain flexible without distortion and without becoming brittle through a temperature range of -70°F to +250°F. Tensile strength shall be at least 3,600 psi and the melt index shall not exceed 0.25.

3. Plastic slats shall be retained in place by means of U-shaped retainer members at the bottom of the fence. Retainer members shall be of the same material as the slats.
- P. Miscellaneous Fittings and Hardware: Fittings and hardware not specifically mentioned, but required for assembly of the fence and gates shall be steel with galvanized and PVC coatings.
- Q. Concrete: Concrete for footings shall have a 28-day compressive strength of 3,000 psi.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Fence and gates shall be installed after final grading is complete.
- B. Care shall be taken not to damage the galvanizing and PVC coating on fencing materials. Any areas damaged shall be repaired with an approved applicable coating.
- C. Posts shall be plumb and the fence line shall be straight between the corner posts. Posts shall be uniformly spaced. The maximum spacing between posts shall be 10 feet. Where the ground slopes, the fence shall follow a uniform grade so that there is no sharp dip or rise in the fence profile. The bottom of the fence shall be 2 inches above finished grade.
- D. Each footing shall be crowned to shed water away from the post.
- E. A tension wire shall be stretched taut from post to post along each section of fence within the bottom 6 inches of the fabric. The tension wire shall be securely tied to each post.
- F. Fabric shall be free of kinks and shall be properly stretched so there is no sagging or bulging. Fabric shall be placed on the outside of the area enclosed. Fabric shall be attached to line posts at 12-inch intervals and to the top rail, tension wire, and braces at 24-inch intervals.
- G. Gates shall be installed plumb and level. When installed, gates shall be tested for ease of operation and proper closure and locking. Hardware shall be adjusted and lubricated where necessary for ease of operation.
- H. All fencing installed for this project shall be grounded.

END OF SECTION

Division 40

Process Interconnections

SECTION 40 61 13
PROCESS CONTROL SYSTEM GENERAL PROVISIONS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. General:

1. Provide necessary tools, equipment, materials, supplies and labor required to complete the installation, startup, and operational testing of a complete and operable Process Instrumentation and Control (I&C) System as indicated on the Drawings and as specified herein.
2. Provide the necessary equipment components and interconnections along with the services of manufacturers' engineering representatives necessary to ensure that the Owner receives a completely integrated and operational Process I&C system as herein specified.
3. Provide all terminations for wiring at field mounted equipment, equipment enclosures, alarm, and status contacts.
4. Provide necessary Instrumentation and Control wire required for a fully functioning Instrumentation and Controls System as shown on the Drawings.

B. Provide the following equipment and services:

1. Build and install PCP-1, provided by the Hardware Systems Integrator.
2. Configure the VFDs, provided by the Hardware Systems Integrator.
3. Program the PLC, provided by the Owner-preferred Programmer.

C. Work Specified in Other Divisions and Sub-Divisions:

1. General mechanical requirements as specified in Division 40.
2. Equipment and controls that are provided as part of a package system.
3. Refer to Division 26 Specifications for specific requirements for wire, conduit, grounding, and other electrical equipment.
4. Final control elements as specified in Division 40.

1.02 REFERENCE DOCUMENTATION AND STANDARDS

A. American National Standard Institute (ANSI) Publications:

1. Y14.15a Drafting Practice.

- B. Instrumentation Society of America (ISA) Publications:
 - 1. S5.4 Instrument Loop Diagrams.
 - 2. S20 Specification Forms for Process Measurement and Control Equipment, Primary Elements and Control Valves.
- C. Manufacturer's data sheets, materials selection, and installation guidelines for the instrumentation specified in these Specifications and Drawings.

1.03 QUALIFICATIONS

- A. The Contractor shall be an entity that has completed similar utility projects and who has demonstrated experience in purchasing, calibrating, fabricating, installing, and testing the equipment listed in this specification section.
- B. The Contractor shall have at least 5 years of experience in performing all aspects of the type of work specified in this section and shown on the Drawings.

1.04 CONTRACTOR AND SUBCONTRACTOR SYSTEM RESPONSIBILITIES

- A. General: The equipment as specified in this division shall be considered an integrated system. Entire system installation including calibration, verification, startup, operation testing, and training shall be performed by qualified personnel, possessing all the necessary skills and equipment, and who have had experience performing similar installations. Entity responsibilities include:
 - 1. Contractor: To obtain technical data, determine performance requirements, develop detail installation designs, and coordinate the selection of specified equipment to meet the design conditions stated.
 - 2. Hardware System Integrator (HSI): Refer to Section 40 68 13.
 - 3. Software System Integrator (SSI): Refer to Section 40 68 13.
- B. System Responsibilities:
 - 1. Technical: Obtain technical data, determine performance requirements, develop installation details and integrate supplied equipment where depicted on the Drawings.
 - 2. Compatibility: See that components of the process system, including equipment specified under other divisions, are compatible and function properly as a system. Provide such additional equipment, accessories, etc., as are necessary to meet these objectives at no cost to the Owner.
 - 3. Coordination: For control components, devices, and systems specified in other divisions, or shown on the Drawings.
 - a. Provide technical advice to mechanical and electrical subcontractors as necessary regarding their installation of equipment.
 - b. Verify the correctness of installation of all equipment.

- c. Verify that the proper type, size, and number of control wires with their conduits are provided.
 - d. Verify that proper electric power circuits are provided for all components and systems.
 - e. Resolve all manufacturers' installation discrepancies between requirements and the detail requirements of the Drawings and Specifications.
 - f. Supervise final signal connections, all process instrumentation and control equipment.
 - g. Adjust, startup, and test all process instrumentation and control equipment.
 - h. Provide specified documentation and training.
4. Performance: While the Drawings provide sufficient information to establish the form and function of the systems and their relationships, the responsibility for system integration and performance rests solely with the Contractor. The Engineer provides technical instruction and guidance where needed.
 5. Site and Instrument Inspection: Inspect site for conformance to Drawings, paying special attention to space allocation and dimensions shown or required on Drawings. Inspect completed work and verify that it is ready for installation of equipment. Inspect each piece of equipment for damage, defects, completeness, and correct operation before installing.

1.05 SUBMITTALS

- A. Shop Drawings: Submit shop drawings (diagrams) for review in complete, searchable, PDF sets indexed by specification number, with tabs marked by subject. Submit manufacturer's catalog cuts for each item for which shop drawings are not required. Manufacturer's catalog cuts, specifications, or data sheets shall be clearly marked to delineate the options or styles to be furnished. Show dimensions, physical configurations, methods of connecting equipment together, mounting details, and wiring schematics. Drawings shall be complete with device tag numbers, wire numbers, and terminal board numbers. Submit fabrication details, nameplate legends, and control panel internal wiring and piping schematic drawings. Submit panel graphic drawings where applicable. Include material lists and/or bills of material.
- B. Record Drawings: Submit a revised set of shop drawings that incorporates all change orders and modifications made during performance of the work. In addition, submit equipment and device installation diagrams and other drawings as necessary to depict the "as-constructed" condition of equipment. Include all installed field and panel conduit and piping/tubing runs and routing, tray systems, supports, mounting details, interconnection diagrams with cable, wire, tube, and termination numbers. Submit a copy of CAD-produced drawings in AutoCAD DWG format via email.

- C. Operation and Maintenance Manuals: Furnish Operation and Maintenance Manuals, including Instruction Manuals and Part Lists, for equipment provided under Division 40. Obtain data from manufacturers, and format and bind as specified. Obtain distribution method instructions from the Owner or Owner's representative.
1. Schedule: Deliver at least two copies of manuals in 3-ring binders (8-1/2 by 11-inch format) and one electronic copy not later than the equipment shipment date.
 2. Contents: Include in manuals not less than the following information, as applicable, for each process equipment, subsystem and/or packaged systems:
 - a. General, introduction and overall description, purpose, functions, simplified theory of operations, etc.
 - b. Specifications (including equipment specification data sheet as described above under Shop Drawings), sufficiently detailed for reordering exact duplicates of the original items.
 - c. Installation instructions, procedures, sequences, tolerances, and precautions.
 - d. Operational procedures.
 - e. Shutdown procedures.
 - f. Maintenance, calibration, and repair instructions.
 - g. Parts list and spare parts recommendations.
 - h. Calibration curves, rating tables, and any other data showing the relationship of the variable inputs and the calibrated output of all measuring devices and controlled equipment.
 3. Format:
 - a. Use drawings and pictorials to illustrate the text to the extent necessary to ensure a clear, concise presentation. If manuals have been written to cover a family of similar equipment or equipment, strike out inapplicable information in a neat fashion or emphasize applicable portion by heavily weighted arrows, circles, or boxes; whichever provides the clearest and neatest presentation.
 - b. Group manuals by system control panels, including field instrumentation connected or associated with the panel. Where identical equipment is used in more than one control loop or subsystem, include only one instruction manual, per panel grouping; however, an index by tag number for all equipment shall identify its location in that manual.
 - c. Provide control loop and/or subsystem operational descriptions to identify the function of each instrument and its relation to the other equipment in the loop.
 4. Binding: Bind each manual in a cover which indicates the panel or process area to which it applies, manufacturer's name, local address and telephone number, and year of purchase. Punch and bind (with plastic reinforced edges) manuals in standard three-ring binders and include system name and subcontractor's name on binding.

- D. Accessory and Maintenance Materials: Submit data for the following items:
1. Special Tools and Accessories: Special tools, equipment, and accessories for maintaining equipment and equipment requiring periodic repair and adjustment as specified elsewhere herein. Also, furnish special lifting and handling devices for equipment requiring such devices.
 2. Maintenance Materials and Spare Parts: Submit a list of manufacturer-recommended spare parts for each item specified. Refer to other sections of these Specifications.
- E. Demonstration and Final Operation Test Plan and Results: Submit a document that outlines all procedures to be used in final operational testing of instrument and control systems. Include a description of each system, the scope of testing, test methods and materials, testing equipment and recorders, a list of functional parameters to be recorded on each item, and shop drawings showing temporary bypasses, jumpers, and devices.

1.06 QUALITY ASSURANCE

- A. Standard of Quality: The Contractor shall provide equipment of the types and sizes specified which has been demonstrated to operate successfully. Provide equipment which is new and of recent proven design.

1.07 INSPECTIONS

- A. The Engineer may inspect the fabricated equipment at the factory before shipment to job site. Provide the Engineer with 2-week prior written notice (preferably e-mail) so that an inspection can be arranged at the factory.
- B. Inspection of the equipment at the factory by the Engineer will be made after the manufacturer has performed satisfactory checks, adjustments, tests, and operations.
- C. Favorable review of the equipment at the factory only allows the manufacturer to ship the equipment to the project site. The Contractor shall be responsible for the proper installation and satisfactory startup operation of the equipment to the satisfaction of the manufacturer and the Engineer.

1.08 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Box, crate, or otherwise enclose and protect equipment and equipment during shipment, handling, and storage. Keep all equipment dry and covered from exposure to weather, moisture, corrosive liquids and gases or any element that could degrade the equipment. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Notify the Engineer in writing in the event that any equipment or material is damaged. Obtain prior favorable review of the Contractor/manufacturer proposed Replacement/Repair by the Engineer before making repairs to or replacing damaged products.

1.09 SEISMIC ANCHORAGE AND STRUCTURAL DATA

- A. Mechanical, instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces.

1.10 WARRANTY

- A. Warranty shall include parts, labor, and travel expenses necessary for repairs at the job site.
- B. Unless otherwise indicated, minimum warranty duration shall be 1 year from the Final Acceptance Date.
- C. Contractor shall provide warranty equivalent to the manufacturer's warranty period beginning on the issue date of the certificate of substantial completion.

PART 2 – PRODUCTS

2.01 MATERIALS AND STANDARD SPECIFICATIONS

- A. Provide equipment, equipment, and materials suitable for service conditions and meeting standard specifications such as ANSI, ASTM International (ASTM), etc. The intent of this specification is to secure equipment and equipment of a uniform quality and manufacture throughout the Owner's facility. All equipment in the plant of the same type shall be made by the same manufacturer.
- B. For any approved substitutions, it is the responsibility of the Contractor to adhere to the requirements of the substituted equipment's manufacturer's installation requirements and these Specifications. If the manufacturer's installation requirements conflict with these Specifications/Drawings in such a way that the as designed Specifications/Drawings may void the substituted equipment manufacturer's warranty or diminish the functionality of the equipment and or process, the manufacturer's requirements shall prevail.

2.02 NAMEPLATES

- A. For each piece of equipment, provide a manufacturer's nameplate showing the manufacturer's name, location, the pertinent ratings, and the model designation.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved plastic nameplate (Refer to Section 26 05 53 for specific requirements). Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel screws or, where favorably reviewed by the Engineer, with epoxy cement. Where no inscription is indicated on the Drawings, furnish nameplates with an appropriate inscription furnished by the Engineer upon prior request by the Contractor.

- C. Each control device, including pushbuttons, control switches, and indicating lights, shall have an integral legend plate or nameplate indicating the device function. These shall be inscribed as indicated on the Drawings or as favorably reviewed by the Engineer.
- D. Provide CAUTION or SAFETY nameplates to alert operators of special conditions that may result in faulty equipment operations. Devices containing batteries that must be replaced periodically must be clearly identified. Nameplates are not required if the device senses and displays a low battery warning.

2.03 NAME TAGS

- A. All instrumentation and equipment items or systems shall be identified by name tags. Field equipment shall be tagged with the assigned instrumentation tag number listed in the Instrumentation Schedule. Refer to Section 40 70 00.1.
- B. Name tags shall be stainless steel with engraved or stamped black characters of 3/16-inch-minimum height. Tags shall be attached to equipment with a tag holder and stainless steel band with a worm screw clamping device. Use 20-gauge stainless steel wire where banding is impractical. For field panels or large equipment cases use stainless steel screws; however, such permanent attachment shall not be on an ordinarily replaceable part.

2.04 FIELD-MOUNTED EQUIPMENT

- A. All instrument and control equipment mounted outside of protective structures shall be equipped with suitable surge arresting devices to protect the equipment from damage due to electrical transients induced in the interconnecting lines from lightning discharges or nearby electrical devices. Protective devices used on 120 Vac inputs to field mounted equipment shall be secondary valve surge protectors conforming to the requirements of ANSI C62.1.

2.05 EQUIPMENT LOCATIONS

- A. Provide equipment and materials suitable for the types of locations in which they are located as defined under Division 40. All equipment specified for field mounting shall be weatherproof and splash proof as a minimum. If electrical or electronic components are contained within the equipment, they shall be housed in NEMA 3R gasketed cases, and NEMA 4X in corrosive locations unless noted otherwise on the Drawings or specific item specification.

2.06 PAINTING

- A. Factory paint all equipment and equipment except where installed in pipelines. Repair damaged factory paint to satisfaction of the Engineer. Feathering, priming, and painting shall produce a reasonable match to the surrounding paint work.

2.07 FASTENERS

- A. Fasteners for securing equipment to walls, floors, and the like shall be either hot-dip galvanized after fabrication or stainless steel. Provide stainless steel fasteners in corrosive

locations. When fastening to existing walls, floors, and the like, provide capsule anchors, not expansion shields. Size capsule anchors to meet load requirements. Minimum size capsule anchor bolt is 3/8 inch.

2.08 TUBING, PIPE, FITTINGS AND SUPPORTS

- A. General: Instrument tubing listed below is required for all equipment and control valves. Select the appropriate tubing materials to satisfy service conditions except where specifically shown on Installation Detail Drawing.
 - 1. Stainless Steel: Stainless tubing shall be Type 304 seamless, cold drawn and annealed per ASTM A269. Sizes shall be 1/4-inch O.D. by 0.045-inch wall, 3/8-inch O.D. by 0.035-inch wall or 1/2-inch O.D. by 0.035-inch wall. Use for instrument or valve connections.
 - 2. Fittings:
 - a. Stainless Steel Tube: Threaded tube and pipe shall be Type 304 stainless. Compression fittings shall be Type 316 stainless steel equal to Imperial or Swagelok.
 - b. Supports for Tubing: Supports located in areas exposed to the weather or corrosive atmosphere shall be Type 304 stainless steel Unistrut or equal or made of steel conforming to ASTM A276. Supports not exposed to the weather or corrosive atmosphere shall be carbon steel painted.
 - c. Weld joint fittings shall be permitted for header and branch service only. Use unions only as necessary to simplify instrument removal.
 - 3. Valves:
 - a. Instrument valves shall be 1/4 inch, 3/8 inch, or 1/2 inch from Whitey or Hoke to match tubing material and size.

2.09 INSTRUMENT CALIBRATION

- A. Each field instrument shall be calibrated at 0%, 25%, 50%, 75%, and 100% of span using test equipment to simulate inputs and read outputs that are rated to an accuracy of at least five times greater than the specified accuracy of the instrument being calibrated. Such test equipment have accuracies traceable to the National Institute of Standards and Technology (NIST).
- B. Submit a written report to the Engineer on each instrument. This report shall include a laboratory calibration sheet or the manufacturer's standards calibration sheet on each instrument and calibration reading as finally adjusted within tolerances.
- C. The Contractor shall contract with the manufacturer's qualified test representative to perform calibration on supplied instrumentation.

2.10 FACTORY TESTING

- A. All fabricated equipment shall be tested before it leaves the factory. At the factory verify wiring continuity and equipment operation by simulating input and output.
- B. Factory testing of control panels/devices/equipment shall be completed, documented and provided to the Owner/Engineer for favorable review prior to shipping. Refer to individual specification sections for tests requiring favorable review. Testing shall be performed in an 8-hour day by the Hardware Systems Integrator.
- C. Upon completion of factory testing, submit a report certifying the control panels/devices/equipment are operable and meet the Specifications.

PART 3 – EXECUTION

3.01 MOUNTINGS

- A. Mount and install equipment as indicated on the Drawings or as required by the manufacturer. Mount field equipment on pipe mounts or other similar means in accordance with manufacturer's recommendation. Where mounted in control panels, mount according to requirements of that section.
- B. Equipment specified for field mounting shall be suitable for direct pipe mounting or surface mounting.
- C. All devices shall be accessible to operators for servicing, operating, reading, etc. Provide permanent platforms to ensure that devices are accessible.

3.02 ELECTROMAGNETIC INTERFERENCE (EMI)

- A. Construction shall proceed in a manner which minimizes the introduction of noise (RFI/EMI) into the Process Control System and associated components/devices.

3.03 PREPARATION

- A. Ensure that installation areas are clean and that concrete or masonry operations are completed prior to installing equipment and equipment. Maintain the areas in a broom-clean condition during installation operations.
- B. Equipment shall be protected during shipping, storage, and construction to prevent damage and prevent dust accumulation. Other protective measures (lamp, strip heaters, shaft rotation, etc.) shall be included as required by the manufacturer.

3.04 PERFORMANCE TESTING AND OPERATIONAL TESTING

- A. General: The purpose of the field testing is to verify equipment are calibrated and operationally performing their intended function. Provide the services of factory trained and experienced engineers to perform verification and operational testing as prescribed below. Since the initial calibration of equipment may not satisfy the final operation of system, perform recalibration or adjust setpoints as required to satisfy the performance requirements of the system. Notify the Engineer and Owner in writing a minimum of 48 hours prior to the proposed date for commencing final operational testing and acceptance.
- B. During Process System Verification:
1. Make initial or provisional settings on levels, alarms, etc. listed in the Instrument Schedule.
 2. PID Loops: Verify controllers by observing that the final control element moves in the proper direction to correct the process variable as compared to the set point.
 3. Cause malfunctions to sound alarms or switch to standby to check system operation.
 4. Check all loop equipment thoroughly for correct operation.
 5. Immediately correct all defects and malfunctions disclosed by tests.
 6. Submit a report certifying completion of verification of each process system. This report shall include a data sheet on each piece of equipment tested that indicates equipment tolerances, calibration verification, data, and initial settings made to equipment and devices.
- C. Operational Testing and Tuning: Upon completion of equipment verification, test all systems under process conditions in the presence of the Owner or designated representative. System testing shall be accomplished in accordance with the Engineer approved Test Plan. The test for each portion thereof shall be witnessed, documented, and signed off upon completion by the Engineer. The intent of this test is to demonstrate and certify the operational interrelationship of process equipment, instrumentation, and control systems. This testing shall include, but not be limited to:
1. Making final adjustments to levels, alarms, etc.
 2. Optimum tuning of controllers.
 3. Checking all alarms, failure interlocks, and operational interlocks.
 4. Verifying all PLC and computer input and outputs and operator interface terminal (OIT) displays are fully functional.
 5. Verifying automatic computer-generated reports are performing satisfactorily.
 6. Immediately correcting all defects and malfunctions and retesting.

