Port of Tacoma
People. Partnership. Performance.
P.O. Box 1837
Tacoma, WA 98401-1837
www.portoftacoma.com

May 8, 2018

TO: PLANHOLDERS

SUBJECT: WEST SITCUM STORMWATER TREATMENT
PROJECT NO. 201024.01
CONTRACT NO. ~~070664~~ **070916**

ADDENDUM NUMBER 02

This addendum is issued to amend the following:

A. PROCUREMENT AND CONTRACTRING REQUIREMENTS

1. **DELETE and REPLACE** the issued Section 00 01 01 PORT-PROJECT TITLE PAGE with the attached Section 00 01 01 PORT-PROJECT TITLE PAGE (Attachment A.)
2. **DELETE and REPLACE** the issued Section 00 01 10 Table of Contents with the attached Section 00 01 10 Table of Contents (Attachment B.)
3. **DELETE AND REPLACE** the issued Section 00 11 13 Port-Advertisement for Bids with the attached Section 00 11 13 Port-Advertisement for Bids (Attachment C.)
4. **DELETE and REPLACE** the issued Section 00 21 00 PORT-INSTRUCTIONS TO BIDDERS with the attached Section 00 21 00 PORT-INSTRUCTIONS TO BIDDERS (Attachment D.)
5. **DELETE and REPLACE** the issued Section 00 31 00 PORT – AVAILABLE PROJECT INFORMATION with the attached Section 00 31 00 PORT – AVAILABLE PROJECT INFORMATION (Attachment E.)
6. **DELETE and REPLACE** the issued Section 00 41 00 PORT-BID FORM with the attached Section 00 41 00 PORT-BID FORM (Attachment F.)

B. SPECIFICATIONS

1. **DELETE and REPLACE** the issued Section 01 14 00 Port-WORK RESTRICTIONS with the attached Section 01 14 00 Port-WORK RESTRICTIONS (Attachment G.)
2. **DELETE and REPLACE** the issued Section 01 20 00 Port–PRICE AND PAYMENT PROCEDURES with the attached Section 01 20 00 Port–PRICE AND PAYMENT PROCEDURES (Attachment H.)
3. **DELETE and REPLACE** the issued Section 01 41 00 Port-REGULATORY REQUIREMENTS with the attached Section 01 41 00 Port-REGULATORY REQUIREMENTS (Attachment I.)
4. **DELETE and REPLACE** the issued Section 01 64 00 USER-Owner Furnished Products with the attached Section 01 64 00 USER-Owner Furnished Products (Attachment J.)
5. **ADD** Section 01 71 23 BSD-Field Engineering (Attachment K.)
6. **ADD** Section 22 13 16 Pipe Fittings (Attachment L.)
7. **ADD** Section 22 13 16.01 Pipe Schedule (Attachment M.)

C. DRAWINGS

1. **DELETE and REPLACE** the issued West Sitcum Stormwater Treatment Drawings S05 & S06 with the attached West Sitcum Stormwater Treatment Drawings S05 & S06 (Attachment N.)

Attachments:

Attachment A - Section 00 01 01 PORT-PROJECT TITLE PAGE

Attachment B - Section 00 01 10 Table of Contents

Attachment C – Section 00 11 13 Port-ADVERTISEMENT FOR BIDS

Attachment D - Section 00 21 00 PORT-INSTRUCTIONS TO BIDDERS

Attachment E - Section 00 31 00 PORT – AVAILABLE PROJECT INFORMATION

Attachment F - Section 00 41 00 PORT-BID FORM

Attachment G – Section 00 14 00 Port-WORK RESTRICTIONS

Attachment H - Section 01 20 00 Port–PRICE AND PAYMENT PROCEDURES

Attachment I - Section 01 41 00 Port-REGULATORY REQUIREMENTS

Attachment J - Section 01 64 00 USER-Owner Furnished Products

Attachment K - Section 01 71 23 BSD-Field Engineering

Attachment L - Section 22 13 16 Pipe Fittings

Attachment M - Section 22 13 16.01 Pipe Schedule

Attachment N – West Sitcum Stormwater Treatment Drawings S05 & S06

END OF SECTION

SECTION 00 01 01

PROJECT TITLE PAGE

PORT OF TACOMA
TACOMA, WASHINGTON
WEST SITCUM STORMWATER TREATMENT

PROJECT NO. 201024.01
CONTRACT NO. ~~070664~~ 070916

Jane Vandenberg, PE

Director, Engineering

Hughes Wike, PE

Project Manager

END OF PROJECT TITLE PAGE

VOLUME 1 OF 2

PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS

END OF SECTION

THE PORT OF TACOMA IS CURRENTLY ACCEPTING SEALED BIDS FOR CONSTRUCTION OF THE FOLLOWING:

WEST SITCUM STORMWATER TREATMENT

PROJECT NO. 201024.01 | CONTRACT NO. ~~070664~~ 070916

Scope of Work:	The work required for this project includes installation of new pump stations, hydrodynamic separators, and modular wetland treatment systems. Work includes select trenching for stormwater and new electrical conduit followed by restoration by backfill and asphalt concrete pavement patching.
Bid Estimate:	Estimated cost range is ~~$3,980, 817 to $4,423,130~~ $4,275,000 to $4,750,000, plus Washington State Sales Tax (WSST).
Sealed Bid Date/Time/ Location:	Bids will be received at the Front Reception Desk, Port Administration Office, One Sitcum Plaza, Tacoma, Washington until ~~**3:45 P.M. on date**~~ **2:00 P.M. on May 21, 2018,** at which time they will be publicly opened and read aloud.
Pre-bid Conference and Site Tour:	A pre-bid conference and site visit have been set for ~~5/08/2018 at 10:00am~~ May 10, 2018 @ 1:00PM. The site visit will convene at the Port's Administrative building, located at One Sitcum Plaza. The following Personal Protective Equipment is required for the site visit: sturdy shoes, reflective vest, gloves, safety glasses, hearing protection, and hardhat. Attendees will be required to sign a Release and Acceptance of Responsibility and Acknowledgement of Risks Form prior to entering the site and shall provide their own Personal Protection Equipment (PPE).
Bidding Security:	Each bid must be accompanied by a Certified Check or Bid Security Bond in an amount equal to five (5) percent of the bid.
Contact Information:	All questions are to be put into writing to the Port at procurement@portoftacoma.com. No oral answers will be binding by the Port.

Bidding Documents:

Plans, Specifications, Addenda, and Plan Holders List for this project are available on-line through The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts"; "Procurement", and then the Procurement Number 070664. Bidders must subscribe to the Holder's List on the right hand side of the screen in order to receive automatic email notification of future addenda and to be placed on the Holder's List.

Contact procurement@portoftacoma.com with questions. Holder' s Lists will be updated regularly. Additional Instructions available in 00 21 00 - Instructions to Bidders.

END OF SECTION

PART 1 - SUMMARY

1.01 DEFINITIONS

All definitions set forth in the Agreement, the General Conditions of the Contract for Construction and in other Contract Documents are applicable to the Bidding Documents.

A. "Addenda" are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections. The contents of an Addendum are issued in no particular order and therefore should be carefully and completely reviewed.

B. "Award" means the formal decision by the Port of Tacoma (“Port”) notifying a Responsible Bidder with the lowest responsive Bid of the Port’s acceptance of the Bid and intent to enter into a Contract with the Bidder.

C. The “Award Requirements” include the statutory requirements as a condition precedent to Award.

D. The “Base Bid” is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base to which work may be added or from which work may be deleted for sums stated in Alternate Bids.

E. A “Bid” is a complete and properly signed proposal to do the Work, submitted in accordance with the Bidding Documents, for the sums therein stipulated and supported by any data called for by the Bidding Documents.

F. The “Bid Date” is the day and hour specified in the Bidding Documents, as may be changed through an Addendum, by which Bidders are required to submit Bids to the Port.

G. The “Bid Form” is the form(s) included with the Bidding Documents, with Specification Section 00 41 00, through which a Bidder submits a Bid.

H. A “Bidder” is a person or entity who submits a Bid.

I. The “Bidding Documents” include the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, any other sample bidding and contract forms, the Bid Bond, and the proposed Contract Documents, including any Addenda issued prior to the Bid Date.

J. The “Contract Documents” proposed for the Work consist of the Agreement, the General Conditions of the Contract (as well as any Supplemental, Special or other Conditions included in the project manual), the Drawings, the Specifications, and all Addenda issued prior to, and all modifications issued after, execution of the Contract.

K. A “Sub-Bidder” is a person or entity of any tier who submits a bid or proposal to or through the Bidder for materials, equipment or labor for a portion of the Work.

1.02 BIDDER’S REPRESENTATIONS

By making its Bid, each Bidder represents that:

A. BIDDING DOCUMENTS. The Bidder has read and understands the Bidding Documents, and its Bid is made in accordance with them.

B. PRE-BID MEETING. The Bidder has attended pre-Bid meeting(s) required by the Bidding Documents. Attendance at a mandatory meeting or training session means that, in the sole opinion of the Port, a Project representative of a prospective Bidder has attended all or substantially all of such meeting or session.

C. BASIS. Its Bid is based upon the materials, systems, services, and equipment required by the Bidding Documents, and is made without exception.

D. EXAMINATION. The Bidder has carefully examined and understands the Bidding Documents, the Contract Documents (including, but not limited to, any liquidated damages and insurance provisions), and the Project site, including any existing buildings, it has familiarized itself with the local conditions under which the Work is to be performed and has correlated its observations with the requirements of the proposed Contract Documents and it has satisfied itself as to the nature, location, character, quality and quantity of the Work, the labor, materials, equipment, goods, supplies, work, services and other items to be furnished, and all other requirements of the Contract Documents. The Bidder has also satisfied itself as to the conditions and other matters that may be encountered at the Project site or affect performance of the Work or the cost or difficulty thereof, including but not limited to those conditions and matters affecting: transportation, access, disposal, handling and storage of materials, equipment and other items; availability and quality of labor, water, electric power and utilities; availability and condition of roads; climatic conditions and seasons; physical conditions at the Project site and the surrounding locality; topography and ground surface conditions; and equipment and facilities needed preliminary to and at all times during the performance of the Work. The failure of the Bidder fully to acquaint itself with any applicable condition or matter shall not in any way relieve the Bidder from the responsibility for performing the Work in accordance with, and for the Contract Sum and within the Contract Time provided for in, the Contract Documents.

E. PROJECT MANUAL. The Bidder has checked its copies of the project manual (if any) with the table of contents bound therein to ensure the project manual is complete.

F. SEPARATE WORK. The Bidder has examined and coordinated all Drawings, Contract Documents, and Specifications with any other contracts to be awarded separately from, but in connection with, the Work being Bid upon, so that the Bidder is fully informed as to conditions affecting the Work under the Contract being Bid upon.

G. LICENSE REQUIREMENTS. Bidders and Sub-Bidders shall be registered and shall hold such licenses as may be required by the laws of Washington, including a certificate of registration in compliance with RCW 18.27, for the performance of the Work specified in the Contract Documents.

H. NO EXCEPTIONS. Bids must be based upon the materials, systems and equipment described and required by the Bidding Documents, without exception.

1.03 BIDDING DOCUMENTS

A. COPIES

1. Bidders may obtain complete sets of the Bidding Documents from The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts" then "Procurement".

~~Bidders, including subcontractors and suppliers, shall fill out the Port's Sensitive Security Information (SSI) Non-Disclosure Agreement (NDA) and return it to the Port via email to procurement@portoftacoma.com. Only those who submit the SSI NDA will be issued access to the Drawings. The SSI NDA form, with instructions, is available at the following Port website:~~

~~https://www.portoftacoma.com/sites/default/files/Sensitive%20Security%20Informaiton%20Non-Disclosure%20Agreement.pdf~~

~~Upon receipt of the completed SSI NDA form Drawings will be made available through an FTP Site.~~

2. ~~Specifications, Addenda, and Plan Holders List for this project are available on-line through The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts"; "Procurement", and then the Procurement Number 070862. Bidders must subscribe to the Holder's List on the right hand side of the screen in order to receive automatic email notification of future addenda and to be placed on the Holder's List.~~

3. Complete Sets. Bidders shall use complete sets of Bidding Documents in preparing Bids and are solely responsible for obtaining updated information. The Port does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete and/or superseded sets of Bidding Documents.

4. Conditions. The Port makes copies of the Bidding Documents available only for the purpose of obtaining Bids on the Work and does not confer a license or grant permission for any other use.

5. Legible Documents. To the extent any Drawings, Specifications, or other Bidding Documents are not legible, it is the Bidder's responsibility to obtain legible documents.

B. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

1. Format. The Contract Documents are divided into parts, divisions, and sections for convenient organization and reference. Generally, there has been no attempt to divide the Specification sections into Work performed by the various building trades, any Work by separate contractors, or any Work required for separate facilities in or phases of the Project.