7. Submit the witnessed test results and a transmittal letter indicating that all required systems have been tested satisfactorily and the systems meet all the functional requirements of their applicable specifications.
8. Sampling of process streams to ensure automated processes meet the requirements.

3.05 INSTRUCTION OF OWNER'S PERSONNEL

- A. Provide the services of a factory trained and field experienced instrumentation Engineer to conduct group training of the Owner's designated personnel in the operation of each piece of equipment. This training shall be for the time period of up to 1 working day and shall be performed during the operational testing period. Include instruction covering basic system theory, operating principles and adjustments, routine maintenance and repair, and "hands on" operation. The text for this training shall be the Operation and Maintenance Manuals furnished under these Specifications.

END OF SECTION

This Page Intentionally Left Blank

SECTION 40 61 93
PROCESS CONTROL SYSTEM INPUT/OUTPUT LIST

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide input/output (I/O) connections to programmable logic controllers (PLC) as shown on the Drawings, in the attached PLC I/O list that follows this Section, and as needed for a complete and proper installation.
- B. Provide I/O connections for PCP-106.
- C. Related Work: Documents affecting work under this section include but are not necessarily limited to the Technical Specifications and Drawings.

1.02 SUBMITTALS

- A. Hardware System Integrator shall submit final I/O list identifying all electrical connections have been made.

1.03 QUALITY ASSURANCE

- A. It is the Hardware System Integrator's responsibility to verify the existing wire numbers, terminal numbers and configuration of equipment. Note information in submittals, final as-built, and O&M documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

- A. Four original Equipment and I/O spreadsheets are available upon request.
- B. The fonts shown on the Equipment and I/O lists denote:
 - 1. Black font for new connections items.
 - 2. Gray font for future connections not part of this Contract.

END OF SECTION

(PLC I/O LIST FOLLOWS)

This Page Intentionally Left Blank

EQUIP TAG	LOCATION / PROCESS / DESCRIPTION	AB PART #	PLC-106			AB WIRE LABEL		I/O TYPE	SIGNAL
			R	S	P	1/+	2/-		
LE-1	WET WELL LEVEL	5069-IF8	1	1	0	106-1-1-00+	106-1-1-00-	AI	4-20 mA
FIT-1	WET WELL DISCHARGE FLOW		1	1	1	106-1-1-01+	106-1-1-01-	AI	4-20 mA
PIT-1	WET WELL DISCHARGE PRESSURE		1	1	2	106-1-1-02+	106-1-1-02-	AI	4-20 mA
VFD-1	MOTOR SPEED FEEDBACK		1	1	3	106-1-1-03+	106-1-1-03-	AI	4-20 mA
VFD-2	MOTOR SPEED FEEDBACK		1	1	4	106-1-1-04+	106-1-1-04-	AI	4-20 mA
TT-1	PCP-1 TEMPERATURE		1	1	5	106-1-1-05+	106-1-1-05-	AI	4-20 mA
	SPARE		1	1	6	106-1-1-06+	106-1-1-06-	AI	4-20 mA
	SPARE		1	1	7	106-1-1-07+	106-1-1-07-	AI	4-20 mA
VFD-1	MOTOR SPEED SETPOINT	5069-OF4	1	2	0	106-1-2-00+	106-1-2-00-	AO	4-20 mA
VFD-2	MOTOR SPEED SETPOINT		1	2	1	106-1-2-01+	106-1-2-01-	AO	4-20 mA
	SPARE		1	2	2	106-1-2-02+	106-1-2-02-	AO	4-20 mA
	SPARE		1	2	3	106-1-2-03+	106-1-2-03-	AO	4-20 mA
P-1	PUMP IN HAND	5069-IB16	1	3	0	106-1-3-00+	106-1-3-N	DI	24 VDC
P-1	PUMP IN AUTO		1	3	1	106-1-3-01+	106-1-3-N	DI	24 VDC
P-1	PUMP RUNNING		1	3	2	106-1-3-02+	106-1-3-N	DI	24 VDC
P-1	PUMP OVERTEMP ALARM		1	3	3	106-1-3-03+	106-1-3-N	DI	24 VDC
P-1	PUMP SEAL LEAK ALARM		1	3	4	106-1-3-04+	106-1-3-N	DI	24 VDC
VFD-1	VFD FAIL		1	3	5	106-1-3-05+	106-1-3-N	DI	24 VDC
LSHA-1	WET WELL LEVEL HIGH ALARM		1	3	6	106-1-3-06+	106-1-3-N	DI	24 VDC
LSHH-1	WET WELL LEVEL HIGH HIGH		1	3	7	106-1-3-07+	106-1-3-N	DI	24 VDC
LSH-1	WET WELL LEVEL HIGH		1	3	8	106-1-3-08+	106-1-3-N	DI	24 VDC
LSL-1	WET WELL LEVEL LOW		1	3	9	106-1-3-09+	106-1-3-N	DI	24 VDC
	SPARE		1	3	10	106-1-3-10+	106-1-3-N	DI	24 VDC
	SPARE		1	3	11	106-1-3-11+	106-1-3-N	DI	24 VDC
	SPARE		1	3	12	106-1-3-12+	106-1-3-N	DI	24 VDC
	SPARE		1	3	13	106-1-3-13+	106-1-3-N	DI	24 VDC
	SPARE		1	3	14	106-1-3-14+	106-1-3-N	DI	24 VDC
	SPARE	1	3	15	106-1-3-15+	106-1-3-N	DI	24 VDC	
P-2	PUMP IN HAND		1	4	0	106-1-4-00+	106-1-4-N	DI	24 VDC
P-2	PUMP IN AUTO		1	4	1	106-1-4-01+	106-1-4-N	DI	24 VDC

EQUIP TAG	LOCATION / PROCESS / DESCRIPTION	AB PART #	PLC-106			AB WIRE LABEL		I/O TYPE	SIGNAL
			R	S	P	1/+	2/-		
P-2	PUMP RUNNING	5069-IB16	1	4	2	106-1-4-02+	106-1-4-N	DI	24 VDC
P-2	PUMP OVERTEMP		1	4	3	106-1-4-03+	106-1-4-N	DI	24 VDC
P-2	PUMP SEAL FAIL		1	4	4	106-1-4-04+	106-1-4-N	DI	24 VDC
VFD-2	VFD FAIL		1	4	5	106-1-4-05+	106-1-4-N	DI	24 VDC
ZS-1	CONTROL PANEL INTRUSION ALARM		1	4	6	106-1-4-06+	106-1-4-N	DI	24 VDC
ZS-2	WET WELL INTRUSION ALARM		1	4	7	106-1-4-07+	106-1-4-N	DI	24 VDC
ZS-3	METER VAULT INTRUSION ALARM		1	4	8	106-1-4-08+	106-1-4-N	DI	24 VDC
	SPARE		1	4	9	106-1-4-09+	106-1-4-N	DI	24 VDC
	SPARE		1	4	10	106-1-4-10+	106-1-4-N	DI	24 VDC
	SPARE		1	4	11	106-1-4-11+	106-1-4-N	DI	24 VDC
	SPARE		1	4	12	106-1-4-12+	106-1-4-N	DI	24 VDC
	SPARE		1	4	13	106-1-4-13+	106-1-4-N	DI	24 VDC
	SPARE		1	4	14	106-1-4-14+	106-1-4-N	DI	24 VDC
	SPARE		1	4	15	106-1-4-15+	106-1-4-N	DI	24 VDC
ATS-1	ATS IN EMERGENCY		5069-IB16	1	5	0	106-1-5-00+	106-1-5-N	DI
ATS-1	ATS IN NORMAL	1		5	1	106-1-5-01+	106-1-5-N	DI	24 VDC
GEN-1	GENERATOR RUNNING	1		5	2	106-1-5-02+	106-1-5-N	DI	24 VDC
GEN-1	GENERATOR LOW FUEL	1		5	3	106-1-5-03+	106-1-5-N	DI	24 VDC
GEN-1	GENERATOR TROUBLE	1		5	4	106-1-5-04+	106-1-5-N	DI	24 VDC
GEN-1	GENERATOR FAULT/FUEL LEAK	1		5	5	106-1-5-05+	106-1-5-N	DI	24 VDC
SPD-1	SURGE DETECTED	1		5	6	106-1-5-06+	106-1-5-N	DI	24 VDC
PM-1	PHASE FAIL	1		5	7	106-1-5-07+	106-1-5-N	DI	24 VDC
UPS-1	TROUBLE	1		5	8	106-1-5-08+	106-1-5-N	DI	24 VDC
UPS-1	POWER SUPPLY FAIL	1		5	9	106-1-5-09+	106-1-5-N	DI	24 VDC
PCP-106	INTRUSION ALARM	1		5	10	106-1-5-10+	106-1-5-N	DI	24 VDC

EQUIP TAG	LOCATION / PROCESS / DESCRIPTION	AB PART #	PLC-106			AB WIRE LABEL		I/O TYPE	SIGNAL
			R	S	P	1/+	2/-		
PCP-106	INTRUSION DISABLED		1	5	11	106-1-5-11+	106-1-5-N	DI	24 VDC
PCP-106	FORCED FLOAT MODE		1	5	12	106-1-5-12+	106-1-5-N	DI	24 VDC
	SPARE		1	5	13	106-1-5-13+	106-1-5-N	DI	24 VDC
	SPARE		1	5	14	106-1-5-14+	106-1-5-N	DI	24 VDC
	SPARE		1	5	15	106-1-5-15+	106-1-5-N	DI	24 VDC
VFD-1	PUMP START CALL	5069-OB8	1	6	0	106-1-6+	106-1-6-00-	DO	24 VDC
VFD-2	PUMP START CALL		1	6	1	106-1-6+	106-1-6-01-	DO	24 VDC
PCP-106	RESET TELEMETRY		1	6	2	106-1-6+	106-1-6-02-	DO	24 VDC
PCP-106	RESET FLOAT MODE		1	6	3	106-1-6+	106-1-6-03-	DO	24 VDC
	SPARE		1	6	4	106-1-6+	106-1-6-04-	DO	24 VDC
	SPARE		1	6	5	106-1-6+	106-1-6-05-	DO	24 VDC
	SPARE		1	6	6	106-1-6+	106-1-6-06-	DO	24 VDC
	SPARE		1	6	7	106-1-6+	106-1-6-07-	DO	24 VDC

SECTION 40 62 63
OPERATOR INTERFACE TERMINALS (OIT)

PART 1 – GENERAL

1.01 SUMMARY

- A. Provide Operator Interface Terminals (OIT), also referred to as a Human Machine Interface (HMI), as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 SUBMITTALS

- A. Submit shop drawings in compliance with pertinent provisions of Section 40 61 13, including the manufacturer's detailed specifications.
- B. Submit manufacturer's product information and data sheet for all products.
- C. Submit operation and maintenance (O&M) manuals in compliance with pertinent provisions of Section 40 61 13.

1.03 QUALITY ASSURANCE

- A. All PLC and HMI equipment to be provided by one manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 40 61 13.

1.05 SPARE MATERIALS

- A. Provide on spare OIT for each type/model of OIT supplied under these Specifications and Drawings.

1.06 WARRANTY

- A. Refer to Section 40 61 13 for Contractor-supplied equipment warranty requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Design panel-mounted HMI graphics and programming to allow for monitoring and control of the provided equipment.

2.02 PANEL-MOUNTED HMI

- A. Provide panel-mounted HMI with the following requirements:
 - 1. Display Type: Color Active Matrix Thin Film Transistor (TFT) with LED backlight.
 - 2. Display Size: 7-inch diagonal, minimum.

3. Operator Input: Resistive touch-screen.
4. Communication Port: Ethernet or other industrial protocol as shown on the Drawings.
5. Memory: As required for application.
6. Real Time Clock: Backed up for 30 days, minimum.
7. Power: 24 Vdc.
8. Operating Temperature: 0°C to 50°C.
9. Rating: NEMA4X, IP65.
10. Certifications: UL Listed.
11. Cables to connect to communication network.
12. Conformal coating is acceptable.
13. Acceptable Manufacturers:
 - a. Allen-Bradley PanelView 5510 Series.
 - b. Approved Equal.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install HMI in accordance with manufacturer's recommendations.
- B. Configure the HMI in accordance with manufacturer's instructions, and as shown on the Drawings.

3.02 FUNCTIONAL TESTING AND COMMISSIONING

- A. Coordinate functional testing and commissioning with Section 40 63 43. The entire system shall be tested and commissioned as a completed system.

3.03 TRAINING

- A. The Contractor's HSI shall provide one-half day of training for the OIT hardware. This training shall demonstrate the manufacturer's specific requirements for installation, operation and maintenance. Refer to Section 40 68 13.

END OF SECTION

SECTION 40 63 43
PROGRAMMABLE LOGIC CONTROLLERS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the requirements and functions of the programmable logic controller (PLC).
- B. Contractor shall provide programmable logic controller (PLC) as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 SUBMITTALS

- A. The following information described herein and in Section 40 61 13, paragraph 1.05, shall be submitted to the Engineer. Submittals shall include the following:
 - 1. Product Data: Provide product information for the PLC, I/O modules, communication modules, controllers, chassis, power supply, cable, and controller firmware.
 - 2. Product Coordination: Submit a completed PLC system report for the CompactLogix hardware configuration including I/O testing and commissioning Plan to Owner and Engineering 20 days prior to testing and commissioning.
 - a. Submit a completed PLC system report including I/O report signed by the Software System Integrator within 10 days of completing the testing and commissioning.
 - 3. Submit operation and maintenance (O&M) manuals in compliance with pertinent provisions of Division 40.

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Maintain area free of dirt and dust during and after installation of products.

1.04 QUALITY ASSURANCE

- A. Provide all equipment by one manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 26 05 11, "Basic Electrical Methods and Materials."

1.06 SPARE MATERIALS

- A. Provide the following number of spare parts to the Owner that match items specified:
 - 1. One spare processor unit for each unique processor installed.
 - 2. One spare I/O module for each unique I/O module type installed.
 - 3. One spare communication module for each unique communication module installed.
 - 4. One spare power supply for each unique power supply installed.
 - 5. One spare SD card.
- B. Package all spare parts and label all packages with quantity, item description, and part number.

1.07 WARRANTY

- A. Refer to Section 40 61 13 for Contractor-supplied equipment warranty requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The section specifies the requirements for DIN rail mounted type of PLCs.
- B. Design programmable logic controller (PLC) to accept input contact and analog signals, perform the functions specified, and output contact and analog signals to control and/or indicate the specified processes.
- C. Provide DIN rail -mounted style PLC consisting of I/O racks, power supplies, CPUs, memory units, network communication modules, and I/O modules:
 - 1. Provide a modular type system with the necessary number and type of inputs and outputs:
 - a. Noise immunity to meet NEMA Standard ICS2-230.
 - 2. Provide expansion cables and power supplies at each location as required.
 - 3. DIN rail mounted PLC shall fit within the space provided in the existing panels and as shown on the new panel Drawings.

2.02 DIN RAIL MOUNTED PLC

A. Common Hardware Ratings:

1. Operating Temperature Range: 0°C to +55°C.
2. Storage Temperature Range: -40°C to +85°C.
3. Humidity Range: 5% to 95% noncondensing.
4. Noise Immunity in compliance to NEMA Standard ICS 2-230.
5. Operation Vibration Rating: 5.0 G at 10 to 500 Hz, 0.030-inch peak-to-peak.
6. Isolation Level: 1500V between backplane and I/O.
7. Dielectric Withstand Rating: 1500 Vac in compliance with UL 508, CSA C22.2 No. 142.

B. Processor Unit:

1. Program Memory: 2 MB RAM, minimum.
2. Capable of controlling up to 16 I/O modules.
3. Online programming including runtime editing.
4. Standard RAM memory back-up provided through minimum 2-year lithium battery.
5. Memory card: Industrial SD card, 2 GB maximum.
6. LED indicators for: RUN, FORCE, I/O, OK, NS, LINK 1, LINK 2, SD.
7. Three Communication Ports:
 - a. Two Ethernet ports that support Ethernet/IP protocol.
 - b. One USB.
8. Real-time clock.
9. Acceptable Manufacturer:
 - a. Allen-Bradley:
 - 1) CompactLogix 5069-L320ER.
 - b. No substitutions.

C. Discrete Input Modules:

1. Operating Voltage: 24 Vdc.
2. Sixteen non-isolated inputs or eight isolated inputs as required.
3. LEDs to indicate the status of each I/O point.
4. Acceptable manufacturer for 16 non-isolated inputs:
 - a. Allen-Bradley 5069-IB16.
 - b. No substitutions.

D. Analog Input Modules:

1. Eight input channels per module.
2. Ratings:
 - a. Current Rating: 0 to 20 mAdc, 4 to 20 mAdc.
 - b. Voltage Rating: Plus/Minus 10 Vdc, 0 to 10 Vdc, 0 to 5 Vdc, 1 to 5 Vdc.
3. Terminal Impedance:
 - a. Current Rating: 250 ohms.
 - b. Voltage Rating: 220 K ohms.
4. LEDs to indicate the status of each I/O point.
5. Acceptable Manufacturer:
 - a. Allen-Bradley 5069-IF8.
 - b. No substitutions.

E. Relay Output Modules:

1. Voltage Rating: 5 to 125 Vdc.
2. Eight relay outputs.
3. Continuous Current Rating per Point: 2.5 A ac not to exceed 1440 VA for the module.
4. Continuous Current Rating per Module: 16 A ac, 2.5 A/common.
5. LEDs to indicate the status of each I/O point.

6. Acceptable Manufacturer:

- a. Allen-Bradley 5069-OB8.
- b. No substitutions.

F. Provide taps and cables as required for connecting PLC to related devices.

G. CompactLogix devices shall be 5069 Modular CompactLogix Controller compatible.

2.03 NAMEPLATE

A. Refer to Section 26 05 53 for nameplate information requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install PLC in accordance with manufacturer's recommendations and as required to provide complete and fully functional systems.
- B. Install equipment in configuration shown in Drawings.
- C. Install I/O connections in configuration shown in Drawings and in the I/O list per Section 40 61 93.1.
- D. Install component identification and wire tags on all wiring.
- E. Hardware System Integrator shall work with the Software System Integrator to ensure PLC system including the I/O is properly working.

3.02 TESTING AND COMMISSIONING

- A. Testing shall include visual verification of enclosure, disconnect device, fused isolation transformers, terminal blocks, wiring ducts, suppression devices, etc.
- B. Verify PLC and enclosure is bonded to equipment rack or building grounding system.
- C. Verify that all connections between PLC and devices are complete.
- D. Verify that all incoming power supply matches the voltage setting for the PLC.
- E. Verify that all protective devices are set to their appropriate trip settings.
- F. Verify that all input/output devices are connected to the correct input/output points and giving the correct signals.
- G. Input devices can be manipulated to give the open and closed contact conditions and LED on the input module is observed. I/O shall also be confirmed at the HMI.

- H. Verify that loading (transferring) and testing the software operates correctly.
- I. Verify panel UPS units provides power to PLC system equipment during a utility power outage.
- J. Submit a PLC system test report including I/O commissioning test report. Test report shall be signed as completed by both the hardware integrator and software programmer.

3.03 HOUSEKEEPING

- A. Use cable management to secure cables in PLC control cabinet.
- B. Clean units as recommended by manufacturer.
- C. Redline the construction drawings to show changes made during the construction. Submit redline drawings to Owner for preparation of record drawings.

3.04 TRAINING

- A. The Contractor's Software System Integrator shall provide one-half day of training for the PLC hardware. This training shall demonstrate the manufacturer's specific requirements for installation, operation and maintenance. Refer to Section 40 68 13.