2. Duty to Notify. Bidders shall promptly notify the Port in writing of any ambiguity, inconsistency, or error that they may discover upon examination of the Bidding Documents or of the site and local conditions.

3. Products and Installation. All Bidders shall thoroughly familiarize themselves with specified products and installation procedures and submit to the Port any objections (in writing) no later than seven (7) days prior to the Bid Date. The submittal of the Bid constitutes acceptance of products and procedures specified as sufficient, adequate, and satisfactory for completion of the Contract.

4. Written Request. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written email request to procurement@portoftacoma.com at least seven (7) days prior to the Bid Date.

5. **Request to Modify Responsibility Criteria.** No later than seven (7) days prior to the Bid Date, a potential Bidder may request in writing that the Port modify the Responsibility Criteria. The Port will evaluate the information submitted by the potential Bidder and respond before the Bid Date. If the evaluation results in a change of the Criteria, the Port will issue an Addendum identifying the new Criteria.

6. Addenda. The Bidder shall not rely on oral information provided at any pre-Bid meetings or during site visits. Verbal statements made by representatives of the Port are for informational purposes only. Any interpretation, correction or change of the Bidding Documents will be made solely by written Addendum. Interpretations, corrections or changes of the Bidding Documents made in any manner other than by written Addendum, including but not limited to oral statements, will not be binding, and Bidders shall not rely upon such statements, interpretations, corrections or changes. The Port is not responsible for explanations or interpretations of the Bidding Documents other than in a written Addendum.

7. Site Visits. Any site visits are provided as a courtesy to potential Bidders to assist them in becoming familiar with the Project site conditions. However, only the Bidding Documents, including any issued Addenda, may be relied upon by Bidders.
8. Singular References. Reference in the singular to an article, device, or piece of equipment shall include as many of such articles, devices, or pieces as are indicated in the Contract Documents or as are required to complete the installation.
9. Utilities and Runs. The Bidder should assume that the exact locations of any underground or hidden utilities, underground fuel tanks, and plumbing and electrical runs may be somewhat different from any location indicated in the surveys or Contract Documents.

C. SUBSTITUTIONS

1. For substitutions during bidding, refer to Section 00 26 00 – Substitution Procedures During Bidding.

D. ADDENDA

1. Distribution. All Addenda will be written and will be made available on the Port's website or any other source specified by the Port for the Project.
2. Copies. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.
3. Verification and Acknowledgment of Receipt. Prior to submitting a Bid, each Bidder shall ascertain that it has received all Addenda issued. Each Bidder shall acknowledge its receipt and consideration of all Addenda in its Bid.

1.04 BIDDING PROCEDURE

A. FORM AND STYLE OF BIDS

1. Form. Bids (including required attachments) shall be submitted on forms identical to the Bid Form included with the Bidding Documents. No oral, email, or telephonic responses or modifications will be considered.
2. Entries on the Bid Form. All blanks on the Bid Form shall be filled in by typewriter, printer, or manually in ink.
3. Figures. All sums shall be expressed in figures, not words. Portions of the Bid Form may require the addition or multiplication of components bids to a total or the identification of component amounts within a total. In case of discrepancy between unit prices listed and their sum(s), the unit prices listed shall govern (rather than the sum).
4. Initial Changes. Any interlineation, alteration or erasure shall be initialed by an authorized representative of the Bidder.
5. Bid Breakdown. The Bid Form may contain, for the Port’s accounting purposes only, a breakdown of some or all of the components included in the Base Bid.
    a. For lump sum bids the total Contract Sum shall be submitted.
    b. For unit price bids a price shall be submitted for each item of the Work, an extension thereof, and, if requested, the total Contract Sum.
6. No Conditions. The Bidder shall make no conditions or stipulations on the Bid Form nor qualify its Bid in any manner.
7. Identity of Bidder. The Bidder shall include in the specified location on the Bid Form the legal name of the Bidder and, if requested, a description of the Bidder as a sole proprietor,

a partnership, a joint venture, a corporation, or another described form of legal entity. The Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. The Port verifies signature authority on the Labor and Industries website https://fortress.wa.gov/lni/bbip/Search.aspx under the contractor registration business owner information. If the business owner information is not current the bidder shall show proof of authority to sign at the request of the Port. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder

8. Bid Amounts Do Not Include Sales Tax. The Work to be performed constitutes a "retail sale" as this term is defined in RCW 82.04.050. Thus, the Base Bid amount shall include in the sum stated all taxes imposed by law, EXCEPT WASHINGTON STATE AND LOCAL SALES TAX. The engaged Contractor will pay retail sales tax on all consumables used during the performance of the Work and on all items that are not incorporated into the final Work; this tax shall be included in the Base Bid price and in any other prices set forth on the Bid Form. The Port will pay state and local retail sales tax on each progress payment and final payment to the engaged Contractor for transmittal by the Contractor to the Washington State Department of Revenue or to the applicable local government.

B. SUBMISSION OF BIDS

1. Procedure. The Bid, the Bid security, and other documents required to be submitted with the Bid shall be enclosed in a sealed envelope identified with the Project name and number and the Bidder's name and address. If the Bid is sent by mail the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face of the mailing envelope.

   a. If a Bid is mailed, it shall be addressed to the Port of Tacoma, Contracts Department, One Sitcum Plaza, Tacoma, WA 98421.

   b. If a Bid is delivered, it shall be delivered to the Front Reception Desk, Port of Tacoma, One Sitcum Plaza, Tacoma, WA 98421.

   c. The time stamp clock at the Front Reception Desk at One Sitcum Plaza is the Port's official clock.

2. Deposit. Bids shall be deposited at the designated location prior to the Bid Date indicated in the Advertisement or Invitation to Bid, or any extension thereof made by Addendum. Bids received after the Bid Date and time specified shall be returned without consideration at the discretion of the Port or rejected at the time of receipt.

3. Delivery. The Bidder assumes full responsibility for timely delivery at the location designated for receipt of Bids.

4. Form. Oral, facsimile, telephonic, electronic, or email Bids are invalid and will not be considered.

C. MODIFICATION OR WITHDRAWAL OF BID

1. After the Bid Date. A Bid may not be modified, withdrawn or canceled by the Bidder during a sixty (60) day period following the Bid Date, and each Bidder so agrees by virtue of submitting its Bid.

2. Before the Bid Date. Prior to the Bid Date, any Bid submitted may be modified or withdrawn only by notice to the party receiving Bids at the place designated for receipt of Bids. The notice shall be in writing with the signature of the Bidder and shall be worded so as not to reveal the amount of the original Bid. Email notice will not be accepted. It shall be

the Bidder's sole responsibility to verify that the notice has been received by the Port in time to be withdrawn before the Bid opening.

3. Resubmittal. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

4. Bid Security with Resubmission. Bid security shall be in an amount sufficient for the Bid as modified or resubmitted.

D. COMMUNICATIONS

1. Communications from a Bidder related to these Instructions to Bidders must be in writing to procurement@portoftacoma.com. Communications, including but not limited to notices and requests, by Sub-Bidders shall be made through the Bidder and not directly by a Sub-Bidder to the Port.

1.05 CONSIDERATION OF BIDS

A. OPENING OF BIDS: Unless stated otherwise in the Advertisement or Invitation to Bid or an Addendum, the properly identified Bids received on time will be opened publicly and will be read aloud. An abstract of the Base Bids and any Alternate Bids will promptly (and generally within 24 hours) be made available to Bidders and other interested parties.

B. REJECTION OF BIDS: The Port shall have the right but not the obligation to reject any or all Bids for any reason or for no reason, to reject a Bid not accompanied by the required Bid security, or to reject a Bid which is in any way incomplete or irregular.

C. BIDDING MISTAKES: The Port will not be obligated to consider notice of claimed Bid mistakes received more than 24 hours after the Bid Date. In accordance with Washington law, a low Bidder that claims error and fails to enter into the Contract is prohibited from Bidding on the Project if a subsequent call for Bids is made for the Project.

D. ACCEPTANCE OF BID (AWARD)

1. Intent to Accept. The Port intends (but is not bound) to Award a Contract to the Responsible Bidder with the lowest responsive Bid, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Port has the right to waive any informality or irregularity in any Bid(s) received and to accept the Bid which, in its judgment, is in its own best interests.

2. Requirements for Award. Before the Award, the lowest responsive Bidder must be deemed Responsible by the Port and must satisfy all Award Requirements.

E. BID PROTEST PROCEDURES

1. Procedure. A Bidder protesting for any reason the Bidding Documents, a Bidding procedure, the Port's objection to a Bidder or a person or entity proposed by the Bidder, including but not limited to a finding of non-Responsibility, the Award of the Contract or any other aspect arising from or relating in any way to the Bidding shall cause a written protest to be filed with the Port within two (2) business days of the event giving rise to the protest. (Intermediate Saturdays, Sundays, and legal holidays are not counted as business days.) The written protest shall include the name of the protesting Bidder, the bid solicitation number and title under which the protest is submitted, a detailed description of the specific factual and legal grounds for the protest, copies of all supporting documents, evidence that the apparent low bidder has been given notice of the protest, and the specific relief requested. The written protest shall be sent by email to procurement@portoftacoma.com.

2. Consideration. Upon receipt of the written protest, the Port will consider the protest. The Port may, within three (3) business days of the Port's receipt of the protest, provide any other affected Bidder(s) the opportunity to respond in writing to the protest. If the protest is not resolved by mutual agreement of the protesting Bidder and the Port, the Contracts Director of the Port or his or her designee will review the issues and promptly furnish a final and binding written decision to the protesting Bidder and any other affected Bidder(s) within six (6) business days of the Port's receipt of the protest. (If more than one (1) protest is filed, the Port's decision will be provided within six (6) business days of the Port's receipt of the last protest.) If no reply is received from the Port during the six (6) business-day period, the protest will be deemed rejected.
3. Waiver. Failure to comply with these protest procedures will render a protest waived.
4. Condition Precedent. Timely and proper compliance with and exhaustion of these protest procedures shall be a condition precedent to any otherwise permissible judicial consideration of a protest.

1.06 POST BID INFORMATION

A. THE LOWEST RESPONSIVE BIDDER SHALL:

1. Responsibility Detail Form. Within 24 hours of the Low Responsive Bidder Selection Notification, the apparent low Bidder shall submit to the Port the Responsibility Detail Form and Project Example Sheets (Section 00 45 13) executed by an authorized company officer. As requested from the Port, the low, responsive Bidder shall provide written confirmation that the person signing the Bid on behalf of the Bidder was duly authorized at the time of bid, a detailed breakdown of the Bid in a form acceptable to the Port, and other information required by the Port.
2. Within ten (10) days after the Port's Notice of Award of the Contract, the apparent low Bidder shall also submit to the Port:
    a. additional information regarding the use of the Bidder's own forces and the use of subcontractors and suppliers;
    b. the names of the persons or entities (including a designation of the Work to be performed with the Bidder's own forces, and the names of those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work (i.e., either a listed Sub-Bidder or a Sub-Bidder performing Work valued at least ten percent (10%) of the Base Bid), consistent with the listing required with the Bid; and
    c. the proprietary names and the suppliers of the principal items or systems of materials and equipment proposed for the Work.
3. Failure to provide any of the above information in a timely manner will constitute an event of breach permitting forfeiture of the Bid security.
4. Bidder Responsibility. The Bidder will be required to establish to the satisfaction of the Port the reliability and Responsibility of itself and the persons or entities proposed to furnish and perform the Work described in the Bidding Documents. If requested, the Bidder shall meet with the Port to discuss the Bid, including any pricing, the Bid components, and any assumptions made by the Bidder.
5. Objection. Prior to an Award of the Contract, the Port will notify the Bidder in writing if the Port, after due investigation, has reasonable objection to the Bidder or a person or entity proposed by the Bidder. Upon receiving such objection, the Bidder may, at Bidder's option,

(1) withdraw their Bid, (2) submit an acceptable substitute person or entity with no change in the Contract Time and no adjustment in the Base Bid or any Alternate Bid, even if there is a cost to the Bidder occasioned by such substitution, or (3) file a protest in accordance with the Bidding Documents.

6. Change. Persons and entities proposed by the Bidder to whom the Port has made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Port.

7. Right to Terminate. The Bidder's representations concerning its qualifications will be construed as a covenant under the Contract. If a Bidder makes a material misrepresentation on a Qualification Statement, the Port has the right to terminate the Contract for cause and may then pursue any remedies that exist under the Contract or that are otherwise available.

B. INFORMATION FROM OTHER BIDDERS: All other Bidders designated by the Port as under consideration for Award of a Contract shall also provide a properly executed Qualification Statement, if so requested by the Port.