END OF SECTION

SECTION 40 66 00
NETWORK AND COMMUNICATION EQUIPMENT

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the requirements and functions of the network and communication equipment and hardware as shown on the Drawings.
- B. Contractor shall provide network and communication equipment and hardware as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- C. Contractor shall provide the following fiber network, as shown on the Drawings:
 - 1. Single mode fiber between PCP-106 and the Tulalip Tribes' fiber patch handhole.
- D. Related Work: Documents affecting work under this section includes, but is not necessarily limited to Divisions 26 and 40.
- E. Work under this section includes:
 - 1. Providing network equipment.
 - 2. Start-up and testing of the network equipment.

1.02 SUBMITTALS

- A. Submittal Procedures: Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Submit seismic anchorage hardware and installation details.
- C. Submit product data for the following:
 - 1. Ethernet Switches and Fiber Optic Modems (FOM).
 - 2. Patch cables both copper and fiber optics.
- D. Submit electronic copies of final equipment configurations (including passwords) after Substantial Completion on four USB Flash Drives.
- E. Operation and Maintenance manuals.

- F. Submit a Network Communication Equipment testing and commissioning Plan to Owner and Engineering 20 days prior to testing and commissioning.
- G. Submit a Network Communication Equipment report signed by both the hardware integrator and software programmer within 10 days of completing the testing and commissioning.

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Conform to sections of Division 26 and Division 40 during and after installation of the control and monitoring systems.
- B. Maintain area, including enclosures, free of dirt and dust during and after installation of products.

1.04 QUALITY ASSURANCE

- A. Provide enclosures, devices, components, etc., which have been listed and labeled by Underwriter's Laboratories.
- B. Equipment to be provided and installed by a business that supplies and installs/configures this equipment on a daily basis for the last 3 years.
- C. The Contractor shall coordinate fiber connections with the Tribes.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide conditioned storage for equipment and materials per manufacturer's requirements that will become part of the completed facility so that it is protected from weather, dust, water, or construction operations.

1.06 WARRANTY

- A. Refer to Section 40 61 13 for Contractor-supplied equipment warranty requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide the same make and model of all equipment and components which serve the same function within process control panels.
- B. Comply with applicable sections in Divisions 26 and 40 for equipment supplied under this section.

C. Provide network communications equipment for the pump control panel PCP-1, consisting of but not limited to the following as applicable and as shown on the Drawings:

1. Provide the following equipment:
 - a. Ethernet Switches and Fiber Optic Modems (FOM).
 - b. Network Accessories.

2.02 ETHERNET SWITCHES

A. General:

1. Provide switches from a single manufacturer.
2. Manufacturers:
 - a. MOXA.
 - b. Approved equal.

B. Unmanaged Switch:

1. Pluggable terminal blocks.
2. DIN rail mounting.
3. 100 Mbps connectivity, minimum.
4. 8 RJ-45 ports, minimum.
5. 1 SFP port, minimum, full duplex mode.
6. Voltage Input: 24 Vdc.
7. Temperature Rating: 0°C to 75°C.
8. Model: EDS-G308 Series.

2.03 FIBER MODULES

A. General: Provide small form-factor pluggable (SFP) modules compatible with site ethernet switches and fiber.

B. Provide two spares of each type of SFP module.

C. Single Mode Fiber SFP Modules:

1. SFP modules on single mode fiber shall be paired for bi-directional communication.
2. Connectors: Duplex LC.

3. 1 Gbps connectivity, minimum.
4. Temperature Rating: -40°C to 85°C.
5. Manufacturer:
 - a. MOXA SFP-1G10ALC-T paired with MOXA SFP-1G10BLC-T.
 - b. Approved equal.

2.04 NETWORK ACCESSORIES

A. Cable Management:

1. Provide vertical and horizontal cable management for entire enclosure.
2. Copper and fiber cables shall be terminated at a patch panel, and only patch cables connected to switches.
 - a. DIN rail-mounted modular industrial patch panel (MIPP).
 - b. Manufacturers: Belden, Hirschmann, Panduit, or approved equal.
3. Size cable management to handle a quantity of cable greater than or equal to double of the existing cabling.

B. Patch Cables (quantities as required):

1. Ethernet:
 - a. CAT5e.
 - b. Snagless molded connector.
 - c. Length as required.
2. Fiber Optic:
 - a. Fiber size: Refer to Section 26 05 23 for fiber optic requirements.
 - b. LC to SC connectors and as required to interface with fiber optic connectors on equipment for single mode equipment.
 - c. Length as required.

2.05 PROTOCOL CONVERTERS

- A. EtherNet/IP to Modbus RTU Interface Converter:
 - 1. Provides communications from an Ethernet/IP network to equipment on Modbus RTU connections, and visa-versa.
 - 2. Power Input: 24 VDC.
 - 3. EtherNet/IP connection: RJ-45 ethernet.
 - 4. Modbus RTU connection: DB9, serial RS-485.
 - 5. Supported protocols: TCP/IP, Modbus TCP/RTU, EtherNet/IP.
 - 6. Mounting: DIN rail.
 - 7. Manufacturers: MOXA MGate 5105-MB-EIP Series, or approved equal.

2.06 NAMEPLATE

- A. Section 26 05 53 for nameplate information requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment as shown in Drawings and in accordance with manufacturer's requirements.
- B. Connection to the Tribal network shall be overseen and scheduled with the Tribes' Network Administrator. The Tribes will provide notice of 2 weeks.
 - 1. Coordinate installation of SFP modules with Tribes.
- C. Hardware integrator shall work with the PLC software programmer to ensure the Network communications system is properly working.
- D. Touch-up and clean enclosures after the start-up and commissioning.

3.02 START-UP, TESTING, AND COMMISSIONING

- A. Start-up and testing are the responsibility of the HSI.
- B. Verify electrical connections per the Contract Drawings and panel drawings submitted by the HSI.
- C. Verify equipment indicating LED annunciators are indicating proper operations.
- D. Verify booster pump station and upper reservoir network communications.

- E. Test and verify UPS provides power to Network Communication equipment during a utility power outage and before the standby generator provides power.
- F. Submit a Network Communication System commissioning test report. Test report shall be signed by both the hardware integrator and software programmer.
- G. Provide a minimum of two 8-hour days on site to support the start-up and testing of the equipment in conjunction with the Owner's IT staff.
- H. Coordinate IP ranges with Owner's IT staff.

3.03 HOUSEKEEPING

- A. Use cable management to secure cables in enclosure.
- B. Clean units as recommended by manufacturer.
- C. Redline the construction drawings to show changes made during the construction. Submit redline drawings to the Tribes for preparation of record drawings.

3.04 TRAINING

- A. The Contractor's HSI shall provide one-half day of training for the Network hardware. This training shall demonstrate the manufacturer's specific requirements for installation, operation and maintenance. Refer to Section 40 68 13.

END OF SECTION

SECTION 40 68 13
PROCESS CONTROL SOFTWARE

PART 1 – GENERAL

1.01 SUMMARY

- A. This section defines the role of Hardware System Integrator (HSI) versus Software System Integrator (SSI) and identifies the process control software to be purchased by the Contractor's HSI.
1. The HSI is responsible for all hardware (PLCs, Control Panels, etc.) identified in this Contract and equipment required to make the hardware function as intended. This shall be a single firm prequalified by the Owner and subcontracted by the Contractor, who shall design and furnish the system, provide the instrument panels, provide the PLC, VFDs, and other electrical and controls equipment. Additional responsibilities include:
 - a. Installation and configuration of the hardware.
 - b. Configuration of the network switches.
 - c. Configuration and setting of parameters for instrumentation, valves, VFDs, and any devices needing parameters adjusted/configured to make them ready for process control and monitoring.
- B. The process control software will be installed by the Owner's designated SSI. Additional responsibilities include:
1. The SSI is responsible for loading the process control software onto the computer system hardware, programming the PLC specified in Section 40 63 43, and supporting the testing and commissioning of the process control software.
 2. Configuration of the PLC communication (IP addresses) and I/O cards for scaling parameters.
- C. SSI and HSI Qualifications:
1. Work supplied under this section and Section 40 61 13 and custom enclosures specified in Section 26 27 26 shall be provided and programmed by a single manufacturer.
 2. Software System Integrator shall be able to test, service, repair, and modify control panels where installed at the Owner's site.
 3. Panels shall be manufactured, programmed, and tested at the System Integrator's facility local to the Owner's site.
 4. Software System Integrator shall submit a resume of qualifications of the personnel who will be assigned to this project. Ten years of experience working on pump stations and sewer plant controls and instrumentation is required.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The SCADA software shall be Ignition.
- B. The PLC software shall be Allen-Bradley Studio 5000, firmware version 33.
- C. The OIT software shall be Allen-Bradley FactoryTalk View, firmware version 12.
- D. Confirm software versions with the Owner. The SSI shall provide all software needed to perform their work. The Owner is not responsible for providing software or licenses.

PART 3 – EXECUTION

3.01 CONFIGURATION AND PROGRAMMING

- A. The Software System Integrator will install, configure, and program software in the SCADA Server and SCADA Client PCs.
- B. At the time of preparing this document, the Process Control Software recommended are specified in this section. Prior to Contractor procurement of the Process Control Software, the Contractor shall submit a list of software and consult with the Engineer, the HSI, and the SSI to verify the list of software for procurement.

3.02 TESTING AND COMMISSIONING

- A. The SSI shall develop and implement the following testing and commissioning test procedure:
 - 1. Testing of the developed Process Control Software (SSI scope of work) will be performed at the same time of testing of the Process System Hardware (HSI scope of work) specified in these specifications.
 - 2. Process Control Software:
 - a. Demonstrate that each network connected device installed under this Contract is properly installed and functioning.
 - b. Demonstrate that the SCADA software installation executed under this Contract has been installed and are functioning as intended.
 - c. Demonstrate that the SCADA software is properly communicating with each I/O point on each PLC or other devices and that the field data is available at all network nodes.
 - d. Demonstrate that all displays, trends, alarms, and reports have been configured and are properly operating.

- e. Demonstrate that all real-time data is being collected as historical data and is accessible from PCs on the existing LAN.
 - f. Demonstrate that all control system configuration software is properly operating on the HMI workstation, and that the final configuration files can be uploaded, modified, and downloaded into the network attached control equipment.
 - g. Unless otherwise approved in writing, all testing shall be performed in the presence of authorized Owner personnel from both the Operations and Maintenance departments.
 - h. Test forms consisting of an itemized list of items tested and demonstrated shall be prepared by the SSI for each system/system node testing prior to scheduling of each test.
 - i. These forms shall be completed at the time of witnessed testing and signed by both the SSI and Owner personnel.
- B. The SSI shall prepare a final test report and submit it to the Owner.

3.03 TRAINING

- A. Up to 8 hours of training shall be provided by the SSI, as scheduled by the Owner.
- B. Control systems hardware and software training shall include the PLC, HMI, UPS, VFDs, and instrumentation.

END OF SECTION

This Page Intentionally Left Blank

SECTION 40 70 00

INSTRUMENTATION AND CONTROLS, GENERAL REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies general requirements for instrumentation and control (I&C) Work. Detailed requirements for specific electrical items specified in other sections are subject to the requirements of this section. The Electrical Drawings and Schedules included in the specification are functional in nature and do not specify exact locations of equipment or equipment terminations.
- B. All I&C Work included in this Contract including prefabricated assemblies shall conform to the requirements of Division 40 and as required/coordinated under other divisions.

1.02 SECTION INCLUDES

- A. The Hardware System Integrator Contractor shall be responsible for the following Work and all other I&C Work as described in these specifications and the Contract Drawings.
- B. Work Included (Refer to Drawings for detailed information):
 - 1. Fabrication and installation of a new control panel.
 - 2. Verification of connection of all instruments as shown on the Contract Drawings.
 - 3. Configuration, verification and demonstration of operability of Ethernet network. This includes termination of all RJ45 ends and fiber ST connectors.
 - 4. Assisting the Software Systems integrator with Input/Output (I/O) testing for each discrete and analog PLC I/O signal.
 - 5. Manual control testing for each piece of equipment.
 - 6. Verification of backup Float Mode (FM) control.
- C. Provide all tools, equipment, materials, and supplies and be responsible for all labor required to complete the installation, startup, and operational testing of a complete and operable Instrumentation and Control (I&C) System as indicated on the Drawings and as specified herein.
- D. Provide all the necessary equipment components and interconnections along with the services of manufacturers' engineering representatives necessary to ensure that the Owner receives a completely integrated and operational I&C system as herein specified.
- E. Provide all terminations for wiring at field mounted instruments, equipment enclosures, alarm, and status contacts.

- F. Provide all Instrumentation and Control wire required for a fully functioning Instrumentation and Controls System as shown on the Drawings and as specified in Division 26.
- G. Work Specified in Other Divisions:
 - 1. Division 26 work, including all instrumentation and controls conduit, and only that wire specified in Division 26. Refer to Division 26 Specifications for specific requirements for wire, conduit, grounding, and other electrical equipment.
- H. The Hardware Systems Integrator shall coordinate all tests and startups of all systems with the Software Systems Integrator (not in this Contract).
- I. Work excluded under Division 40 (performed by Software Systems Integrator or others, outside these Contract Documents):
 - 1. Programming of the PLC.
 - 2. Programming and integration into the Tulalip SCADA system.
 - 3. Configuration of the telemetry radio based on the site requirements.

1.03 REFERENCE STANDARDS

- A. American National Standard Institute (ANSI) Publications:
 - 1. Y14.15a Drafting Practice
 - 2. C62.1 Surge Arrestors
- B. Instrumentation Society of America (ISA) Publications:
 - 1. S5.4 Instrument Loop Diagrams
 - 2. S20 Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves

1.04 I&C SUBCONTRACTOR QUALIFICATIONS

- A. An I&C Subcontractor has demonstrated experience in purchasing, calibrating, fabricating, installing, and testing the Instrumentation and Control (I&C) products listed in this specification section. Normally, the I&C Subcontractor is a systems house regularly engaged in the business of panel fabrication, control component procurement, programmable logic controller and personal computer (PC) application in the process control industry.
- B. The I&C Subcontractor must have at least 5 years of experience in performing all aspects of the type of work specified in this section and shown on the Drawings.

1.05 I&C SUBCONTRACTOR SYSTEM RESPONSIBILITIES

- A. General: The I&C equipment as specified in this division shall be considered an integrated system. Entire system installation including calibration, verification, startup, operation testing, and training shall be performed by qualified personnel, possessing all the necessary skills and equipment, and who have had experience performing similar installations. Instrumentation and control systems drawings are diagrammatic only; it is the responsibility of the Contractor to obtain technical data, determine performance requirements, develop instrumentation detail installation designs, and coordinate the selection of specified equipment with Contractor supplied equipment to meet the design conditions stated.
- B. System Responsibilities:
1. Instrumentation and control system drawings are diagrammatic only. Obtain technical data, determine performance requirements, develop installation details and integrate I&C subcontractor supplied equipment with Contractor supplied and existing equipment where depicted on the Drawings.
 2. Compatibility: See that all components of the instrumentation system, including equipment specified under other divisions, are completely compatible and function properly as a system. Provide such additional equipment, accessories, etc., as are necessary to meet these objectives at no cost to the Owner.
 3. Coordination: For control components, devices, and systems specified in other divisions or shown on the Drawings.
 - a. Provide technical advice to and electrical contractors as necessary regarding installation of instruments.
 - b. Verify the correctness of installation of all instruments.
 - c. Verify that the proper type, size, and number of control wires are provided with the conduits.
 - d. Verify that proper electric power circuits provided for all components and systems.
 - e. Resolve all manufacturers' installation discrepancies between requirements and the detail requirements of the Drawings and Specifications.
 - f. Supervise final signal connections, both electric and optical, to all process instrumentation and control equipment.
 - g. Adjust, startup, and test all process instrumentation and control equipment.
 - h. Provide specified documentation and training.

4. Performance: While the Drawings provide sufficient information to establish the form and function of the systems and how these systems are related, the responsibility for system integration and performance rests solely with the Contractor. The Engineer provides technical instruction and guidance where needed.
5. Site and Instrument Inspection: Inspect site for conformance to Drawings, paying special attention to space allocation and dimensions shown or required on Drawings. Inspect completed work and verify that it is ready for installation of instruments and equipment. Inspect each instrument and piece of equipment for damage, defects, completeness, and correct operation before installing.
6. Field-modified control panels shall be field inspected and labeled by an accredited engineer approved by the Washington State Department of Labor and Industries.

1.06 SUBMITTALS

- A. Refer to Special Provisions and Section 26 05 11 for required method of preparation and transmittal and conform to requirements herein.
 1. The Contractor shall furnish to the Engineer for review one (1) complete submittal package including all bid items and materials necessary to complete that item of work.
 2. Upon request to Owner, long lead items may be provided in a separate submittal to facilitate project schedule.
- B. Shop Drawings:
 1. Drawings provided in the Contract shall be used for manufacture of the Pump Station control and power panels.
 2. Any required deviations for UL compliance shall be noted on the Drawings as redlines.
 3. Major panel layout deviations shall be submitted to and approved by the Engineer prior to manufacture of the panel.
 4. Deviations of the assigned I/O points shall be submitted to and approved by the Engineer prior to manufacture of the panel.
 5. All equipment listed in the Bill of Material (BOM) is listed by manufacturer part/model. Any substitutions shall be submitted and approved by the Engineer prior to purchase and manufacture of the panel.
- C. Record Drawings: Submit a revised set of shop drawings that incorporates all change orders and modifications made during performance of the work. In addition to interconnect diagrams, and elementary diagrams, submit equipment and device wiring diagrams and other drawings as necessary to depict the "as-built" condition of equipment. Include all installed field and panel conduit and piping/tubing runs and routing, supports, mounting details, interconnection diagrams with cable, wire, tube, and termination numbers. Coordinate all drawings with the conductor identification requirements in Section 26 05 53. Submit a copy of produced drawings in Adobe Acrobat (PDF) format.

- D. Operation and Maintenance Manuals: Furnish Operation and Maintenance Manuals (Manufacturer cut sheets and sales brochures are not acceptable as O&M manuals), including Instruction Manuals and Part Lists, for equipment provided under Division 40 as required by Special Provisions. Obtain data from manufacturers, and format and bind as specified. Obtain distribution method instructions from the Owner or his representative.
1. Schedule: Deliver at least two (2) copies of manuals in three-ring binders (8-1/2 by 11-inch format) not later than the equipment shipment date.
 2. Contents: Include in manuals not less than the following information, as applicable, for each instrument, equipment, subsystem and/or control loop:
 - a. General, introduction and overall description, purpose, functions, simplified theory of operations, etc.
 - b. Specifications (including equipment specification data sheet as described above under Shop Drawings), sufficiently detailed for reordering exact duplicates of the original items.
 - c. Installation instructions, procedures, sequences, tolerances, and precautions.
 - d. Operational procedures.
 - e. Shutdown procedures.
 - f. Maintenance, calibration, and repair instructions.
 - g. Parts list and spare parts recommendations.
 - h. Calibration curves, rating tables, and any other data showing the relationship of the variable inputs and the calibrated output of all measuring devices and controlled equipment.
 3. Format:
 - a. Use drawings and pictorials to illustrate the text to the extent necessary to ensure a clear, concise presentation. If manuals have been written to cover a family of similar instruments or equipment, strike out inapplicable information in a neat fashion or emphasize applicable portion by heavily weighted arrows, circles, or boxes; whichever provides the clearest and neatest presentation.
 - b. Group manuals by system control panels, including field instrumentation connected or associated with the panel. Where identical instruments are used in more than one control loop or subsystem, include only one instruction manual, per panel grouping; however, an index by tag number for all instruments shall identify its location in that manual.
 - c. Provide control loop and/or subsystem operational descriptions to identify the function of each instrument and its relation to the other instruments in the loop.

4. Binding: Bind each manual in a cover which indicates the panel or process area to which it applies, manufacturer's name, local address and telephone number, and year of purchase. Punch and bind manuals in standard three ring binders and include system name and subcontractor's name on binding.
- E. Accessory and Maintenance Materials: Submit data for the following items:
1. Special Tools and Accessories: Special tools, instruments, and accessories for maintaining instruments and equipment requiring periodic repair and adjustment as specified elsewhere herein. Also, furnish special lifting and handling devices for equipment requiring such devices.
 2. Maintenance Materials and Spare Parts: Submit a list of manufacturers recommended spare parts for each item specified. Refer to other sections of these Specifications.
- F. Test Reports: Submit the following test reports as described herein:
1. Instrument Calibration Data Sheets (paragraph 2.12).
 2. Factory Testing of Control Panels (paragraph 2.13).
- G. Demonstration and Final Operation Test Plan and Results: Submit a document that outlines all procedures to be used in final operational testing of instrument and control systems. Include a description of each system, the scope of testing, test methods and materials, testing instruments and recorders, a list of functional parameters to be recorded on each item, and marked up Contract Drawings showing temporary bypasses, jumpers, and devices. Include two columns for the Tribe's Software System Integrator for PLC and SCADA check off for all I/O new and existing.

1.07 QUALITY ASSURANCE

- A. Standard of Quality: The Contractor shall provide equipment of the types and sizes specified which has been demonstrated to operate successfully. Provide equipment which is new and of recent proven design.

1.08 DRAWINGS

- A. Drawings: The Instrumentation Drawings are diagrammatic; exact locations of instrumentation products shall be determined in the field by the Engineer. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the requirements or descriptions in this Specification shall take precedence in the event of conflict.
1. Locations of equipment, inserts, anchors, motors, panels, pull boxes, manholes, conduits, stub-ups, fittings, power and convenience outlets, and ground wells are approximate unless dimensioned; verify locations with the Engineer prior to installation. Field verify scaled dimensions on Drawings.
 2. Review the Drawings and Specification Divisions of other trades and perform the instrumentation work that will be required for the installations.

3. Should there be a need to deviate from the Instrumentation Drawings and Specifications, submit written details and reasons for all changes to the Engineer for favorable review.
4. The Drawings provide details of installation and supersede the manufacturer's recommendation where a conflict exists.

1.09 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Box, crate, or otherwise enclose and protect instruments and equipment during shipment, handling, and storage. Keep all equipment dry and covered from exposure to weather, moisture, corrosive liquids and gases or any element that could degrade the equipment. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Notify the Engineer in writing in the event that any equipment or material is damaged. Obtain prior favorable review by the Engineer before making repairs to or replacement of damaged products.

PART 2 – PRODUCTS

2.01 MATERIALS AND STANDARD SPECIFICATIONS

- A. Provide instruments, equipment, and materials suitable for service conditions and meeting standard specifications such as ANSI, ASTM International (ASTM), ISA, and SAMA. The intent of this Specification is to secure instruments and equipment of a uniform quality and manufacture throughout the plant. All instruments in the plant of the same type shall be made by the same manufacturer.

2.02 NAMEPLATES

- A. For each piece of equipment, provide a manufacturer's nameplate showing his name, location, the pertinent ratings, and the model designation.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved phenolic nameplate. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel screws. Where no inscription is indicated on the Drawings, furnish nameplates with an appropriate inscription furnished by the Engineer upon prior request by the Contractor.
- C. Each control device, including pushbuttons, control switches, and indicating lights, shall have an integral legend plate or nameplate indicating the device function. These shall be inscribed as indicated on the Drawings or as favorably reviewed by the Engineer.
- D. Provide CAUTION or SAFETY nameplates to alert operators of special conditions that may result in faulty equipment operations or locations where differing voltages may require special attention or PPE. Devices containing batteries that must be replaced periodically must be clearly identified. Nameplates are not required if the device senses and displays a low battery warning.

2.03 EQUIPMENT NAME TAGS

- A. All instrumentation and equipment items or systems shall be identified by name tags. Field equipment shall be tagged with the assigned instrumentation tag number listed on the Drawings.
- B. Name tags shall be stainless steel with engraved or stamped black characters of 3/16-inch minimum height. Tags shall be attached to equipment with a tag holder and stainless-steel band with a worm screw clamping device. Use 20-gauge stainless steel wire where banding is impractical. For field panels or large equipment cases use stainless steel screws; however, such permanent attachment shall not be on an ordinarily replaceable part.

2.04 FIELD-MOUNTED EQUIPMENT

- A. All instrument and control equipment mounted outside of protective structures shall be equipped with suitable surge arresting devices to protect the equipment from damage due to electrical transients induced in the interconnecting lines from lightning discharges or nearby electrical devices. Protective devices used on 120 Vac inputs to field mounted equipment shall be secondary valve surge protectors conforming to the requirements of ANSI C62.1.

2.05 EQUIPMENT OPERATING CONDITIONS

- A. All equipment shall be rated for normal operating performance with varying operating conditions over the following minimum ranges:
 - 1. Electrical Power: 120 Vac \pm 10%, 60 Hz, unregulated, except where specifically stated otherwise on the Drawings or in the Specifications, or when two-wire, loop-powered devices are specified.
 - 2. Field Instruments:
 - a. Outdoor Areas:
 - 1) Ambient Temperature: -10°F to +120°F.
 - 2) Ambient Relative Humidity: 5% to 100%.
 - 3) Weather: Rain and sleet.
 - b. Indoor Areas:
 - 1) Ambient Temperature: +35°F to +120°F.
 - 2) Ambient Relative Humidity: 5% to 95% non-condensing.

2.06 EQUIPMENT LOCATIONS

- A. Provide equipment and materials suitable for the types of locations as defined under Division 26. All equipment specified for field mounting shall be weatherproof and splash proof as a minimum. If electrical or electronic components are contained within the equipment, these items shall be housed in NEMA 3R gasketed cases, and NEMA 4X in corrosive locations unless noted otherwise on the Drawings or specific item specification.

2.07 ANALOG SIGNAL INDICATED UNITS

- A. For all instruments with local or remote indicators, provide indicators scaled in actual engineering units, i.e., gallons per minute, feet, psi, etc., rather than 0 to 100%, unless noted otherwise on the Drawings or Instrument Index.

2.08 SIGNAL TRANSMISSION

- A. Analog: Signal transmission between electric or electronic instruments shall be 4-20 mA and shall operate at 24 Vdc. Signal output from all transmitters and controllers shall be current regulated and shall not be affected by changes in load resistance within the unit's rating. Where practical, milliampere signals from the field shall be converted to a voltage signal at the external terminals of each panel, and all instruments within a panel shall be parallel wired.
- B. Nonstandard transmission systems such as impulse duration, pulse rate, and voltage regulated will not be permitted except where specifically noted in the PLC I/O List or shown on the Drawings. When transmitters with nonstandard outputs do occur, the output shall be converted to 4-20 mA prior to transmission.
- C. Discrete: All alarm and status signals at the PLC shall be 24 Vdc unless specified otherwise. Interposing relays may be required to interface other voltage types to the PLC 24 Vdc input requirements.

2.09 PAINTING

- A. Factory paint all instruments and equipment except where installed in pipelines or equipment has a stainless steel finish. Where instrument panels are installed adjacent to electrical control panels provided under Division 26, provide instrument panels of identical color to that of electrical control panels (unless the instrument panel is stainless steel). Repair damaged factory paint to satisfaction of the Engineer. Feathering, priming and painting shall produce a reasonable match to the surrounding paint work.

2.10 FASTENERS

- A. Fasteners for securing equipment to walls, floors, and the like shall be either hot-dip galvanized after fabrication or stainless steel. Provide stainless steel fasteners in corrosive locations. When fastening to existing walls, floors, and the like, provide capsule anchors, not expansion shields. Size capsule anchors to meet load requirements. Minimum size capsule anchor bolt is 3/8 inch.

2.11 INSTRUMENT CALIBRATION

- A. Each field instrument shall be calibrated at 0%, 25%, 50%, 75%, and 100% of span using test instruments to simulate inputs and read outputs that are rated to an accuracy of at least five times greater than the specified accuracy of the instrument being calibrated. Such test instruments have accuracies traceable to the National Institute of Standards and Technology (NIST).
- B. Submit a written report to the Engineer on each instrument. This report shall include a laboratory calibration sheet or the manufacturer's standards calibration sheet on each instrument and calibration reading as finally adjusted within tolerances.
- C. The Contractor may, at his option, choose to perform calibration on an instrument by acquiring the services of an independent test lab, or by obtaining the required test instruments and performing the calibration.

2.12 FACTORY TESTING OF CONTROL PANELS

- A. All fabricated equipment shall be tested before it leaves the factory. At the factory verify wiring continuity and equipment operation by simulating input and output.
- B. Factory testing of control panels/devices/equipment shall be accomplished. Refer to individual Specification sections for tests requiring favorable review.
- C. Upon completion of factory testing, submit a report certifying the control panels/devices/equipment are operable and meet the Specifications.
- D. A UL 508 label shall be affixed to the control panel door prior to shipment.

PART 3 – EXECUTION

3.01 MOUNTINGS

- A. Mount and install equipment as indicated. Mount field instruments on pipe mounts or other similar means in accordance with suppliers' recommendation. Where mounted in control panels, mount according to requirements of that section.
- B. Equipment specified for field mounting shall be suitable for direct pipe mounting or surface mounting, surface-mounted indicators and equipment with calibration adjustments or requiring periodic inspection shall be mounted not lower than 3 feet 6 inches nor higher than 6 feet above walkways, platforms, catwalks, and the like.
- C. Note that applicable specifications require detail drawings showing anchorage requirements for the equipment. Anchorage requirements are specified in Division 3.
- D. All devices shall be accessible to operators for servicing, operating, reading, etc. Provide permanent platforms to ensure devices are continuously accessible.

3.02 FIELD WIRING

- A. Ring out signal wiring prior to termination and perform surge withstand tests where required (see Section 26 05 11, NETA testing requirements). Verify wire number and terminations are satisfactory as designated on the Loop and Interconnect Diagrams. Verify all terminations are tight and shields are uniformly grounded at one location.

3.03 ELECTROMAGNETIC INTERFERENCE (EMI)

- A. Construction shall proceed in a manner which minimizes the introduction of noise (RFI/EMI) into the I&C System.
- B. Cross signal wires and wires carrying ac power or control signals at right angles.
- C. Separate signal wires from wires carrying ac power or switched ac/dc control signals within control panels, terminal cabinets, telemetry equipment, multiplexer cabinets, and data loggers as much as possible.

3.04 SIGNAL GROUNDING

- A. A single-point grounding system for instrument signals is required for all instrument panels. This instrument single point grounding system does not use building steel or conduit systems for its ground path.
 - 1. Ground all signal shields, signal grounds, and power supplies at an isolated signal bus within each instrument panel, rack, or enclosure. The shields at the far ends of these signal cables must be disconnected (floated) from any ground to prevent ground loops.
 - 2. Do not connect the rack or enclosure frames to the signal grounding buses.
 - 3. Connect each isolated signal ground bus within each panel using a stranded, insulated copper wire of size 6 AWG or larger directly to a system ground rod installed per the Drawings.
- B. If more than one instrument panel or rack is installed side-by-side, locate an isolated system grounding plate in one of the panels.
 - 1. Connect all the isolated signal buses in such instrument panel or rack radially to the system ground plate using a stranded, insulated copper wire of size 8 AWG or larger.
 - 2. Do not use conduit, cable raceways or building steel to distribute the grounding connections; use dedicated wires as specified above. Install a single conduit containing a #2 AWG insulated ground wire from the insulated grounding plate directly to a system ground rod installed per the Drawings. See Division 26 for conduit requirements.

3.05 PREPARATION

- A. Ensure that installation areas are clean and that concrete or masonry operations are completed prior to installing instruments and equipment. Maintain the areas in a broom-clean condition during installation operations.
- B. Panels shall be protected during construction to prevent damage to front panel devices and prevent dust accumulation in the intervals. Other protective measures (lamp, strip heaters, etc.) shall be included as weather conditions dictate.

3.06 FIELD TESTING

- A. General: The purpose of the field testing is to verify instruments are calibrated and operationally performing the intended function. Provide the services of factory trained and experienced engineers to perform verification and operational testing as prescribed below. Since the initial calibration of instruments may not satisfy the final operation of system, perform recalibration or adjust setpoints as required to satisfy the performance requirements of the system. Notify the Engineer in writing a minimum of 48 hours prior to the proposed date for commencing final operational testing and acceptance. Coordinate with the Tribe's Software System Integrator for all testing to be performed.
- B. System Verification Testing: Verify that each instrument is operating and calibrated by simulating inputs at the primary element in each system loop and verify performance at loop output devices (i.e. recorder, indicator, alarm, etc., except controllers). Simulate inputs at 0%, 25%, 50%, 75%, and 100% of span or with on-off inputs, as applicable. During system verification:
 - 1. Make initial or provisional settings on levels, alarms, etc.
 - 2. Verify controllers by observing that the final control element moves in the proper direction to correct the process variable as compared to the set point.
 - 3. Cause malfunctions to sound alarms or switch to standby to check system operation.
 - 4. Check all loop instruments thoroughly for correct operation.
 - 5. Immediately correct all defects and malfunctions disclosed by tests.
 - 6. Submit a report certifying completion of verification of each instrument system. This report shall include a data sheet on each instrument tested that indicates instrument tolerances, instrument calibration verification, data, and initial settings made to devices.
- C. Final Operational Testing: Upon completion of instrument verification, test all systems under process conditions in the presence of the Owner or designated representative. System testing shall be accomplished in accordance with an approved Test Plan. The test for each portion thereof shall be witnessed, documented, and signed off upon completion by the

Engineer. The intent of this test is to demonstrate and certify the operational interrelationship of plant instrumentation and control systems. This testing shall include, but not be limited to:

1. Making final adjustments to levels, alarms, etc.
2. Optimum tuning of controllers.
3. Checking all alarms, failure interlocks, and operational interlocks.
4. Coordination with the Tribe's Software System Integrator for verifying all computer input and outputs and computer monitors are fully functional.
5. Immediately correcting all defects and malfunctions and retesting.
6. Submit the witnessed test results and a transmittal letter indicating that all required systems have been tested satisfactorily and the systems meet all the functional requirements of the applicable specifications.

3.07 INSTRUCTION OF OWNER'S PERSONNEL

- A. Provide the services of a factory trained and field experienced instrumentation engineer to conduct group training of the Owner's designated personnel in the operation of each instrument system. This training shall be for the time period of up to five working days and shall be performed during the operational testing period. Include instruction covering basic system theory, operating principles and adjustments, routine maintenance and repair, and "hands on" operation. The text for this training shall be the Operation and Maintenance Manuals furnished under these Specifications.

END OF SECTION

This Page Intentionally Left Blank

This Page Is Intentionally Left Blank

SECTION 40 71 10

MAGNETIC FLOW METERS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section specifies products and procedures for furnishing and installing a magnetic flow meter (flow tubes and flow elements, indicators, transmitters, and accessories).
- B. The supplier shall furnish all equipment specified herein, including flow tubes, flow elements, indicators, transmitters, manufacturer-supplied interconnecting cables, and incidental materials required for proper mounting and subsequent functional installation.
- C. Provide the size as shown on the Drawings.
- D. Like items of equipment specified herein shall be the end products of one manufacturer in order to achieve standardization for operation, maintenance, spare parts, and manufacturer's services.

1.02 SUBMITTALS

- A. Refer to Section 40 70 00.
- B. Manufacturer's Certificate of Proper Installation.

1.03 QUALITY ASSURANCE

- A. Ensure that materials of construction of wetted parts are compatible with process liquid.
- B. Refer to Section 40 70 00.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment according to manufacturer's instructions.
- B. Refer to Section 40 70 00.

1.05 WARRANTY

- A. Refer to Section 40 70 00.

1.06 PERFORMANCE SUMMARY

- A. Function: Measure, indicate, and transmit the flow of a process liquid in a full pipe.
- B. Type: Electromagnetic flow meter, which uses characterized electromagnetic induction to produce a voltage linearly proportional to the average flow rate.

- C. Accuracy: System accuracy shall be within $\pm 1\%$ of actual flow rate over a fluid velocity range of 1 to 30 feet per second (fps), and within 0.01 fps for velocities less than 1 fps. Repeatability shall be 0.1% of full scale or better. System accuracy shall be traceable to NIST using prototype meters of the same configuration.
- D. Parts: Flow tube and element, transmitter, interconnecting cables, mounting hardware, and calibrator.

1.07 SERVICE

- A. Process Liquid: Wastewater. - Organic solids in aqueous suspension, 0% to 3% by weight, some organic grease, varying amounts of abrasive grit, over and ambient temperature range of -10°F to +120°F and a process temperature range of +15°F to +120°F.
- B. Electrical Classification: Class I, Group D, Division 2.
- C. Testing Laboratory Approval: Major electrical components (i.e., flow tube/flow element and indicator/transmitter) shall be approved and labeled by an acceptable electrical testing laboratory, either UL, CSAUS, NRTL, or FM for Class I, Group D, Division 2.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers and equipment shall be according to the following list, unless otherwise approved by the Owner's Representative:
 - 1. Sitrans FM MAG 5100W with remote panel mounted MAG 5000 transmitter and display.

2.02 FEATURES

- A. Zero stability feature to eliminate the need to stop flow to check zero alignment.
- B. No obstructions to flow.
- C. If an empty pipe is detected, signal shall be automatically reset to zero and resume operation upon restored flow. Also, allow a signal from the PLC to reset to zero.

2.03 PROCESS CONNECTION

- A. Meter Size: As indicated on the Drawings.
- B. Connection Type: ASME B15.5 class 150 flanges.
- C. Flange Material: Carbon steel.

2.04 SIGNAL INTERFACES

- A. Output signal shall be 4 to 20 mA DC.
- B. Scaled pulse output.
- C. Hart protocol, permitting digital communication and calibration over same 2-wire cable as 4 to 20 mA output signal.

2.05 POWER

- A. 120 V, unless otherwise noted.

2.06 ELEMENT

- A. Flow Tube/Flow Element
 - 1. Tube Material: Carbon steel ASTM A 105 with corrosion protection EN ISO 12944 grade C5 (durability up to 15 years).
 - 2. Tube Lengths: Manufacturer standard lengths.
 - 3. Liner Material: NBR Hard Rubber
 - 4. Liner Protectors: Covers on each end to protect liner during shipment.
 - 5. Electrode Material: Hastelloy C276.
 - 6. Grounding Rings or Electrodes: Hastelloy C276. Provide grounding rings/electrodes, securely mounted to ensure proper operation regardless of piping material. If grounding electrodes are provided, grounding rings shall also be provided to for liner protection. Provide grounding straps as required by the piping material and installed with the required appurtenances as needed to connect appropriately at the flow element, the associated valve vault, and the station grounding grid as recommended by the manufacturer.
 - 7. Enclosure Rating: IP68 – sensor terminations shall be potted with manufacturer potting kit.
 - 8. Flow range: 200 – 1500 gpm

2.07 INDICATOR/TRANSMITTER

- A. Display: Indicating in units of gpm and totalizing in units of gallons or gallons multiplied.
- B. Mounting: remote panel mount with manufacturer wall mounting unit.
- C. Enclosure: NEMA4X.
- D. Zero and Span: Field adjustable.

- E. Output: 4-20mA.
- F. Scaled pulse output.
- G. Indicator: LCD display.
- H. Suitable for use with any size of element.
- I. Terminations: Shall provide low power voltage to the element and shall have wiring terminals environmentally isolated from the electronics.
- J. HART protocol required.

2.08 CABLES

- A. Types: As required for empty pipe detection and as recommended by manufacturer.
- B. Lengths: As required for transmitters mounted directly to flow tubes. Refer to Plans.

2.09 CALIBRATION SYSTEM

- A. Features:
 - 1. Field programmable electronics.
 - 2. Self-diagnostics with troubleshooting codes.
 - 3. Ability to program electronics with full scale flow, engineering units, meter size, zero flow cutoff, desired signal damping, totalizer unit digit value, etc.
 - 4. Initial flow tube calibration and subsequent calibration checks.
 - 5. Transmitter shall not require factory calibration after electrode replacement and shall maintain the specified accuracy.
- B. Equipment:
 - 1. Transmitter with each flow meter provided.
 - 2. One portable calibrator required for the electromagnetic flow meter provided.