1.07 PERFORMANCE BOND, LABOR AND MATERIAL PAYMENT BOND, AND INSURANCE

A. BOND REQUIREMENTS: Within ten (10) days after the Port's Notice of Award of the Contract, the successful Bidder shall obtain and furnish statutory bonds pursuant to RCW 39.08 covering the faithful performance of the Contract and the payment of all obligations arising thereunder in the form and amount prescribed in the Contract Documents. The cost of such bonds shall be included in the Base Bid.

B. TIME OF DELIVERY AND FORM OF BONDS: The successful Bidder shall deliver an original copy of the required bonds to the Port, 1 Sitcum Plaza, Tacoma, WA 98421, within the time specified in the Contract Documents.

C. INSURANCE: a certificate of insurance from the Bidder's insurance company that meets or exceeds all requirements of the Contract Documents;

D. GOVERNMENTAL REQUIREMENTS: Notwithstanding anything in the Bidding or Contract Documents to the contrary, the Bidder shall provide all bonding, insurance and permit documentation as required by governmental authorities having jurisdiction for any portions of the Project.

1.08 FORM OF AGREEMENT

A. FORM TO BE USED: The Contract for the Work will be written on the form(s) contained in the Bidding Documents, including any General, Supplemental or Special Conditions, and the other Contract Documents included with the project manual.

B. CONFLICTS: In case of conflict between the provisions of these Instructions and any other Bidding Document, these Instructions shall govern. In case of conflict between the provisions of the Bidding Documents and the Contract Documents, the Contract Documents shall govern.

C. CONTRACT DELIVERY. Within ten (10) days after Notice of Award, the Bidder shall submit a signed Contract to the Port in the form tendered to the Bidder and without modification.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of the Contract Documents, as follows:

B. Geotechnical Report: Entitled GEOTECHNICAL REPORT, West Sitcum Stormwater Treatment, Port of Tacoma, dated 3/16/2018.

1. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Engineer.

2. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in the Contract Documents.

~~3. This report, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to the Port.~~

C. Certain information relating to shop drawings for Port furnished hydrodynamic separators and treatment systems.

1.02 PRELIMINARY DATA

A. Certain preliminary investigations and studies made by the Port are available to the bidders but will not be part of the Contract Documents, as follows:

1. Stormwater Engineering Report for West Sitcum Marine Terminal, Parametrix, January 2018.

1.0~~2~~3 AVAILABILITY

A. Reference Documents are available on-line through The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts"; "Procurement", and then the Procurement Number.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

BIDDER'S NAME: _____

PROJECT TITLE: WEST SITCUM STORMWATER TREATMENT

The undersigned Bidder declares that it has read the specifications, understands the tools, materials, etc., including all work incidental to, or described or implied as incidental to such items, according to the contract documents of the Port of Tacoma, and that the Bidder will complete the work within the time stated, and that Bidder will accept in full payment therefore the lump sum or unit price(s) set forth below:

Proposed Bid Price. (Note: Show prices in figures only.) Complete Installation:

ITEM NO.	DESCRIPTION OF ITEM	QTY	UOM	UNIT PRICE	EXTENDED PRICE
1	Mobilization and Demobilization	1	LS		
2	Basin A Construction	1	LS		
3	Basin B Construction	1	LS		
4	Basin C Construction	1	LS		
5	Unforeseen conditions / Unforeseen utility relocations	1	Allowance	$20,000	$20,000
6	Trench Safety Systems	1	LS		
7	Storm Drain Line Flushing	1	LS		

TOTAL BID AMOUNT	

Evaluation of Bids. In accordance with the provisions of these Contract Documents, Bids will be evaluated to determine the lowest Base Bid Subtotal offered by a responsible Bidder submitting a responsive bid.

Progress Payment Retention. In accordance with RCW 60.28.011, the undersigned elects that, during the life of the Contract, the money withheld from Contract progress payments be retained as indicated below. Failure to indicate a choice shall be construed as approval of Item (a).

a. Retained percentages will be retained by the Port in a fund; or _____ (Initials)

b. Deposited by the Port in an interest-bearing account in a bank, mutual savings bank or savings and loan association; or _____ (Initials)

c. Placed in escrow with a bank or trust company; or _____ (Initials)

d. Retainage Bond in an amount equal to 5% of the Contract Sum plus Change Orders.

_____
(Initials)

The retainage bond shall be based on the form furnished in Section 00 61 23 or otherwise acceptable to the Port and duly completed and signed by a licensed surety or sureties registered with the Washington State Insurance Commissioner and on the currently authorized insurance list published by the Washington State Insurance Commissioner. The surety or sureties must be rated at least A minus, FSC(6), or higher by A.M. Best Rating Guide and be authorized by the Federal Department of the Treasury. Attorneys-in-fact who sign the retainage bond must file with each bond a certified and effective Power of Attorney statement.

NOTE: Accounts and deposits made under Items (b) and (c), above, must be in a bank which is listed on the State of Washington Public Depositaries current list.

Trench Excavation Safety Provision. If the bid amount contains work which requires trenching exceeding a depth of 4 feet, all costs for trench safety shall be included in the Base Bid and indicated below for adequate trench safety systems in compliance with RCW 39.04 and WAC 296-155-650. Bidder shall include a lump sum amount, excluding Washington State Sales Tax. If trench excavation safety provisions do not pertain to the Work, the Bidder should enter “N.A.” or “Not Applicable” in the blank on the Bid Form.

Trench Excavation Safety: _____(Total in Written Figures Only)

Addenda. Bidder acknowledges review of all Addenda through No. _____

Bid Security. A certified check, cashier’s check, or other obligation of a bank, or a bid security bond in substantially the form set forth in Section 00 43 13, Bid Security Form for at least 5% of the total bid without sales tax, accompanies this bid.

Principal Subcontractors/Suppliers. The bidder shall list below the name of each subcontractor or supplier to whom the bidder proposes to subcontract the portions of the work listed below, or name itself for the work.

Work to be Performed	**Name of Firm**
HVAC (Heating, Ventilation and Air Conditioning) Work	
Plumbing Work as described in RCW 18.106	
Electrical Work as described in RCW 19.28	

Noncollusion. The undersigned declares under penalty of perjury that the bid submitted is a genuine and not a sham or collusive bid, or made in the interest or on behalf of any person or firm not therein named; and further says that the said bidder has not directly or indirectly induced or solicited any bidder on the above work or supplies to put in a sham bid, or any other person or corporation to refrain from bidding; and that said bidder has not in any manner sought by collusion to secure to the bidder an advantage over any other bidder or bidders.

Name of Firm	Date
Signature	By Title
Mailing Address	City, State Zip Code
Telephone Number	Email Address
WA State Contractor's License No.	Date of Issue Expiration Date
Unified Business Identifier (UBI) No.	Employment Security Department No.