PART 3 – EXECUTION

3.01 GENERAL

- A. Work shall be performed in a workmanlike manner by craftsmen skilled in the particular trade. All work shall present a neat and finished appearance.
- B. Products shall be installed in accordance with manufacturer's written instructions.

- C. Flow meter conduit entry shall be FLEX type.
- D. Flow meters installed below grade shall have flow tube terminal boxes filled with factory-supplied, removable two-part sealing compound for submersion protection. The Contractor shall install the compound immediately after field quality control tests.
- E. For any approved substitutions, it is the responsibility of the Contractor to adhere to the requirements of the substituted equipment manufacturer's installation requirements and these specifications. If the manufacturer's installation requirements conflict with these Specifications/Drawings in such a way that may void the manufacturer's warranty, the manufacturer's requirements shall prevail.

3.02 FIELD QUALITY CONTROL

- A. Functional Test:
 - 1. Inspect magnetic flow meters for proper installation and operation by the factory supplier, with NIST traceable instrument and methods.
 - 2. Record test data for report in accordance with Section 40 70 00. Include report in the O&M manual.
 - 3. Field parameter settings shall be provided in the O&M manual.

END OF SECTION

This Page Intentionally Left Blank

SECTION 40 71 20

LEVEL INSTRUMENTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section specifies products and procedures for furnishing and installing a level instruments (float switches, level transmitters, and accessories).
- B. The supplier shall furnish all equipment specified herein, including float switches with integral cables, and a level transmitter, manufacturer-supplied interconnecting cables, and incidental materials required for proper mounting and subsequent functional installation.
- C. Provide the size as shown on the Drawings.
- D. Like items of equipment specified herein shall be the end products of one manufacturer in order to achieve standardization for operation, maintenance, spare parts, and manufacturer's services.

1.02 SUBMITTALS

- A. Refer to Section 40 70 00.
- B. Manufacturer's Certificate of Proper Installation.

1.03 QUALITY ASSURANCE

- A. Ensure that materials of construction of wetted parts are compatible with process liquid.
- B. Refer to Section 40 70 00.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment according to manufacturer's instructions.
- B. Refer to Section 40 70 00.

1.05 WARRANTY

- A. Refer to Section 40 70 00.

1.06 PERFORMANCE SUMMARY

- A. Function: Measure, indicate, and transmit the level of a process liquid in a wet well.
- B. Accuracy: System accuracy shall be within $\pm 1\%$ of actual level.
- C. Parts: Flow tube and element, transmitter, interconnecting cables, mounting hardware, and calibrator.

1.07 SERVICE

- A. Process Liquid: Wastewater. - Organic solids in aqueous suspension, 0% to 3% by weight, some organic grease, varying amounts of abrasive grit, over and ambient temperature range of -10°F to +120°F and a process temperature range of +15°F to +120°F.
- B. Electrical Classification: Class I, Group D, Division 2.
- C. Testing Laboratory Approval: Major electrical components (i.e., flow tube/flow element and indicator/transmitter) shall be approved and labeled by an acceptable electrical testing laboratory, either UL, CSAUS, NRTL, or FM for Class I, Group D, Division 2.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers and equipment shall be according to the following list, unless otherwise approved by the Owner's Representative:
 - 1. Level Transmitter shall be VEGAPULS C 23.
 - 2. Float Switches shall be Flygt – Model ENM-10.

2.02 SIGNAL INTERFACES

- 1. Level Transmitter shall be a 4 to 20 mA 2-wire arrangement 12 to 35 VDC loop powered.
- 2. Float Switches shall be rated for 250VAC at 10 amp and 24VDC at 10mA minimum to 6A maximum.

2.03 LEVEL TRANSMITTER

- A. Radar level transmitters shall have integral radar type level sensor.
- B. Transmitter range shall be 98.4 feet.
- C. Transmitter shall have an accuracy of 2 mm.
- D. Transmitter shall have automatic temperature compensation over a -40°F to 176°F range.
- E. Cable shall have sufficient length to terminate in the termination panel with 3 feet of slack.
- F. Provide stainless steel bracket for mounting.
- G. See drawings for mounting details.

2.04 FLOAT SWITCHES

- A. Float Casing Material: Polypropylene.
- B. Switch: Mechanical switch (non-mercury type) in float casing, SPDT N.C., minimum 10 A contacts rated 120 Vac.
- C. Bulb Shape: Pear.
- D. Cable: NBR/PVC with sufficient length to terminate in the termination panel with 3 feet of slack.
- E. Actuation Point: Maximum angle of 20° above, 10° below horizontal, or 1 inch above/below horizontal.
- F. Provide switch cables of suitable lengths for the individual installations. Consult the Drawings for applications and ranges. The Contractor shall verify each float cable length requirement and provide cable lengths with the float switch product submittal data.
- G. Approval: ATEX/IECEX.

PART 3 – EXECUTION

3.01 GENERAL

- A. Work shall be performed in a workmanlike manner by craftsmen skilled in the particular trade. All work shall present a neat and finished appearance.
- B. Products shall be installed in accordance with manufacturer's written instructions.
- C. The level transmitter shall be installed a minimum distance of 12 inches from the wall of the wet well and mounted as close to the top as possible while allowing for replacing the sensor. All mounting hardware and fasteners shall be stainless steel.

3.02 FIELD QUALITY CONTROL

- A. Functional Test:
 - 1. Inspect float switches and level transmitter for proper installation and operation by the factory supplier, with NIST traceable instrument and methods.
 - 2. Verify and record transmitter signal and float trip settings to within 0.2 inches by gradually raising the water level in the wet well and measuring down to the water surface. Record the range of the transmitter from 1.00 feet of water depth to 10.00 feet of water depth along with the corresponding 4 – 20 mA signal. Record the float switch trip point and adjust as necessary to match the required levels to within 0.2 inches.

3. Record test data for report in accordance with Section 40 70 00. Include report in the O&M manual.
4. Field parameter settings shall be provided in the O&M manual.

END OF SECTION

SECTION 40 71 30

PRESSURE INSTRUMENTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This section specifies products and procedures for furnishing and installing pressure instruments (pressure gage, seal, pressure transmitter, and accessories).
- B. The supplier shall furnish all equipment specified herein, including tubing, piping, isolation diagram, mounting plate, transmitters, manufacturer-supplied interconnecting cables, and incidental materials required for proper mounting and subsequent functional installation.
- C. Provide as shown on the Drawings.

1.02 SUBMITTALS

- A. Refer to Section 40 70 00.
- B. Manufacturer's Certificate of Proper Installation.

1.03 QUALITY ASSURANCE

- A. Ensure that materials of construction of wetted parts are compatible with process liquid.
- B. Refer to Section 40 70 00.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment according to manufacturer's instructions.
- B. Refer to Section 40 70 00.

1.05 WARRANTY

- A. Refer to Section 40 70 00.

1.06 PERFORMANCE SUMMARY

- A. Function: Measure, indicate, and transmit the pressure of a process liquid in a full pipe.

1.07 SERVICE

- A. Process Liquid: Wastewater. - Organic solids in aqueous suspension, 0% to 3% by weight, some organic grease, varying amounts of abrasive grit, over and ambient temperature range of -10°F to +120°F and a process temperature range of +15°F to +120°F.
- B. Electrical Classification: Class I, Group D, Division 2.

- C. Testing Laboratory Approval: Major electrical components (transmitter) shall be approved and labeled by an acceptable electrical testing laboratory, either UL, CSAUS, NRTL, or FM for Class I, Group D, Division 2.

PART 2 – PRODUCTS

2.01 PRESSURE GAGES

- A. Shall be Ashcroft.
- B. Range shall be 0 – 60 psig.
- C. Dial Size shall be 4.5 inches in diameter.
- D. Tube and sockets shall be 316L stainless steel.
- E. Case shall be polybutylene terephthalate (PBT).
- F. Window shall be an acrylic lens.
- G. Accuracy shall be plus or minus 0.5% of span.
- H. Connection shall be 0.5 inch male national pipe thread lower mount.
- I. Gage shall be isolated with a ball valve.
- J. Gage shall be liquid filled with glycerin.
- K. See drawings for mounting details.

2.02 DIAPHRAGM SEAL

- A. Shall be Ashcroft 80 Wafer Isolation Ring.
- B. Pressure rating 200 psig minimum.
- C. Body shall be stainless steel and lining shall be Buna-N rubber.
- D. Fasteners shall be 316 stainless steel.
- E. Connections shall be 0.5 inch female national pipe thread.
- F. Assemble shall be liquid filled with distilled water.
- G. See drawings for mounting details.

2.03 PRESSURE TRANSMITTER

- A. Pressure transmitter shall be UNIK Series 5000 transmitters by Druck.
- B. Material shall be 316L stainless steel.
- C. The electrical connection shall be polyurethane cable with 50 feet of length sufficient to extend to termination panel.
- D. Transmitter shall be a 4 to 20 mA 2-wire arrangement.
- E. Transmitter range shall be 0 to 100 psig.
- F. Transmitter shall be temperature compensated over a range of 14°F to 122°F.
- G. Transmitter shall have an accuracy of plus or minus 0.04% of full range, calibrated at room temperature.
- H. The transmitter shall have a wet 0.25 inch female national pipe taper end connection.
- I. The transmitter shall have gage reference.
- J. See drawings for mounting details.

PART 3 – EXECUTION

3.01 GENERAL

- A. Work shall be performed in a workmanlike manner by craftsmen skilled in the particular trade. All work shall present a neat and finished appearance.
- B. Products shall be installed in accordance with manufacturer's written instructions.
- C. Pressure transmitter cable shall be factory installed and extend to the above grade termination panel approximately 50 feet distant. Contractor shall verify length required.
- D. Fill tubing and gage with glycerin above the diaphragm isolator.
- E. For any approved substitutions, it is the responsibility of the Contractor to adhere to the requirements of the substituted equipment manufacturer's installation requirements and these specifications. If the manufacturer's installation requirements conflict with these Specifications/Drawings in such a way that may void the manufacturer's warranty, the manufacturer's requirements shall prevail.

3.02 FIELD QUALITY CONTROL

A. Functional Test:

1. Inspect pressure instrumentation for proper installation and operation with NIST traceable instrument and methods.
2. Record test data for report in accordance with Section 40 70 00. Include report in the O&M manual.
3. Field parameter settings shall be provided in the O&M manual.

END OF SECTION

SECTION 40 78 00
PANEL-MOUNTED INSTRUMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the requirements and functions of the panel mounted instrumentation and controls.
- B. Contractor shall provide panel mounted instrumentation and control, as specified herein, the Drawings, and as needed for a complete and proper installation.
- C. Refer to Division 26 for relays.

1.02 REFERENCED STANDARDS

<u>Reference</u>	<u>Title</u>
NEMA 250	Enclosures for Electrical Equipment (1,000 volts maximum)
NEMA ICS 1	Industrial Controls and Systems: General Requirements
NEMA ICS 2	Industrial Controls and Systems: Controllers, Contactors, and Overload Relays, Rated 600 Volts AC
NEMA KS 1	Enclosed and Miscellaneous Distribution Equipment Switches (600 volts maximum)

1.03 SUBMITTALS

- A. The information described in this section and in Section 40 61 13, paragraph 1.05, shall be submitted to the Engineer.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 26 05 11, "Basic Electrical Methods and Materials."

1.05 SPARE MATERIAL

- A. None.

1.06 SEISMIC ANCHORAGE AND STRUCTURAL DATA

- A. Refer to Section 40 61 13.

1.07 WARRANTY

- A. Refer to Section 40 61 13 for Contractor-supplied equipment warranty requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide panel mounted instrumentation and control equipment of manufacturer and model as specified in the Drawings.
- B. Products shall be classified for the following locations, unless otherwise specified. Where more than one of the below conditions applies, equipment shall be dual rated:
 - 1. Indoor Locations: NEMA 12.
 - 2. Outdoor Locations: NEMA 4X.
 - 3. Corrosive Areas: Nonmetallic NEMA 4X.
 - 4. Hazardous Areas: NEMA 7.

2.02 CONTROL DEVICES

- A. Pushbuttons:
 - 1. 30.5 mm flush head, heavy-duty, with NEMA rating to match enclosure type.
 - 2. Operators: Red for stop functions and black for all other functions.
 - 3. Provide pushbuttons designated “Lock-Out-Stop” (LOS) with a padlockable attachment to maintain the device in a depressed (stop or open) position.
 - 4. Escutcheon (nameplate) legend as specified on the Drawings.
 - 5. Unless otherwise specified, use momentary contact type.
 - 6. Contact Blocks:
 - a. NEMA ICS 2 designation A600 except when switching circuits monitored by programmable controllers or other solid-state circuits.
 - b. Hermetically sealed, logic-read type.
 - c. Acceptable Manufacturer:
 - 1) Siemens.
 - 2) Square D.
 - 3) Or approved equal.

B. Selector Switches:

1. 30.5 mm heavy-duty, with NEMA rating to match enclosure type.
2. Unless otherwise indicated, contact blocks and number of positions as required to perform the specified operations.
3. Contact Blocks: Rated as specified in this section.
4. Escutcheon Legend: As indicated on the Drawings.
5. Acceptable Manufacturer: Where solid state loads are switched, and the indicated contact development cannot be obtained with logic-read type contacts:
 - a. Siemens.
 - b. Square D.
 - c. Or approved equal.

C. Indicating Lights:

1. Indicating Lights: 5 to 6 Vdc light emitting diodes (LEDs) with autotransformer and push-to-test feature.
2. Testing: As a group using a common lamp test button.
3. Indicating Light Colors: Per Drawings.
4. Heavy-duty, with NEMA rated socket/wiring to match enclosure type.

D. Control Stations:

1. Pushbuttons: Protective Hypalon boots.
2. When indicating lights are specified, size to accommodate the transformer type lights.
3. Acceptable Manufacturer:
 - a. Siemens.
 - b. Square D.
 - c. Or approved equal.

2.03 MAGNETIC CONTACTORS

A. Lighting Contactors:

1. Electrically held contactors used to switch current to incandescent filament, fluorescent and high intensity discharge lamp loads.

2. Rated 600 V AC, 60 hertz.
3. Coil Voltage Contact Rating and Number of Phase: As specified.

B. Motor Contactors:

1. Designed for continuous operation of induction motors at 600 volts or less at 60 Hz and comply with NEMA ICS 2-321.
2. Minimum Contactor Size: Unless otherwise indicated, NEMA size 1.
3. Supply the contactor with a normally open auxiliary contact for use as a hold-in contact as a minimum. Provide additional contacts as indicated.
4. Additional contacts as needed.
5. The coil voltage, frequency, and number of poles to be as specified.

2.04 INSTRUMENTATION

A. Temperature Transmitters:

1. Designed for temperature sensing and transmitting within control panels.
2. Mounting: DIN rail.
3. Voltage: loop-powered.
4. Output: 4-20 mA 2-wire.
5. Temperature Range: 0 to 160° F.
6. Manufacturers: Automation Direct, Phoenix Contact, or approved equal.

B. Intrusion Limit Switches:

1. Pre-wired limit switches designed for control panels and hatches.
2. Snap-action, single-pole double-throw (SPDT), normally closed relay contacts.
3. Voltage input: 24VDC.
4. Factory sealed in an IP65 enclosure.
5. UL Listed.
6. Manufacturers: Honeywell, Square D, or approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Mount control stations, contactors, and safety disconnect switches 48 inches above finished floor.
- B. Mount safety devices per manufacturer recommendations, locations per the Drawings.

3.02 FIELD CHECKOUT AND TESTING

- A. Checkout each miscellaneous electrical device for:
 - 1. Proper mounting.
 - 2. Proper interconnections.
 - 3. Absence of shorts and grounds.
 - 4. Proper function of motor start and control equipment.
 - 5. Power supply.
 - 6. Field devices.
- B. Checkout Systems:
 - 1. Proper interconnections.
 - 2. Absence of shorts and grounds.
- C. Field Testing: To be provided as part of the system and operational testing:
 - 1. Test all products per Section 40 61 13.

END OF SECTION

This Page Intentionally Left Blank

Appendix A

Davis-Bacon Wages

"General Decision Number: WA20240001 05/24/2024
 Superseded General Decision Number: WA20230001
 State: Washington
 Construction Type: Highway
 Counties: Washington Statewide.
 HIGHWAY (Excludes D.O.E. Hanford Site in Benton and Franklin
 Counties)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	02/02/2024
3	03/08/2024
4	05/24/2024

CARP0003-006 06/01/2021

SOUTHWEST WASHINGTON: CLARK, COWLITZ, KLICKITAT, LEWIS (Piledriver only), PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to Willapa Bay to the Pacific Ocean), SKAMANIA, and WAHKIAKUM Counties.

	Rates	Fringes
Carpenters:		
CARPENTERS.....	\$ 44.38	16.87
DIVERS TENDERS.....	\$ 49.09	16.87
DIVERS.....	\$ 93.09	16.87
DRYWALL.....	\$ 44.38	16.87
MILLWRIGHTS.....	\$ 46.89	16.87
PILEDRIVERS.....	\$ 44.97	16.87

DEPTH PAY:
 50 TO 100 FEET \$1.00 PER FOOT OVER 50 FEET
 101 TO 150 FEET \$1.50 PER FOOT OVER 101 FEET
 151 TO 200 FEET \$2.00 PER FOOT OVER 151 FEET

Zone Differential (Add up Zone 1 rates):
 Zone 2 - \$0.85
 Zone 3 - 1.25
 Zone 4 - 1.70
 Zone 5 - 2.00
 Zone 6 - 3.00

BASEPOINTS: ASTORIA, LONGVIEW, PORTLAND, THE DALLES, AND VANCOUVER, (NOTE: All dispatches for Washington State Counties: Cowlitz, Wahkiakum and Pacific shall be from Longview Local #1707 and mileage shall be computed from that point.)

ZONE 1: Projects located within 30 miles of the respective city hall of the above mentioned cities
 ZONE 2: Projects located more than 30 miles and less than 40 miles of the respective city of the above mentioned cities
 ZONE 3: Projects located more than 40 miles and less than 50 miles of the respective city of the above mentioned cities
 ZONE 4: Projects located more than 50 miles and less than 60 miles of the respective city of the above mentioned cities.
 ZONE 5: Projects located more than 60 miles and less than 70 miles of the respective city of the above mentioned cities
 ZONE 6: Projects located more than 70 miles of the respected city of the above mentioned cities

 CARP0030-004 06/01/2021

CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM Counties

	Rates	Fringes
CARPENTER		
BRIDGE CARPENTERS.....	\$ 49.18	19.01
CARPENTERS ON CREOSOTE		
MATERIAL.....	\$ 47.02	19.01
CARPENTERS.....	\$ 49.18	19.01
DIVERS TENDER.....	\$ 54.54	19.01
DIVERS.....	\$ 103.43	19.01
MILLWRIGHT AND MACHINE		
ERECTORS.....	\$ 50.68	19.01
PILEDRIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED		
MATERIAL, ALL PILING.....	\$ 49.58	19.01

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - ALL CLASSIFICATIONS EXCEPT MILLWRIGHTS AND PILEDRIERS)

Hourly Zone Pay shall be paid on jobs located outside of the free zone computed from the city center of the following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay:

0 -25 radius miles	Free
26-35 radius miles	\$1.00/hour
36-45 radius miles	\$1.15/hour
46-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - MILLWRIGHT AND PILEDRIVER ONLY)

Hourly Zone Pay shall be computed from Seattle Union Hall, Tacoma City center, and Everett City center

Zone Pay:

0 -25 radius miles	Free
26-45 radius miles	\$.70/hour
Over 45 radius miles	\$1.50/hour

 CARP0059-002 06/01/2019

ADAMS, ASOTIN, BENTON, CHELAN (East of 120th meridian), COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT (East of 120th meridian), KITTITAS (East of 120th meridian), LINCOLN, OKANOGAN (East of 120th meridian), PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN, and YAKIMA (East of 120th meridian) Counties

	Rates	Fringes
CARPENTER		
GROUP 1.....	\$ 35.47	16.88
GROUP 2.....	\$ 47.42	18.96
GROUP 3.....	\$ 36.66	16.88
GROUP 4.....	\$ 36.66	16.88
GROUP 5.....	\$ 83.96	16.88
GROUP 6.....	\$ 40.23	16.88
GROUP 7.....	\$ 41.23	16.88
GROUP 8.....	\$ 37.66	16.88
GROUP 9.....	\$ 44.23	16.88

CARPENTER & DIVER CLASSIFICATIONS:

GROUP 1: Carpenter

GROUP 2: Millwright, Machine Erector

GROUP 3: Piledriver - includes driving, pulling, cutting, placing collars, setting, welding, or creosote treated material, on all piling

GROUP 4: Bridge, Dock, and Wharf carpenters

GROUP 5: Diver Wet

GROUP 6: Diver Tender, Manifold Operator, ROV Operator

GROUP 7: Diver Standby

GROUP 8: Assistant Diver Tender, ROV Tender/Technician

GROUP 9: Manifold Operator-Mixed Gas

ZONE PAY:

ZONE 1	0-45 MILES	FREE
ZONE 2	45-100	\$4.00/PER HOUR
ZONE 3	OVER 100 MILES	\$6.00/PER HOUR

DISPATCH POINTS:

CARPENTERS/MILLWRIGHTS: PASCO (515 N Neel Street) or Main Post Office of established residence of employee (Whichever is closest to the worksite).