Identification of Contractor as a sole proprietor, a partnership, a joint venture, a corporation, or another described form of legal entity

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies work sequence and constraints.

B. The purpose of the milestones, sequence and limitations of construction are to ensure that the Contractor understands the requirements and limitations on its work by the specific characteristics of the Contract, schedules and conducts work in a manner consistent with achieving these purposes, and complies with the construction schedule, the specific sequence, constraints, milestones and limitations of work specified.

C. Sequence of construction: Plan the sequence of construction to accommodate all the requirements of the specifications. The Contract Price shall include all specified requirements as described in this Section.

1.02 CONTRACTOR ACCESS AND USE OF PREMISES

A. Activity Regulations

1. Ensure Contractor personnel deployed to the project become familiar with and follow all regulations or restrictions established by the Engineer.

B. Working Facility

1. The Facility will remain in operation for the duration of construction. The Contractor shall conduct all items of the Work in such a manner as to prevent interference with the normal operations of the Facility. Work outside of staging area to be coordinated with terminal vessel schedules; typically, Wednesdays and Fridays.

2. The facility is a restricted area. All workers shall possess TWIC credentials. See Section 00 73 63, Security Requirements.

~~2~~3. TWIC Escorting Requirements:

a. TWIC escort personnel are not permitted work assignments outside of observing non-TWIC workers.

b. TWIC escort personnel may observe a maximum of five non-TWIC workers.

c. All contractor personnel who are to receive escort training must coordinate to attend single classroom date.

C. Work Site Regulations

1. Keep within the limits of work and assigned avenues of ingress and egress. Do not enter any areas outside the designated work location unless previously approved by the Engineer. The Contractor must comply with the following conditions:

a. Restore all common areas to a clean and useable condition that permits the resumption of Tenant operations after the Contractor ceases daily work.

b. Be responsible for control and security of Contractor-owned equipment and materials at the work site. Report to Port Security (phone (253) 383-9472) any missing/lost/stolen property.

c. Ensure all materials, tools and equipment will be removed from the site or secured within the designated laydown area at the end of each shift.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

PART 1 - GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

A. The provisions and intent of the Contract, including the General and Supplemental Conditions apply to this work as if specified in this section. Work related to this section is described throughout these Specifications.

B. Individual submittals are required in accordance with the pertinent sections of these Specifications

1.02 PAYMENT PROCEDURES

A. Monthly pay estimates shall clearly identify the work performed for the given time period based on the approved Schedule of Values.

1. At the Pre-construction meeting, the Engineer and the Contractor shall agree upon a date each month when payment applications shall be submitted.

B. Prior to submitting a payment application, the Contractor and Engineer shall meet each month to review the work accomplished to determine the actual quantities including labor, materials and equipment charges to be billed.

1. Prior to the payment application meeting, the Contractor shall submit to the Engineer all measurement documentation as referenced in these contract documents; to include all measurement by weight, volume or field.

2. For all change work being done on a force account basis, the Contractor shall submit prior to meeting with Engineer all Force Account back-up documentation as required to process the payment application where Force Account work is being billed. The Engineer and the Contractor shall review the documentation at the payment application meeting to verify quantities and review the work accomplished.

3. The Contractor shall bring a copy of all documentation to the pay application meeting with the Engineer.

C. Following the Engineers' review, the Contractor shall prepare an original pay estimate with complete supporting documentation attached and submit it electronically using Adobe PDF file format to cpinvoices@portoftacoma.com

D. An estimated cashflow statement projecting the Contractor's monthly billings on the project shall be submitted with each payment application.

1.03 PAYMENT PRICING

A. Pricing for the various lump sum or unit prices in the Bid Form, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work in accordance with the requirements of the Contract Documents.

B. Pricing also includes all costs of compliance with the regulations of public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).

C. No separate payment will be made for any item that is not specifically set forth in the Bid Form, and all costs therefore shall be included in the prices named in the Bid Form for the various appurtenant items of work.

D. All other work not specifically mentioned in the measurement and payment sections identified below shall be considered incidental to the work performed and merged into the various unit and lump sum prices bid. Payment for work under one item will not be paid for under any other item.

E. The Port of Tacoma reserves the right to make changes should unforeseen conditions necessitate such changes. Where work is on a unit price basis, the actual quantities occasioned by such changes shall govern the compensation.

1.04 LUMP-SUM MEASUREMENT

A. Lump-sum measurement will be for the entire item, unit of Work, structure, or combination thereof, as specified and as indicated in the Contractor's submitted bid.

1. If the Contractor requests progress payments for lump-sum items, such progress payments will be made in accordance with an approved schedule of values. The quantity for payment for completed work shall be an estimated percentage of the lump sum amount, agreed to between the Engineer and Contractor, payable in monthly progress payments in increments proportional to the work performed in amounts as agreed between the Engineer and the Contractor.

1.05 REJECTED, EXCESS, OR WASTED MATERIALS

A. Quantities of material wasted or disposed of in a manner not called for under the Contract; rejected loads of material, including material rejected after it has been placed by reasons of the failure of the Contractor to conform to the provisions of the Contract; material not unloaded from the transporting vehicle; material placed outside the lines indicated on the Contract Drawings or established by the Engineer; or material remaining on hand after completion of the Work, will not be paid for, and such quantities shall not be included in the final total quantities. No additional compensation will be permitted for loading, hauling, and disposing of rejected material.

1.06 MEASUREMENT AND PAYMENT

A. Item #1: Mobilization and Demobilization

1. Payment for MOBILIZATION AND DEMOBILIZATION shall be for preparatory work and operations performed by the Contractor including, but not limited to completion and submittal and approval of the following:

a. All bonds and insurance certificates

b. Initial Submittal Schedule

c. Schedule of Values

d. Detailed CPM progress schedule

e. Erosion and Sediment Control Plan

f. Hazardous and Contaminated Substance Health and Safety Plan

g. Establishing Contractor's Project Manager, Superintendent, and other required specified personnel on the Work site full time.

h. Furnishing and installing all temporary facilities and controls as needed for the safe and proper completion of the work, including utilities, sanitary facilities, barriers and enclosures, fences, staging and entrance areas, and field offices, as specified.

i. Mobilization onto the site required in support of the Contractor's first 30 days of operations.

j. Furnishing and installing project signs, as specified.

2. Mobilization and Demobilization shall be paid at the lump sum price listed in the Contractor's submitted bid. Incremental payment shall be made for each location as follows:

a. 40% after completion of 5% of the total contract amount of other bid items have been earned.

b. 40% after completion of 20% of the total contract amount of other bid items have been earned.

c. 20% after completion of all work on the project has been completed, including cleanup and acceptance of the project by the Port.

B. Item #2: Basin A Construction

1. Item Description: The Work of this item includes all Work required to complete the Basin A portion of West Sitcum Stormwater Treatment project as included in the Contract Documents that is not specifically included in other bid items described in this section.

2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, approved by the Engineer in accordance with the approved Schedule of Values.

C. Item #3:Basin B Construction.

1. Item Description: The Work of this item includes all Work required to complete the Basin B portion of West Sitcum Stormwater Treatment project as included in the Contract Documents that is not specifically included in other bid items described in this section.

2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, approved by the Engineer in accordance with the approved Schedule of Values.

D. Item #4: Basin C Construction.

1. Item Description: The Work of this item includes all Work required to complete the Basin C portion of West Sitcum Stormwater Treatment project as included in the Contract Documents that is not specifically included in other bid items described in this section.

2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, approved by the Engineer in accordance with the approved Schedule of Values.

E. Item #5: Unforeseen conditions allowance and unforeseen utility relocations.

1. Item Description: This allowance will be for UNFORESEEN CONDITIONS for work unidentified at the time of bid and will be paid preferably as negotiated unit price(s) or lump

sum(s). If unit prices or lump sums cannot be established, work will be paid on a time and material basis per Section 00 72 00 General Conditions Article 8.0. Work under this bid item shall be accomplished upon written direction of the Engineer as a Minor Change in Work. The amount of the allowance will be adjusted based on actual work authorized by the Engineer. Any portion of the allowance not used will be deducted from the CONTRACT SUM. This bid item may or may not be used.

2. Measurement: This item will be measured based upon the method agreed upon for each Minor Change issued.

3. Payment: This item will be paid at the price agreed upon for each Change in Work issued by the Engineer in accordance with procedures noted in Section 01 26 00 - Change Management Procedures.

F. Item #6: Trench Safety Systems.

1. Item Description: The Work of this item includes shoring and safety systems for all trench excavations exceeding 4-foot depths.

2. Measurement: This item will be measured as a lump sum unit.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid.

G. Item #7: Storm Drain Line Flushing

1. Item Description: This item includes all work associated with storm drain line flushing per the Contract Plans.

2. Measurement: This item will be measured as a lump sum unit.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXEUCTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 PERMITS, CODES AND REGULATIONS

A. The following permits/approvals have been applied for (or are on file) and incorporated into the Contract:

1. Shoreline Management Act / Critical Areas Compliance
2. Site Development Permit (SDEV18-0030)
3. Building Permit (BLDCN18-0041)

B. Conform with the requirements of listed permits and additional or other applicable permits, codes, and regulations as may govern the Work.

C. Obtain and pay fees for licenses, permits, inspections, and approvals required by laws ordinances, and rules of appropriate governing or approving agencies necessary for proper completion of Work (other than those listed under item 1.01A above and Special Inspections called for by the International Building Code).

D. Conform with current applicable codes, regulations and standards, which is the minimum standard of quality for material and workmanship. Provide labor, materials, and equipment necessary for compliance with code requirements or interpretations, although not specifically detailed in Drawings or specifications. Be familiar with applicable codes and standards prior to bidding.

E. Process through Engineer, request to extend, modify, revise, or renew any of the permits (listed in 1.01.A above). Furnish requests in writing and include a narrative description and adequate Drawings to clearly describe and depict proposed action. Do not contact regulatory agency with requests for permit extensions, modifications, revisions, or renewals without the prior written consent of the Engineer.

1.02 VARIATIONS WITH CODES, REGULATIONS AND STANDARDS

A. Nothing in the Drawings and specifications permits Work not conforming to codes, permits or regulations. Promptly submit written notice of the Engineer of observed variations or discrepancies between the Contract Documents and governing codes and regulations.

B. Appropriate modifications to the Contract Documents will be made by Change Order to incorporate changes to Work resulting from code and/or regulatory requirements. Contractor assumes responsibility for Work contrary to such requirements if Work proceeds without notice.

C. Contractor is not relieved from complying with requirements of Contract Documents which may exceed, but not conflict with requirements of governing codes.

1.03 COORDINATION WITH REGULATORY AGENCIES

A. Coordinate Work with appropriate governing or regulating authorities and agencies.

B. Provide advance notification to proper officials of Project schedule and schedule revisions throughout Project duration, in order to allow proper scheduling of inspection visits at proper stages of Work completion.

C. Regulation coordination is in addition to inspections conducted by Engineer. Notify Engineer at least 48 hours in advance of scheduled inspections involving outside regulating officials, to allow Engineer to be present for inspections.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. The purpose of this section is to provide the framework for transferring Port provided equipment and materials to the Contractor in a safe, timely and effective manner.

1.02 SUBMITTALS

A. Submit an inspection report or log to the Engineer of the inspection performed on the equipment and materials before acceptance by the Contractor. Flag any equipment or materials identified as being in unsatisfactory condition before moving or relocating it from the Location Area described below. Document unsatisfactory condition of equipment photographically, using digital media.

1.03 COORDINATION

A. The materials will be available by: ~~between 5/22/2018 and 6/28/2018.~~

B. Pump stations [7/18/2018 - 8/08/2018]

C. Hydrodynamic separators [7/01/2018 - 7/16/2018]

D. Treatment systems [7/01/2018 - 7/16/2018]

1.04 LOCATION

A. The materials are be located on the West Sitcum terminal. Contractor shall be responsible for receiving and unloading all owner supplied equipment.

B. Owner furnished materials shall be staged in the central staging area, as shown on Sheet G08, or at construction areas at Basins A, B, and C, as shown on Sheet G07 at Contractor's option.

PART 2 - PRODUCTS

2.01 ITEMS

A. Assume all items are in satisfactory condition unless otherwise indicated. Report in writing to the Engineer equipment found to be in unsatisfactory condition.

No.	Description	Quantity	Manufacturer/Supplier
1	Stormwater Pump Stations	6	Romtech Utilities
2	Vortex-Type Hydrodynamic Separators	3	Titan Earthwork
3	Treatment Systems	26	BioClean

PART 3 - EXECUTION

3.01 REMOVAL OF EQUIPMENT FROM STORAGE LOCATION

A. Protect, transport and install where indicated within the Contract Documents.

3.02 PROTECTION

A. Equipment

1. Tightly cover and protect equipment against dirt, moisture or impact, mechanical and chemical damage.

2. Repair

a. Repair or replace Port provided property damaged by the Contractor.