CARPENTERS/PILEDRIIVER: SPOKANE (127 E. AUGUSTA AVE.) or Main Post Office of established residence of employee (Whichever is closest to the worksite).

CARPENTERS: WENATCHEE (27 N. CHELAN) or Main Post Office of established residence of employee (Whichever is closest to the worksite).

CARPENTERS: COEUR D' ALENE (1839 N. GOVERNMENT WAY) or Main Post Office of established residence of employee (Whichever is closest to the worksite).

CARPENTERS: MOSCOW (306 N. JACKSON) or Main Post Office of established residence of employee (Whichever is closest to the worksite).

DEPTH PAY FOR DIVERS BELOW WATER SURFACE:

50-100 feet	\$2.00 per foot
101-150 feet	\$3.00 per foot
151-220 feet	\$4.00 per foot
221 feet and deeper	\$5.00 per foot

PREMIUM PAY FOR DIVING IN ENCLOSURES WITH NO VERTICAL ASCENT:

0-25 feet	Free
26-300 feet	\$1.00 per Foot

SATURATION DIVING:

The standby rate applies until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. the diver rate shall be paid for all saturation hours.

WORK IN COMBINATION OF CLASSIFICATIONS:

Employees working in any combination of classifications within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

HAZMAT PROJECTS:

Anyone working on a HAZMAT job (task), where HAZMAT certification is required, shall be compensated at a premium, in addition to the classification working in as follows:

LEVEL D + \$.25 per hour - This is the lowest level of protection. No respirator is used and skin protection is minimal.

LEVEL C + \$.50 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B + \$.75 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit".

LEVEL A +\$1.00 per hour - This level utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line.

 CARP0770-003 06/01/2021

WEST OF 120TH MERIDIAN FOR THE FOLLOWING COUNTIES:
 CHELAN, DOUGLAS, GRANT, KITTITAS, OKANOGAN, and YAKIMA

	Rates	Fringes
CARPENTER		
CARPENTERS ON CREOSOTE		
MATERIAL.....	\$ 47.02	19.01
CARPENTERS.....	\$ 49.18	19.01
DIVERS TENDER.....	\$ 54.54	19.01
DIVERS.....	\$ 103.43	19.01
MILLWRIGHT AND MACHINE		
ERECTORS.....	\$ 50.68	19.01
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED		
MATERIAL, ALL PILING.....	\$ 49.58	19.01

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - ALL CLASSIFICATIONS EXCEPT MILLWRIGHTS AND PILEDRIIVERS

Hourly Zone Pay shall be paid on jobs located outside of the free zone computed from the city center of the following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay:

0 -25 radius miles	Free
26-35 radius miles	\$1.00/hour
36-45 radius miles	\$1.15/hour
46-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - MILLWRIGHT AND PILEDRIVER ONLY)

Hourly Zone Pay shall be computed from Seattle Union Hall, Tacoma City center, and Everett City center

Zone Pay:

0 -25 radius miles	Free
26-45 radius miles	\$.70/hour
Over 45 radius miles	\$1.50/hour

 ELEC0046-001 08/07/2023

CALLAM, JEFFERSON, KING AND KITSAP COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 76.99	28.60
ELECTRICIAN.....	\$ 69.99	28.39

 * ELEC0048-003 01/01/2024

CLARK, KLICKITAT AND SKAMANIA COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 44.22	21.50
ELECTRICIAN.....	\$ 60.50	28.64

HOURLY ZONE PAY:

Hourly Zone Pay shall be paid on jobs located outside of the free zone computed from the city center of the following listed cities:

Portland, The Dalles, Hood River, Tillamook, Seaside and Astoria

Zone Pay:

- Zone 1: 31-50 miles \$1.50/hour
- Zone 2: 51-70 miles \$3.50/hour
- Zone 3: 71-90 miles \$5.50/hour
- Zone 4: Beyond 90 miles \$9.00/hour

*These are not miles driven. Zones are based on Delorme Street Atlas USA 2006 plus.

 ELEC0048-029 01/01/2024

COWLITZ AND WAHKIAKUM COUNTY

	Rates	Fringes
CABLE SPLICER.....	\$ 44.22	21.50
ELECTRICIAN.....	\$ 60.50	28.64

 ELEC0073-001 08/01/2023

ADAMS, FERRY, LINCOLN, PEND OREILLE, SPOKANE, STEVENS, WHITMAN COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 34.10	16.68
ELECTRICIAN.....	\$ 47.55	16.03

 ELEC0076-002 02/02/2024

GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE, AND THURSTON COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 64.38	25.64
ELECTRICIAN.....	\$ 58.53	25.47

 ELEC0112-005 06/01/2022

ASOTIN, BENTON, COLUMBIA, FRANKLIN, GARFIELD, KITTITAS, WALLA WALLA, YAKIMA COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 54.34	24.26
ELECTRICIAN.....	\$ 51.75	24.18

ELEC0191-003 06/01/2022

ISLAND, SAN JUAN, SNOHOMISH, SKAGIT AND WHATCOM COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 44.23	17.73
ELECTRICIAN.....	\$ 53.20	27.51

ELEC0191-004 06/01/2018

CHELAN, DOUGLAS, GRANT AND OKANOGAN COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 40.82	17.63
ELECTRICIAN.....	\$ 42.45	21.34

ENGI0302-003 06/01/2023

CHELAN (WEST OF THE 120TH MERIDIAN), CLALLAM, DOUGLAS (WEST OF THE 120TH MERIDIAN), GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, KITTITAS, MASON, OKANOGAN (WEST OF THE 120TH MERIDIAN), SAN JUNA, SKAGIT, SNOHOMISH, WHATCOM AND YAKIMA (WEST OF THE 120TH MERIDIAN) COUNTIES

Zone 1 (0-25 radius miles):

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1A.....	\$ 54.93	25.57
Group 1AA.....	\$ 55.75	25.57
Group 1AAA.....	\$ 56.54	25.57
Group 1.....	\$ 54.13	25.57
Group 2.....	\$ 53.42	25.57
Group 3.....	\$ 52.83	25.57
Group 4.....	\$ 49.40	25.57

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) - \$1.00

Zone 3 (Over 45 radius miles) - \$1.30

BASEPOINTS: Aberdeen, Bellingham, Bremerton, Everett, Kent, Mount Vernon, Port Angeles, Port Townsend, Seattle, Shelton, Wenatchee, Yakima

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-over 300 tons, or 300 ft of boom
(including jib with attachments)

GROUP 1AA - Cranes 200 to 300 tons, or 250 ft of boom (including jib with attachments); Tower crane over 175 ft in height, base to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons, under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader- overhead 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self propelled 45 yards and over; Slipform pavers; Transporters, all truck or track type

GROUP 2 - Barrier machine (zipper); Batch Plant Operaor-Concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-overhead, bridge type-20 tons through 44 tons; Chipper; Concrete Pump-truck mount with boom attachment; Crusher; Deck Engineer/Deck Winches (power); Drilling machine; Excavator, shovel, backhoe-3yards and under; Finishing Machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders-overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics-all; Mixers-asphalt plant; Motor patrol graders-finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrade trimmer; Tractors, backhoes-over 75 hp; Transfer material service machine-shuttle buggy, blaw knox-roadtec; Truck crane oiler/driver-100 tons and over; Truck Mount portable conveyor; Yo Yo Pay dozer

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; A-frame crane over 10 tons; Drill oilers-auger type, truck or crane mount; Dozers-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loader-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler- asphalt, crusher; Pumps-concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrpers-concrete and carry-all; Service engineer-equipment; Trenching machines; Truck Crane Oiler/Driver under 100 tons; Tractors, backhoe 75 hp and under

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete finish machine-laser screed; Cranes-A frame-10 tons and under; Elevator and Manlift-permanent or shaft type; Gradechecker, Stakehop; Forklifts under 3000 lbs. with attachments; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger, mechanical; Power plant; Pumps, water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

HANDLING OF HAZARDOUS WASTE MATERIALS:

Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not outfitted with protective clothing

H-2 Class "C" Suit - Base wage rate plus \$.25 per hour.

H-3 Class "B" Suit - Base wage rate plus \$.50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$.75 per hour.

ENGI0370-002 06/01/2021

ADAMS, ASOTIN, BENTON, CHELAN (EAST OF THE 120TH MERIDIAN), COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN (EAST OF THE 120TH MERIDIAN), PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA (EAST OF THE 120TH MERIDIAN) COUNTIES

ZONE 1:

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 29.76	20.65
GROUP 2.....	\$ 30.08	20.65
GROUP 3.....	\$ 30.69	20.65
GROUP 4.....	\$ 30.85	20.65
GROUP 5.....	\$ 31.01	20.65
GROUP 6.....	\$ 31.21	20.65
GROUP 7.....	\$ 31.56	20.65
GROUP 8.....	\$ 32.66	20.65

ZONE DIFFERENTIAL (Add to Zone 1 rate): Zone 2 - \$2.00

Zone 1: Within 45 mile radius of Spokane, Pasco, Washington; Lewiston, Idaho

Zone 2: Outside 45 mile radius of Spokane, Pasco, Washington; Lewiston, Idaho

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors (under 2000 CFM, gas, diesel, or electric power); Deck Hand; Fireman & Heater Tender; Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade, including seal and chip coatings (farm type, Case, John Deere & similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Welding Machine; Crane Oiler-Driver (CLD required) & Cable Tender, Mucking Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks (pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums); Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending Machine; Bob Cat (Skid Steer); Boring Machine (earth); Boring Machine (rock under 8 inch bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumor, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Dozer/Tractor (up to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond); Equipment Serviceman; Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Plant Machine; Trenching Machines (under 7 ft. depth capacity); Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8 inch bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe & Hoe Ram (under 3/4 yd.); Carrydeck & Boom Truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline; Derricks & Stifflegs (under 65 tons); Drilling Equipment (8 inch bit & over) (Robbins, reverse circulation & similar); Hoe Ram; Piledriving Engineers; Paving (dual drum); Railroad Track Liner Operatoer (self-propelled); Refrigeration Plant Engineer (1000 tons & over); Signalman (Whirleys, Highline Hammerheads or similar); Grade Checker

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers) (Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoe (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (motor patrol & attachments); Cable Controller (dispatcher); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons, to and including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle & Screening Plant Operator; Dozer, 834 R/T & similar; Drill Doctor; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Rollerman (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all, rubber-tired; Screed Operator; Shovel (under 3 yds.); Trenching Machines (7 ft. depth & over); Tug Boat Operator Vector guzzler, super sucker; Lime Batch Tank Operator (REcycle Train); Lime Brain Operator (Recycle Train); Mobile Crusher Operator (Recycle Train)

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds & over); Blade (finish & bluetop) Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Concrete Cleaning/Decontamination machine operator; Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell and dragline; Derricks & Stiffleys (65 tons & over); Elevating Belt (Holland type); Heavy equipment robotics operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Whirleys & Hammerheads, ALL; H.D. Mechanic; H.D. Welder; Hydraulic Platform Trailers (Goldhofer, Shaurerly and Similar); Ultra High Pressure Waterjet Cutting Tool System Operator (30,000 psi); Vacuum Blasting Machine Operator

GROUP 8: Cranes (85 tons and over, and all climbing, overhead, rail and tower), all attachments including clamshell, dragline; Loaders (overhead and front-end, 10 yards and over); Helicopter Pilot

BOOM PAY: (All Cranes, Including Tower)
 180 ft to 250 ft \$.50 over scale
 Over 250 ft \$.80 over scale

NOTE:

In computing the length of the boom on Tower Cranes, they shall be measured from the base of the Tower to the point of the boom.

HAZMAT:

Anyone working on HAZMAT jobs, working with supplied air shall receive \$1.00 an hour above classification.

 ENGI0612-001 06/01/2023

PIERCE County

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH GROUP SHALL BE 90% OF THE BASE RATE PLUS FULL FRINGE BENEFITS. ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

Zone 1 (0-25 radius miles):

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1A.....	\$ 56.08	25.07
GROUP 1AA.....	\$ 56.89	25.07
GROUP 1AAA.....	\$ 57.70	25.07
GROUP 1.....	\$ 55.26	25.07
GROUP 2.....	\$ 54.55	25.07
GROUP 3.....	\$ 53.94	25.07
GROUP 4.....	\$ 50.50	25.07

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) = \$1.00

Zone 3 (Over 45 radius miles) - \$1.30

BASEPOINTS: CENTRALIA, OLYMPIA, TACOMA

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1 AAA - Cranes-over 300 tons or 300 ft of boom
(including jib with attachments)

GROUP 1AA - Cranes- 200 tonsto 300 tons, or 250 ft of boom
(including jib with attachments; Tower crane over 175 ft in
height, bas to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom
(including jib with attachments); Crane-overhead, bridge
type, 100 tons and over; Tower crane up to 175 ft in height
base to boom; Loaders-overhead, 8 yards and over; Shovels,
excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons under 150 ft
of boom (including jib with attachments); Crane-overhead,
bridge type, 45 tons thru 99 tons; Derricks on building
work; Excavator, shovel, backhoes over 3 yards and under 6
yards; Hard tail end dump articulating off-road equipment
45 yards and over; Loader- overhead, 6 yards to, but not
including, 8 yards; Mucking machine, mole, tunnel, drill
and/or shield; Quad 9 HD 41, D-10; Remote control operator
on rubber tired earth moving equipment; Rollagon; Scrapers-
self-propelled 45 yards and over; Slipform pavers;
Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-
concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with
attachments; Crane-Overhead, bridge type, 20 tons through
44 tons; Chipper; Concrete pump-truck mount with boom
attachment; Crusher; Deck engineer/deck winches (power);
Drilling machine; Excavator, shovel, backhoe-3 yards and
under; Finishing machine, Bidwell, Gamaco and similar
equipment; Guardrail punch; Loaders, overhead under 6
yards; Loaders-plant feed; Locomotives-all; Mechanics- all;
Mixers, asphalt plant; Motor patrol graders, finishing;
Piledriver (other than crane mount); Roto-mill, roto-
grinder; Screedman, spreader, topside operator-Blaw Knox,
Cedar Rapids, Jaeger, Caterpillar, Barbar Green;
Scraper-self- propelled, hard tail end dump, articulating
off-road equipment- under 45 yards; Subgrader trimmer;
Tractors, backhoe over 75 hp; Transfer material service
machine-shuttle buggy, Blaw Knox- Roadtec; Truck Crane
oiler/driver-100 tons and over; Truck Mount Portable
Conveyor; Yo Yo pay

GROUP 3 - Conveyors; Cranes through 19 tons with attachments; Crane-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozer-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside Hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler- asphalt, crusher; Pump-Concrete; Roller, plant mix or multi-lfit materials; Saws-concrete; Scrapers, concrete and carry all; Service engineers-equipment; Trenching machines; Truck crane oiler/driver under 100 tons; Tractors, backhoe under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes A-frame 10 tons and under; Elevator and manlift (permanent and shaft type); Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger-mechanical; Power plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not outfitted with protective clothing, Class "D" Suit - Base wage rate plus \$.50 per hour.

H-2 Class "C" Suit - Base wage rate plus \$1.00 per hour.

H-3 Class "B" Suit - Base wage rate plus \$1.50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$2.00 per hour.

 ENGI0612-012 06/01/2023

LEWIS, PACIFIC (portion lying north of a parallel line extending west from the northern boundary of Wahkaikum County to the sea) AND THURSTON COUNTIES

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH GROUP SHALL BE 90% OF THE BASE RATE PLUS FULL FRINGE BENEFITS. ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

Zone 1 (0-25 radius miles):

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1A.....	\$ 54.85	25.07
GROUP 1AA.....	\$ 55.67	25.07
GROUP 1AAA.....	\$ 56.45	25.07
GROUP 1.....	\$ 54.05	25.07
GROUP 2.....	\$ 53.36	25.07
GROUP 3.....	\$ 52.75	25.07
GROUP 4.....	\$ 49.36	25.07

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) = \$1.00

Zone 3 (Over 45 radius miles) - \$1.30

BASEPOINTS: CENTRALIA, OLYMPIA, TACOMA

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1 AAA - Cranes-over 300 tons or 300 ft of boom
 (including jib with attachments)

GROUP 1AA - Cranes- 200 tonsto 300 tons, or 250 ft of boom
 (including jib with attachments; Tower crane over 175 ft in height, bas to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom
 (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader- overhead, 6 yards to, but not including, 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9 HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled 45 yards and over; Slipform pavers; Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-Overhead, bridge type, 20 tons through 44 tons; Chipper; Concrete pump-truck mount with boom attachment; Crusher; Deck engineer/deck winches (power); Drilling machine; Excavator, shovel, backhoe-3 yards and under; Finishing machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Loaders, overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics- all; Mixers, asphalt plant; Motor patrol graders, finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self-propelled, hard tail end dump, articulating off-road equipment- under 45 yards; Subgrader trimmer; Tractors, backhoe over 75 hp; Transfer material service machine-shuttle buggy, Blaw Knox- Roadtec; Truck Crane oiler/driver-100 tons and over; Truck Mount Portable Conveyor; Yo Yo pay

GROUP 3 - Conveyors; Cranes through 19 tons with attachments; Crane-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozer-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside Hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler- asphalt, crusher; Pump-Concrete; Roller, plant mix or multi-lfit materials; Saws-concrete; Scrapers, concrete and carry all; Service engineers-equipment; Trenching machines; Truck crane oiler/driver under 100 tons; Tractors, backhoe under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes A-frame 10 tons and under; Elevator and manlift (permanent and shaft type); Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger-mechanical; Power plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not outfitted with protective clothing, Class "D" Suit - Base wage rate plus \$.50 per hour.

H-2 Class "C" Suit - Base wage rate plus \$1.00 per hour.

H-3 Class "B" Suit - Base wage rate plus \$1.50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$2.00 per hour.

 ENGI0701-002 01/01/2022

CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH), SKAMANIA, AND WAHAKIYAKUM COUNTIES

POWER EQUIPMENT OPERATORS: ZONE 1

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 51.65	16.35
GROUP 1A.....	\$ 53.81	16.35
GROUP 1B.....	\$ 55.97	16.35
GROUP 2.....	\$ 49.74	16.35
GROUP 3.....	\$ 48.59	16.35
GROUP 4.....	\$ 45.26	16.35
GROUP 5.....	\$ 44.02	16.35
GROUP 6.....	\$ 40.80	16.35

Zone Differential (add to Zone 1 rates):

Zone 2 - \$3.00

Zone 3 - \$6.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS; MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion Counties, West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22 and all jobs or projects located in Yamhill County, Washington County and Columbia County and all jobs or projects located in Clark & Cowlitz County, Washington except that portion of Cowlitz County in the Mt. St. Helens "Blast Zone" shall receive Zone I pay for all classifications.

All jobs or projects located in the area outside the identified boundary above, but less than 50 miles from the Portland City Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone I pay for all classifications.

All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone III pay for all classifications.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

Group 1

Concrete Batch Plan and or Wet mix three (3) units or more; Crane, Floating one hundred and fifty (150) ton but less than two hundred and fifty (250) ton; Crane, two hundred (200) ton through two hundred ninety nine (299) ton with two hundred foot (200') boom or less (including jib, inserts and/or attachments); Crane, ninety (90) ton through one hundred ninety nine (199) ton with over two hundred (200') boom Including jib, inserts and/or attachments); Crane, Tower Crane with one hundred seventy five foot (175') tower or less and with less than two hundred foot (200') jib; Crane, Whirley ninety (90) ton and over; Helicopter when used in erecting work

Group 1A

Crane, floating two hundred fifty (250) ton and over; Crane, two hundred (200) ton through two hundred ninety nine (299) ton, with over two hundred foot (200') boom (including jib, inserts and/or attachments); Crane, three hundred (300) ton through three hundred ninety nine (399) ton; Crane, Tower Crane with over one hundred seventy five foot (175') tower or over two hundred foot (200') jib; Crane, tower Crane on rail system or 2nd tower or more in work radius

Group 1B

Crane, three hundred (300) ton through three hundred ninety nine (399) ton, with over two hundred foot (200') boom (including jib, inserts and/or attachments); Floating crane, three hundred fifty (350) ton and over; Crane, four hundred (400) ton and over

Group 2

Asphalt Plant (any type); Asphalt Roto-Mill, pavement profiler eight foot (8') lateral cut and over; Auto Grader or "Trimmer"; Blade, Robotic; Bulldozer, Robotic Equipment (any type); Bulldozer, over one hundred twenty thousand (120,000) lbs. and above; Concrete Batch Plant and/or Wet Mix one (1) and two (2) drum; Concrete Diamond Head Profiler; Canal Trimmer; Concrete, Automatic Slip Form Paver (Assistant to the Operator required); Crane, Boom Truck fifty (50) ton and with over one hundred fifty foot (150') boom and over; Crane, Floating (derrick barge) thirty (30) ton but less than one hundred fifty (150) ton; Crane, Cableway twenty-five (25) ton and over; Crane, Floating Clamshell three (3) cu. Yds. And over; Crane, ninety (90) ton through one hundred ninety nine (199) ton up to and including two hundred foot (200') of boom (including jib inserts and/or attachments); Crane, fifty (50) ton through eighty nine (89) ton with over one hundred fifty foot (150') boom (including jib inserts and/or attachments); Crane, Whirley under ninety (90) ton; Crusher Plant; Excavator over one hundred thirty thousand (130,000) lbs.; Loader one hundred twenty thousand (120,000) lbs. and above; Remote Controlled Earth Moving Equipment; Shovel, Dragline, Clamshell, five (5) cu. Yds. And over; Underwater Equipment remote or otherwise, when used in construction work; Wheel Excavator any size

Group 3

Bulldozer, over seventy thousand (70,000) lbs. up to and including one hundred twenty thousand (120,000) lbs.; Crane, Boom Truck fifty (50) ton and over with less than one hundred fifty foot (150') boom; Crane, fifty (50) ton through eighty nine (89) ton with one hundred fifty foot (150') boom or less (including jib inserts and/or attachments); Crane, Shovel, Dragline or Clamshell three (3) cu. yds. but less than five (5) cu. Yds.; Excavator over eighty thousand (80,000) lbs. through one hundred thirty thousand (130,000) lbs.; Loader sixty thousand (60,000) lbs. and less than one hundred twenty thousand (120,000) lbs.

Group 4

Asphalt, Screed; Asphalt Paver; Asphalt Roto-Mill, pavement profiler, under eight foot (8') lateral cut; Asphalt, Material Transfer Vehicle Operator; Back Filling Machine; Backhoe, Robotic, track and wheel type up to and including twenty thousand (20,000) lbs. with any attachments; Blade (any type); Boatman; Boring Machine; Bulldozer over twenty thousand (20,000) lbs. and more than one hundred (100) horse up to seventy thousand (70,000) lbs.; Cable-Plow (any type); Cableway up to twenty five (25) ton; Cat Drill (John Henry); Chippers; Compactor, multi-engine; Compactor, Robotic; Compactor with blade self-propelled; Concrete, Breaker; Concrete, Grout Plant; Concrete, Mixer Mobile; Concrete, Paving Road Mixer; Concrete, Reinforced Tank Banding Machine; Crane, Boom Truck twenty (20) ton and under fifty (50) ton; Crane, Bridge Locomotive, Gantry and Overhead; Crane, Carry Deck; Crane, Chicago Boom and similar types; Crane, Derrick Operator, under one hundred (100) ton; Crane, Floating Clamshell, Dragline, etc. Operator, under three (3) cu. yds. Or less than thirty (30) ton; Crane, under fifty (50) ton; Crane, Quick Tower under one hundred foot (100') in height and less than one hundred fifty foot (150') jib (on rail included); Diesel-Electric Engineer (Plant or Floating); Directional Drill over twenty thousand (20,000) lbs. pullback; Drill Cat Operator; Drill Doctor and/or Bit Grinder; Driller, Percussion, Diamond, Core, Cable, Rotary and similar type; Excavator Operator over twenty thousand (20,000) lbs. through eighty thousand (80,000) lbs.; Generator Operator; Grade-all; Guardrail Machines, i.e. punch, auger, etc.; Hammer Operator (Piledriver); Hoist, stiff leg, guy derrick or similar type, fifty (50) ton and over; Hoist, two (2) drums or more; Hydro Axe (loader mounted or similar type); Jack Operator, Elevating Barges, Barge Operator, self-unloading; Loader Operator, front end and overhead, twenty five thousand (25,000) lbs. and less than sixty thousand (60,000) lbs.; Log Skidders; Piledriver Operator (not crane type); Pipe, Bending, Cleaning, Doping and Wrapping Machines; Rail, Ballast Tamper Multi-Purpose; Rubber-tired Dozers and Pushers; Scraper, all types; Side-Boom; Skip Loader, Drag Box; Strump Grinder (loader mounted or similar type); Surface Heater and Planer; Tractor, rubber-tired, over fifty (50) HP Flywheel; Trenching Machine three foot (3') depth and deeper; Tub Grinder (used for wood debris); Tunnel Boring Machine Mechanic; Tunnel, Mucking Machine; Ultra High Pressure Water Jet Cutting Tool System Operator; Vacuum Blasting Machine Operator; Water pulls, Water wagons

Group 5

Asphalt, Extrusion Machine; Asphalt, Roller (any asphalt mix); Asphalt, Roto-Mill pavement profiler ground man; Bulldozer, twenty thousand (20,000) lbs. or less, or one hundred (100) horse or less; Cement Pump; Chip Spreading Machine; Churn Drill and Earth Boring Machine; Compactor, self-propelled without blade; Compressor, (any power) one thousand two hundred fifty (1,250) cu. ft. and over, total capacity; Concrete, Batch Plant Quality control; Concrete, Combination Mixer and compressor operator, gunite work; Concrete, Curb Machine, Mechanical Berm, Curb and/or Curb and Gutter; Concrete, Finishing Machine; Concrete, Grouting Machine; Concrete, Internal Full Slab Vibrator Operator; Concrete, Joint Machine; Concrete, Mixer single drum, any capacity; Concrete, Paving Machine eight foot (8') or less; Concrete, Planer; Concrete, Pump; Concrete, Pump Truck; Concrete, Pumpcrete Operator (any type); Concrete, Slip Form Pumps, power driven hydraulic lifting device for concrete forms; Conveyored Material Hauler; Crane, Boom Truck under twenty (20) tons; Crane, Boom Type lifting device, five (5) ton capacity or less; Drill, Directional type less than twenty thousand (20,000) lbs. pullback; Fork Lift, over ten (10) ton or Robotic; Helicopter Hoist; Hoist Operator, single drum; Hydraulic Backhoe track type up to and including twenty thousand (20,000) lbs.; Hydraulic Backhoe wheel type (any make); Laser Screed; Loaders, rubber-tired type, less than twenty five thousand (25,000) lbs.; Pavement Grinder and/or Grooving Machine (riding type); Pipe, cast in place Pipe Laying Machine; Pulva-Mixer or similar types; Pump Operator, more than five (5) pumps (any size); Rail, Ballast Compactor, Regulator, or Tamper machines; Service Oiler (Greaser); Sweeper Self-Propelled; Tractor, Rubber-Tired, fifty (50) HP flywheel and under; Trenching Machine Operator, maximum digging capacity three foot (3') depth; Tunnel, Locomotive, Dinkey; Tunnel, Power Jumbo setting slip forms, etc.

Group 6

Asphalt, Pugmill (any type); Asphalt, Raker; Asphalt, Truck Mounted Asphalt Spreader, with Screed; Auger Oiler; Boatman; Bobcat, skid steer (less than one (1) yard); Broom, self-propelled; Compressor Operator (any power) under 1,250 cu. ft. total capacity; Concrete Curing Machine (riding type); Concrete Saw; Conveyor Operator or Assistant; Crane, Tugger; Crusher Feederman; Crusher Oiler; Deckhand; Drill, Directional Locator; Fork Lift; Grade Checker; Guardrail Punch Oiler; Hydrographic Seeder Machine, straw, pulp or seed; Hydrostatic Pump Operator; Mixer Box (CTB, dry batch, etc.); Oiler; Plant Oiler; Pump (any power); Rail, Brakeman, Switchman, Motorman; Rail, Tamping Machine, mechanical, self-propelled; Rigger; Roller grading (not asphalt); Truck, Crane Oiler-Driver

IRON0014-005 01/02/2023

ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS, FERRY, FRANKLIN,
GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND ORIELLE, SPOKANE,
STEVENS, WALLA WALLA AND WHITMAN COUNTIES

	Rates	Fringes
IRONWORKER.....	\$ 37.11	31.57

IRON0029-002 01/02/2023

CLARK, COWLITZ, KLICKITAT, PACIFIC, SKAMANIA, AND WAHKAIKUM
COUNTIES

	Rates	Fringes
IRONWORKER.....	\$ 42.27	32.57

IRON0086-002 01/02/2023

YAKIMA, KITTITAS AND CHELAN COUNTIES

	Rates	Fringes
IRONWORKER.....	\$ 37.11	31.57

IRON0086-004 01/02/2023

CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS,
MASON, PIERCE, SKAGIT, SNOHOMISH, THURSTON, AND WHATCOM COUNTIES

	Rates	Fringes
IRONWORKER.....	\$ 50.90	32.57

* LABO0238-004 06/01/2023

A-1 AREA: ASOTIN, BENTON, FRANKLIN, GARFIELD, LINCOLN, SPOKANE, WALLA WALLA, & WHITMAN COUNTIES

A-2 AREA: ADAMS, COLUMBIA, DOUGLAS (East of 120th Meridian), FERRY, GRANT, OKANOGAN, PEND OREILLE, & STEVENS COUNTIES

	Rates	Fringes
LABORER (A-1)		
GROUP 1.....	\$ 30.88	15.70
GROUP 2.....	\$ 33.72	15.70
GROUP 3.....	\$ 34.03	15.70
GROUP 4.....	\$ 34.33	15.70
GROUP 5.....	\$ 34.64	15.70
LABORER (A-2)		
GROUP 1.....	\$ 33.88	15.60
GROUP 2.....	\$ 36.72	15.60
GROUP 3.....	\$ 37.03	15.60
GROUP 4.....	\$ 37.33	15.60
GROUP 5.....	\$ 37.64	15.60

LABORERS CLASSIFICATIONS

GROUP 1: Flagman; Landscape Laborer; Scaleman; Traffic Control Maintenance Laborer (to include erection and maintenance of barricades, signs and relief of flagperson); Window Washer/Cleaner (detail cleanup, such as, but not limited to cleaning floors, ceilings, walls, windows, etc. prior to final acceptance by the owner)

GROUP 2: Asbestos Abatement Worker; Brush Hog Feeder; Carpenter Tender; Cement Handler; Clean-up Laborer; Concrete Crewman (to include stripping of forms, hand operating jacks on slip form construction, application of concrete curing compounds, pumpcrete machine, signaling, handling the nozzle of squeezecrete or similar machine, 6 inches and smaller); Confined Space Attendant; Concrete Signalman; Crusher Feeder; Demolition (to include clean-up, burning, loading, wrecking and salvage of all material); Dumpman; Fence Erector; Firewatch; Form Cleaning Machine Feeder, Stacker; General Laborer; Grout Machine Header Tender; Guard Rail (to include guard rails, guide and reference posts, sign posts, and right-of-way markers); Hazardous Waste Worker, Level D (no respirator is used and skin protection is minimal); Miner, Class "A" (to include all bull gang, concrete crewman, dumpman and pumpcrete crewman, including distributing pipe, assembly & dismantle, and nipper); Nipper; Riprap Man; Sandblast Tailhoseman; Scaffold Erector (wood or steel); Stake Jumper; Structural Mover (to include separating foundation, preparation, cribbing, shoring, jacking and unloading of structures); Tailhoseman (water nozzle); Timber Bucker and Faller (by hand); Track Laborer (RR); Truck Loader; Well-Point Man; All Other Work Classifications Not Specially Listed Shall Be Classified As General Laborer

GROUP 3: Asphalt Roller, walking; Cement Finisher Tender; Concrete Saw, walking; Demolition Torch; Dope Pot Firemen, non-mechanical; Driller Tender (when required to move and position machine); Form Setter, Paving; Grade Checker using level; Hazardous Waste Worker, Level C (uses a chemical "splash suit" and air purifying respirator); Jackhammer Operator; Miner, Class "B" (to include brakeman, finisher, vibrator, form setter); Nozzleman (to include squeeze and flo-crete nozzle); Nozzleman, water, air or steam; Pavement Breaker (under 90 lbs.); Pipelayer, corrugated metal culvert; Pipelayer, multi-plate; Pot Tender; Power Buggy Operator; Power Tool Operator, gas, electric, pneumatic; Railroad Equipment, power driven, except dual mobile power spiker or puller; Railroad Power Spiker or Puller, dual mobile; Rodder and Spreader; Tamper (to include operation of Barco, Essex and similar tampers); Trencher, Shawnee; Tugger Operator; Wagon Drills; Water Pipe Liner; Wheelbarrow (power driven)

GROUP 4: Air and Hydraulic Track Drill; Asphalt Raker; Brush Machine (to include horizontal construction joint cleanup brush machine, power propelled); Caisson Worker, free air; Chain Saw Operator and Faller; Concrete Stack (to include laborers when laborers working on free standing concrete stacks for smoke or fume control above 40 feet high); Guniting (to include operation of machine and nozzle); Hazardous Waste Worker, Level B (uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Laser Beam Operator (to include grade checker and elevation control); Miner, Class C (to include miner, nozzleman for concrete, laser beam operator and rigger on tunnels); Monitor Operator (air track or similar mounting); Mortar Mixer; Nozzleman (to include jet blasting nozzleman, over 1,200 lbs., jet blast machine power propelled, sandblast nozzle); Pavement Breaker (90 lbs. and over); Pipelayer (to include working topman, caulker, collarman, jointer, mortarman, rigger, jacker, shorer, valve or meter installer); Pipewrapper; Plasterer Tender; Vibrators (all)

GROUP 5 - Drills with Dual Masts; Hazardous Waste Worker, Level A (utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line); Miner Class "D", (to include raise and shaft miner, laser beam operator on riases and shafts)

LABO0238-006 06/01/2023

COUNTIES EAST OF THE 120TH MERIDIAN: ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND OREILLE, STEVENS, SPOKANE, WALLA WALLA, WHITMAN

	Rates	Fringes
Hod Carrier.....	\$ 34.97	15.70

LABO0242-003 06/01/2022

KING COUNTY

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 29.82	13.80
GROUP 2A.....	\$ 34.20	13.80
GROUP 3.....	\$ 42.86	13.80
GROUP 4.....	\$ 43.90	13.80
GROUP 5.....	\$ 44.62	13.80
Group 6.....	\$ 45.91	13.90

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT, SEATTLE, KENT, TACOMA, OLYMPIA, CENTRALIA, ABERDEEN, SHELTON, PT. TOWNSEND, PT. ANGELES, AND BREMERTON

- ZONE 1 - Projects within 25 radius miles of the respective city hall
- ZONE 2 - More than 25 but less than 45 radius miles from the respective city hall
- ZONE 3 - More than 45 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$1.00
 ZONE 3 - \$1.30

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE, AND YAKIMA

- ZONE 1 - Projects within 25 radius miles of the respective city hall
- ZONE 2 - More than 25 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$2.25

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window Washer/Cleaner (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2A: Batch Weighman; Crusher Feeder; Fence Laborer; Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C: uses a chemical "splash suit" and air purifying respirator); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B: uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20 ft); Spreader (concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Mortarman and Hodcarrier; Powderman; Re-Timberman; Hazardous Waste Worker (Level A: utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line).

Group 6: Miner

LABO0252-010 06/01/2022

CLALLAM, GRAYS HARBOR, JEFFERSON, KITSAP, LEWIS, MASON, PACIFIC
(EXCLUDING SOUTHWEST), PIERCE, AND THURSTON COUNTIES

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 29.82	13.80
GROUP 2.....	\$ 34.20	13.80
GROUP 3.....	\$ 42.86	13.80
GROUP 4.....	\$ 43.90	13.80
GROUP 5.....	\$ 44.62	13.80

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT, SEATTLE, KENT,
TACOMA, OLYMPIA, CENTRALIA, ABERDEEN, SHELTON, PT.
TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective
city hall

ZONE 2 - More than 25 but less than 45 radius miles from the
respective city hall

ZONE 3 - More than 45 radius miles from the respective city
hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$1.00

ZONE 3 - \$1.30

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE, AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective
city hall

ZONE 2 - More than 25 radius miles from the respective city
hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$2.25

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window
Washer/Cleaner (detail clean-up, such as but not limited to
cleaning floors, ceilings, walls, windows, etc., prior to
final acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer;
Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C: uses a chemical "splash suit" and air purifying respirator); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B: uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20 ft); Spreader (concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Mortarman and Hodcarrier; Grade Checker and Transit Person; High Scaler; Powderman; Re-Timberman; Hazardous Waste Worker (Level A: utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied airline).

LABO0292-008 06/01/2022

ISLAND, SAN JUAN, SKAGIT, SNOHOMISH, AND WHATCOM COUNTIES

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 29.82	13.80
GROUP 2.....	\$ 34.20	13.80
GROUP 3.....	\$ 42.86	13.80
GROUP 4.....	\$ 43.90	13.80
GROUP 5.....	\$ 44.62	13.80

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT, SEATTLE, KENT, TACOMA, OLYMPIA, CENTRALIA, ABERDEEN, SHELTON, PT. TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city hall
 ZONE 2 - More than 25 but less than 45 radius miles from the respective city hall
 ZONE 3 - More than 45 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$1.00
 ZONE 3 - \$1.30

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE, AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city hall
 ZONE 2 - More than 25 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$2.25

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window Washer/Cleaner (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer; Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C: uses a chemical "splash suit" and air purifying respirator); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B: uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20 ft); Spreader (concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Mortarman and Hodcarrier; Powderman; Re-Timberman; Hazardous Waste Worker (Level A: utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line).

LABO0335-001 06/01/2022

CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH OF A STRAIGHT LINE MADE BY EXTENDING THE NORTH BOUNDARY LINE OF WAHKIAKUM COUNTY WEST TO THE PACIFIC OCEAN), SKAMANIA AND WAHKIAKUM COUNTIES

	Rates	Fringes
Laborers:		
ZONE 1:		
GROUP 1.....	\$ 37.98	13.80
GROUP 2.....	\$ 38.76	13.80
GROUP 3.....	\$ 39.35	13.80
GROUP 4.....	\$ 39.85	13.80
GROUP 5.....	\$ 34.75	13.80
GROUP 6.....	\$ 31.61	13.80
GROUP 7.....	\$ 27.44	13.80

Zone Differential (Add to Zone 1 rates):
 Zone 2 \$ 0.65
 Zone 3 - 1.15
 Zone 4 - 1.70
 Zone 5 - 2.75

BASE POINTS: LONGVIEW AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city all.
 ZONE 2: More than 30 miles but less than 40 miles from the respective city hall.
 ZONE 3: More than 40 miles but less than 50 miles from the respective city hall.
 ZONE 4: More than 50 miles but less than 80 miles from the respective city hall.
 ZONE 5: More than 80 miles from the respective city hall.

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Plant Laborers; Asphalt Spreaders; Batch Weighman; Broomers; Brush Burners and Cutters; Car and Truck Loaders; Carpenter Tender; Change-House Man or Dry Shack Man; Choker Setter; Clean-up Laborers; Curing, Concrete; Demolition, Wrecking and Moving Laborers; Dumpers, road oiling crew; Dumpmen (for grading crew); Elevator Feeders; Median Rail Reference Post, Guide Post, Right of Way Marker; Fine Graders; Fire Watch; Form Strippers (not swinging stages); General Laborers; Hazardous Waste Worker; Leverman or Aggregate Spreader (Flaherty and similar types); Loading Spotters; Material Yard Man (including electrical); Pittsburgh Chipper Operator or Similar Types; Railroad Track Laborers; Ribbon Setters (including steel forms); Rip Rap Man (hand placed); Road Pump Tender; Sewer Labor; Signalman; Skipman; Slopers; Spraymen; Stake Chaser; Stockpiler; Tie Back Shoring; Timber Faller and Bucker (hand labor); Toolroom Man (at job site); Tunnel Bullgang (above ground); Weight-Man- Crusher (aggregate when used)

GROUP 2: Applicator (including pot power tender for same), applying protective material by hand or nozzle on utility lines or storage tanks on project; Brush Cutters (power saw); Burners; Choker Splicer; Clary Power Spreader and similar types; Clean- up Nozzleman-Green Cutter (concrete, rock, etc.); Concrete Power Buggyman; Concrete Laborer; Crusher Feeder; Demolition and Wrecking Charred Materials; Gunite Nozzleman Tender; Gunite or Sand Blasting Pot Tender; Handlers or Mixers of all Materials of an irritating nature (including cement and lime); Tool Operators (includes but not limited to: Dry Pack Machine; Jackhammer; Chipping Guns; Paving Breakers); Pipe Doping and Wrapping; Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (Wet); Stake-Setter; Tunnel-Muckers, Brakemen, Concrete Crew, Bullgang (underground)

GROUP 3: Asbestos Removal; Bit Grinder; Drill Doctor; Drill Operators, air tracks, cat drills, wagon drills, rubber-mounted drills, and other similar types including at crusher plants; Gunite Nozzleman; High Scalers, Strippers and Drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Manhole Builder; Powdermen; Concrete Saw Operator; Pwdermen; Power Saw Operators (Bucking and Falling); Pumpcrete Nozzlemen; Sand Blasting (Dry); Sewer Timberman; Track Liners, Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks, Tugger Operator; Tunnel-Chuck Tenders, Nippers and Timbermen; Vibrator; Water Blaster

GROUP 4: Asphalt Raker; Concrete Saw Operator (walls); Concrete Nozzelman; Grade Checker; Pipelayer; Laser Beam (pipelaying)-applicable when employee assigned to move, set up, align; Laser Beam; Tunnel Miners; Motorman-Dinky Locomotive-Tunnel; Powderman-Tunnel; Shield Operator-Tunnel

GROUP 5: Traffic Flaggers

GROUP 6: Fence Builders

GROUP 7: Landscaping or Planting Laborers

LABO0335-019 06/01/2022

	Rates	Fringes
Hod Carrier.....	\$ 37.98	13.80

LABO0348-003 06/01/2022

CHELAN, DOUGLAS (W OF 12TH MERIDIAN), KITTITAS, AND YAKIMA COUNTIES

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 25.37	13.80
GROUP 2.....	\$ 29.16	13.80
GROUP 3.....	\$ 31.94	13.80
GROUP 4.....	\$ 32.72	13.80
GROUP 5.....	\$ 32.09	13.19

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT, SEATTLE, KENT, TACOMA, OLYMPIA, CENTRALIA, ABERDEEN, SHELTON, PT. TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city hall
 ZONE 2 - More than 25 but less than 45 radius miles from the respective city hall
 ZONE 3 - More than 45 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$1.00
 ZONE 3 - \$1.30

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE, AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city hall
 ZONE 2 - More than 25 radius miles from the respective city hall

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$2.25

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window Washer/Cleaner (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer; Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C: uses a chemical "splash suit" and air purifying respirator); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B: uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20 ft); Spreader (concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Mortarman and Hodcarrier; Powderman; Re-Timberman; Hazardous Waste Worker (Level A: utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line).

PAIN0005-002 07/01/2022

STATEWIDE EXCEPT CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH),
SKAMANIA, AND WAHAKIYAKUM COUNTIES

	Rates	Fringes
Painters:		
STRIPERS.....	\$ 33.37	18.53

PAIN0005-004 03/01/2009

CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS,
MASON, PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND
WHATCOM COUNTIES

	Rates	Fringes
PAINTER.....	\$ 20.82	7.44

* PAIN0005-006 07/01/2018

ADAMS, ASOTIN; BENTON AND FRANKLIN (EXCEPT HANFORD SITE);
CHELAN, COLUMBIA, DOUGLAS, FERRY, GARFIELD, GRANT, KITTITAS,
LINCOLN, OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA,
WHITMAN AND YAKIMA COUNTIES

	Rates	Fringes
PAINTER		
Application of Cold Tar		
Products, Epoxies, Polyure		
thanes, Acids, Radiation		
Resistant Material, Water		
and Sandblasting.....	\$ 30.19	11.71
Over 30'/Swing Stage Work..	\$ 22.20	7.98
Brush, Roller, Striping,		
Steam-cleaning and Spray....	\$ 22.94	11.61
Lead Abatement, Asbestos		
Abatement.....	\$ 21.50	7.98

*\$.70 shall be paid over and above the basic wage rates
listed for work on swing stages and high work of over 30
feet.

* PAIN0055-003 04/01/2024

CLARK, COWLITZ, KLICKITAT, PACIFIC, SKAMANIA, AND WAHKIAKUM COUNTIES

	Rates	Fringes
PAINTER		
Brush & Roller.....	\$ 37.69	14.92
Spray and Sandblasting.....	\$ 37.69	14.92

All high work over 60 ft. = base rate + \$0.75

* PAIN0055-006 04/01/2024

CLARK, COWLITZ, KLICKITAT, SKAMANIA and WAHKIAKUM COUNTIES

	Rates	Fringes
Painters:		
HIGHWAY & PARKING LOT		
STRIPER.....	\$ 37.69	14.92

PLAS0072-004 06/01/2023

ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, KITTITAS, LINCOLN, OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN, AND YAKIMA COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
ZONE 1.....	\$ 38.05	16.89

Zone Differential (Add to Zone 1 rate): Zone 2 - \$3.00

BASE POINTS: Spokane, Pasco, Lewiston; Wenatchee
 Zone 1: 0 - 45 radius miles from the main post office
 Zone 2: Over 45 radius miles from the main post office

PLAS0528-001 06/01/2023

CLALLAM, COWLITZ, GRAYS HARBOR, ISLAND, JEFFERSON, KING,
KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SAN JUAN, SKAGIT,
SNOHOMISH, THURSTON, WAHKIAKUM AND WHATCOM COUNTIES

	Rates	Fringes
CEMENT MASON		
CEMENT MASON.....	\$ 52.10	20.27
COMPOSITION, TROWEL MACHINE, GRINDER, POWER TOOLS, GUNNITE NOZZLE.....	\$ 52.60	20.27
TROWELING MACHINE OPERATOR ON COMPOSITION.....	\$ 52.60	20.27

PLAS0555-002 06/01/2023

CLARK, KLICKITAT AND SKAMANIA COUNTIES

ZONE 1:

	Rates	Fringes
CEMENT MASON		
CEMENT MASONS DOING BOTH COMPOSITION/POWER MACHINERY AND SUSPENDED/HANGING SCAFFOLD..	\$ 45.06	19.95
CEMENT MASONS ON SUSPENDED, SWINGING AND/OR HANGING SCAFFOLD.....	\$ 44.19	19.95
CEMENT MASONS.....	\$ 43.33	19.95
COMPOSITION WORKERS AND POWER MACHINERY OPERATORS...	\$ 44.19	19.95

Zone Differential (Add To Zone 1 Rates):

- Zone 2 - \$0.65
- Zone 3 - 1.15
- Zone 4 - 1.70
- Zone 5 - 3.00

BASE POINTS: BEND, CORVALLIS, EUGENE, MEDFORD, PORTLAND,
SALEM, THE DALLES, VANCOUVER

- ZONE 1: Projects within 30 miles of the respective city hall
- ZONE 2: More than 30 miles but less than 40 miles from the
respective city hall.
- ZONE 3: More than 40 miles but less than 50 miles from the
respective city hall.
- ZONE 4: More than 50 miles but less than 80 miles from the
respective city hall.
- ZONE 5: More than 80 miles from the respective city hall

TEAM0037-002 06/01/2020

CLARK, COWLITZ, KLICKITAT, PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), SKAMANIA, AND WAHKIAKUM COUNTIES

	Rates	Fringes
Truck drivers:		
ZONE 1		
GROUP 1.....	\$ 29.33	16.40
GROUP 2.....	\$ 29.46	16.40
GROUP 3.....	\$ 29.60	16.40
GROUP 4.....	\$ 29.89	16.40
GROUP 5.....	\$ 30.03	16.40
GROUP 6.....	\$ 30.31	16.40
GROUP 7.....	\$ 30.53	16.40

Zone Differential (Add to Zone 1 Rates):

- Zone 2 - \$0.65
- Zone 3 - 1.15
- Zone 4 - 1.70
- Zone 5 - 2.75

BASE POINTS: ASTORIA, THE DALLES, LONGVIEW AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall.

ZONE 2: More than 30 miles but less than 40 miles from the respective city hall.

ZONE 3: More than 40 miles but less than 50 miles from the respective city hall.

ZONE 4: More than 50 miles but less than 80 miles from the respective city hall.

ZONE 5: More than 80 miles from the respective city hall.

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: A Frame or Hydra lift truck w/load bearing surface; Articulated Dump Truck; Battery Rebuilders; Bus or Manhaul Driver; Concrete Buggies (power operated); Concrete Pump Truck; Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations there of: up to and including 10 cu. yds.; Lift Jitneys, Fork Lifts (all sizes in loading, unloading and transporting material on job site); Loader and/or Leverman on Concrete Dry Batch Plant (manually operated); Pilot Car; Pickup Truck; Solo Flat Bed and misc. Body Trucks, 0-10 tons; Truck Tender; Truck Mechanic Tender; Water Wagons (rated capacity) up to 3,000 gallons; Transit Mix and Wet or Dry Mix - 5 cu. yds. and under; Lubrication Man, Fuel Truck Driver, Tireman, Wash Rack, Steam Cleaner or combinations; Team Driver; Slurry Truck Driver or Leverman; Tireman

GROUP 2: Boom Truck/Hydra-lift or Retracting Crane; Challenger; Dumpsters or similar equipment all sizes; Dump Trucks/Articulated Dumps 6 cu to 10 cu.; Flaherty Spreader Driver or Leverman; Lowbed Equipment, Flat Bed Semi-trailer or doubles transporting equipment or wet or dry materials; Lumber Carrier, Driver-Straddle Carrier (used in loading, unloading and transporting of materials on job site); Oil Distributor Driver or Leverman; Transit mix and wet or dry mix trucks: over 5 cu. yds. and including 7 cu. yds.; Vacuum Trucks; Water truck/Wagons (rated capacity) over 3,000 to 5,000 gallons

GROUP 3: Ammonia Nitrate Distributor Driver; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 10 cu. yds. and including 30 cu. yds. includes Articulated Dump Trucks; Self-Propelled Street Sweeper; Transit mix and wet or dry mix truck: over 7 cu yds. and including 11 cu yds.; Truck Mechanic-Welder-Body Repairman; Utility and Clean-up Truck; Water Wagons (rated capacity) over 5,000 to 10,000 gallons

GROUP 4: Asphalt Burner; Dump Trucks, side, end and bottom dumps, including Semi-Trucks and Trains or combinations thereof: over 30 cu. yds. and including 50 cu. yds. includes Articulated Dump Trucks; Fire Guard; Transit Mix and Wet or Dry Mix Trucks, over 11 cu. yds. and including 15 cu. yds.; Water Wagon (rated capacity) over 10,000 gallons to 15,000 gallons

GROUP 5: Composite Crewman; Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 50 cu. yds. and including 60 cu. yds. includes Articulated Dump Trucks

GROUP 6: Bulk Cement Spreader w/o Auger; Dry Pre-Batch concrete Mix Trucks; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains of combinations thereof: over 60 cu. yds. and including 80 cu. yds., and includes Articulated Dump Trucks; Skid Truck

GROUP 7: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 80 cu. yds. and including 100 cu. yds., includes Articulated Dump Trucks; Industrial Lift Truck (mechanical tailgate)

* TEAM0174-001 06/01/2020

CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM COUNTIES

	Rates	Fringes
Truck drivers:		
ZONE A:		
GROUP 1:.....	\$ 42.88	20.92
GROUP 2:.....	\$ 42.04	20.92
GROUP 3:.....	\$ 39.23	20.92
GROUP 4:.....	\$ 34.26	20.92
GROUP 5:.....	\$ 42.43	20.92

ZONE B (25-45 miles from center of listed cities*): Add \$.70 per hour to Zone A rates.

ZONE C (over 45 miles from centr of listed cities*): Add \$1.00 per hour to Zone A rates.

*Zone pay will be calculated from the city center of the following listed cities:

BELLINGHAM	CENTRALIA	RAYMOND	OLYMPIA
EVERETT	SHELTON	ANACORTES	BELLEVUE
SEATTLE	PORT ANGELES	MT. VERNON	KENT
TACOMA	PORT TOWNSEND	ABERDEEN	BREMERTON

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - "A-frame or Hydralift" trucks and Boom trucks or similar equipment when "A" frame or "Hydralift" and Boom truck or similar equipment is used; Buggymobile; Bulk Cement Tanker; Dumpsters and similar equipment, Tournorockers, Tournowagon, Tournotrailer, Cat DW series, Terra Cobra, Le Tourneau, Westinghouse, Athye Wagon, Euclid Two and Four-Wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump Trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with 16 yards to 30 yards capacity: Over 30 yards \$.15 per hour additional for each 10 yard increment; Explosive Truck (field mix) and similar equipment; Hyster Operators (handling bulk loose aggregates); Lowbed and Heavy Duty Trailer; Road Oil Distributor Driver; Spreader, Flaherty Transit mix used exclusively in heavy construction; Water Wagon and Tank Truck-3,000 gallons and over capacity

GROUP 2 - Bulllifts, or similar equipment used in loading or unloading trucks, transporting materials on job site; Dumpsters, and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat. D.W. Series, Terra Cobra, Le Tourneau, Westinghouse, Athye wagon, Euclid two and four-wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with less than 16 yards capacity; Flatbed (Dual Rear Axle); Grease Truck, Fuel Truck, Greaser, Battery Service Man and/or Tire Service Man; Leverman and loader at bunkers and batch plants; Oil tank transport; Scissor truck; Slurry Truck; Sno-Go and similar equipment; Swampers; Straddler Carrier (Ross, Hyster) and similar equipment; Team Driver; Tractor (small, rubber-tired) (when used within Teamster jurisdiction); Vacuum truck; Water Wagon and Tank trucks-less than 3,000 gallons capacity; Winch Truck; Wrecker, Tow truck and similar equipment

GROUP 3 - Flatbed (single rear axle); Pickup Sweeper; Pickup Truck. (Adjust Group 3 upward by \$2.00 per hour for onsite work only)

GROUP 4 - Escort or Pilot Car

GROUP 5 - Mechanic

HAZMAT PROJECTS

Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C: +\$.25 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B: +\$.50 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: +\$.75 per hour - This level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

TEAM0690-004 01/01/2019

ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY,
FRANKLIN, GARFIELD, GRANT KITTITAS, LINCOLN, OKANOGAN, PEND
OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA
COUNTIES

	Rates	Fringes
Truck drivers: (AREA 1: SPOKANE ZONE CENTER: Adams, Chelan, Douglas, Ferry, Grant, Kittitas, Lincoln, Okanogan, Pen Oreille, Spokane, Stevens, and Whitman Counties		
AREA 1: LEWISTON ZONE CENTER: Asotin, Columbia, and Garfield Counties		
AREA 2: PASCO ZONE CENTER: Benton, Franklin, Walla Walla and Yakima Counties)		
AREA 1:		
GROUP 1.....	\$ 23.91	17.40
GROUP 2.....	\$ 26.18	17.40
GROUP 3.....	\$ 26.68	17.40
GROUP 4.....	\$ 27.01	17.40
GROUP 5.....	\$ 27.12	17.40
GROUP 6.....	\$ 27.29	17.40
GROUP 7.....	\$ 27.82	17.40
GROUP 8.....	\$ 28.18	17.40
AREA 2:		
GROUP 1.....	\$ 26.05	17.40
GROUP 2.....	\$ 28.69	17.40
GROUP 3.....	\$ 28.80	17.40
GROUP 4.....	\$ 29.13	17.40
GROUP 5.....	\$ 29.24	17.40
GROUP 6.....	\$ 29.24	17.40
GROUP 7.....	\$ 29.78	17.40
GROUP 8.....	\$ 30.10	17.40

Zone Differential (Add to Zone 1 rate: Zone 1 + \$2.00)

BASE POINTS: Spokane, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: Outside 45 radius miles from the main post office

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and under); Leverperson (loading trucks at bunkers); Trailer Mounted Hydro Seeder and Mulcher; Seeder & Mulcher; Stationary Fuel Operator; Tractor (small, rubber-tired, pulling trailer or similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile & Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under); Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000 lbs.); Fuel Truck Driver, Steamcleaner & Washer; Power Operated Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson; Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6 yds.); Trucks, side, end, bottom & articulated end dump (3 yards to and including 6 yds.); Warehouseperson (to include shipping & receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser; Trucks, side, end, bottom & articulated end dump (over 6 yards to and including 12 yds.); Truck Mounted Hydro Seeder; Warehouseperson; Water Tank truck (0-8,000 gallons)

GROUP 5: Dumptor (over 6 yds.); Lowboy (50 tons & under); Self-loading Roll Off; Semi-Truck & Trailer; Tractor with Steer Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds. to and including 10 yds.); Trucks, side, end, bottom and end dump (over 12 yds. to & including 20 yds.); Truck-Mounted Crane (with load bearing surface either mounted or pulled, up to 14 ton); Vacuum Truck (super sucker, guzzler, etc.)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift (over 16,000 lbs.); Dumps (Semi-end); Mechanic (Field); Semi-end Dumps; Transfer Truck & Trailer; Transit Mixers & Trucks Hauling Concrete (over 10 yds. to & including 20 yds.); Trucks, side, end, bottom and articulated end dump (over 20 yds. to & including 40 yds.); Truck and Pup; Tournarocker, DWs & similar with 2 or more 4 wheel-power tractor with trailer, gallonage or yardage scale, whichever is greater Water Tank Truck (8,001- 14,000 gallons); Lowboy(over 50 tons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated trailer); Transit Mixers & Trucks Hauling Concrete (over 20 yds.); Truck, side, end, bottom end dump (over 40 yds. to & including 100 yds.); Truck Mounted Crane (with load bearing surface either mounted or pulled (16 through 25 tons);

GROUP 8: Prime Movers and Stinger Truck; Trucks, side, end, bottom and articulated end dump (over 100 yds.); Helicopter Pilot Hauling Employees or Materials

Footnote A - Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C-D: - \$.50 PER HOUR (This is the lowest level of protection. This level may use an air purifying respirator or additional protective clothing.

LEVEL A-B: - \$1.00 PER HOUR (Uses supplied air in conjunction with a chemical splash suit or fully encapsulated suit with a self-contained breathing apparatus.

Employees shall be paid Hazmat pay in increments of four(4) and eight(8) hours.

NOTE:

Trucks Pulling Equipment Trailers: shall receive \$.15/hour over applicable truck rate

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those

classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the "SA" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R. 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the "SA" identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====
END OF GENERAL DECISION"