3.03 RELOCATION

A. Install in accordance with the Contract Documents.

3.04 FIELD QUALITY CONTROL

A. Equipment Inspection

1. Examine each piece or component for visual defects.

B. Tests

1. Test each piece or component to ensure that it is operational in conformance with the Contract Documents.

3.05 ADDITIONAL REQUIREMENTS

A. Reference specification sections 33 05 16 (Precast Vaults), 33 44 13 (Pump Stations), 33 44 19 (Treatment Systems), and 33 44 43 (Vortex-Type Hydrodynamic Separators) for additional handling, protection, and quality control requirements.

3.06 AVAILABLE SHOP DRAWINGS FOR OWNER FURNISHED PRODUCTS ARE INCLUDED IN THE REFERENCE DOCUMENTS PER SECTION 00 31 00.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field engineering services by Contractor.

1.02 DESCRIPTION OF SERVICES

A. Specific services listed in this section are in addition to, and do not supersede, general Execution and Closeout Requirements.

B. Sole responsibility for establishing all locations, dimensions and levels of items of work.

C. Sole responsibility for provision of all materials required to establish and maintain benchmarks and control points, including batter boards, grade stakes, structure elevation stakes, and other items.

D. Keeping a transit, theodolite, or TST (total station theodolite with electronic distance measurement device); leveling instrument; and related implements such as survey rods and other measurement devices, at the project site at all times.

E. Preparation and maintenance of professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the work.

PART 2 PRODUCTS - NOT USED

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: This section includes requirements applicable to all piping, fittings, and connections. The actual pipe size and fittings shall be as shown on the Drawings, and described in the Pipe Schedule.

B. Data Sheets are provided at the end of this section for each type of pipe to be used. Additional general, material, and execution requirements are noted within the data sheet specific to each pipe material type.

1.02 SUBMITTALS

A. Submittals for pipe and fittings for use in connecting to existing structures or pipe will NOT be reviewed within associated field excavations and inspection findings confirming the existing type(s) and diameter(s).

B. Shop Drawings and Product Data:

1. Submittals shall be per Section 01 33 00 – Submittal Procedures.

2. The drawings developed by the Engineer are diagrammatic in nature and may not indicate all necessary bends, offsets and fittings. The Contractor shall, prior to developing shop drawings for field piping installation, inspect each area of work for site conformance with the Contract Documents. Submission of the shop drawings for field piping systems shall be verification that the Contractor has inspected the work areas and that the shop drawings indicate all field/site conditions which may impact the installation and performance of the work. Field or site conditions which impact the installation or performance of the work shall be indicated on the shop drawings. Failure of the Contractor to indicate these field or site conditions during the shop drawing phase which impact installation shall be cause for disallowing claims associated with these field or site conditions.

3. General piping layouts showing locations for all piping systems with respect to structures, other piping and utilities (ductwork, conduits, etc.) and details and location of joints, anchors, supports, fittings, connections, penetrations, valves, piping appurtenances, flexible couplings, manholes, and cleanouts as applicable.

   a. Submit detailed certified dimensional shop drawings and manufacturer's product data for materials and equipment.

   b. Submit for approval prior to installation, complete piping field installation shop drawings for piping systems. Shop drawings shall include plan and section view including elevation, dimensions from fixed structures, valve and instrument locations.

   c. Show complete information concerning materials of construction, fabrication, protective coatings, installation, mounting, and anchoring requirements, fasteners and other details.

   d. Pipe is to be furnished with special lengths, field-trim pieces, and closure pieces as required by Drawings 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. Manufacturing method, materials standards, grade of material, wall thickness and tolerances, pressure rating, and fitting fabrication details shall be provided for each pipe, fitting, and accessory.

   e. Details describing type of thrust restraint used at each joint in pressure pipe systems.

4. For each piping system identified in the Pipe Schedule submit pipe, fittings, linings, and coatings to be used.

5. Manufacturer's handling, delivery, storage, and installation instructions.

6. Submit written verification of required pressure testing.

7. Calculations for pipe design and fittings reinforcement and/or test data.

8. Welder certifications and qualifications.
9. Details of stulling and shipping packaging.

C. Quality Control Submittals:

1. Manufacturer's Certificate of Proper Installation.
2. Certified welding inspection and test results.
3. Test logs.

D. Basis of Design: Where a Basis of Design is specified and the Contractor elects to provide a product other than the Basis of Design, the Contractor is responsible for incorporation of all modifications needed to provide a complete and fully functional system. Additionally, the Contractor is responsible for ensuring that products meet all specified material and workmanship requirements of the specifications even when submitting a named manufacturer or product.

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, washers, gaskets, jointing materials, guides, hangers, supports, and appurtenances as shown and specified, and as required for a complete and functioning piping system. All pipe joints shall be restrained. Mortar lined and coated steel pipe shall have full circumferential welds.
2. All exposed piping shall be adequately supported with devices of appropriate design and as specified in Section 22 33 46 – 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.

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. They also shall have in their 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 retrained 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. Flexible 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. Flexible couplings shall be of the positive lock type where necessary to prevent separation of pipe due to internal pressure.

1.05 POTHOLING

A. Contractor shall verify the material and diameter of the existing pipe where connections occur. This shall be done prior to shop drawings submission and is required to allow for submittal review.

1.06 CONSTRUCTION SCHEDULING/SEQUENCING

A. Connections and utilities changes must be scheduled to provide the least possible interruptions of service. Prior to any shutdown, all materials, fittings, supports, equipment, and tools shall be on the site and all necessary labor scheduled prior to starting any connection work. The Contractor shall notify the Engineer in writing at least 7 days in advance of any required shutdowns. In general, shutdowns shall not exceed 4 hours in duration and even then only if stormwater conveyance is not required for the duration of service shutdown. In all other cases bypass pumping and/or piping shall be required so that service is maintained for the duration of construction. If a shutdown of more than 4 hours is required, the Contractor shall first install temporary service bypass and connections to all affected sites and/or buildings. All work under this Contract shall be conducted in a manner which will minimize shutdowns, open roadways, or traffic obstructions caused by the construction. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor.

B. Planned utility service shutdowns shall be accomplished during periods of minimum use. In some cases, this will require night or weekend work, which shall be at no additional cost to the Owner. The Contractor shall program work so that service will be restored in the minimum possible time, and shall cooperate with the Owner in reducing shutdowns of the utility system to a minimum. No utility interruption will be permitted without the prior approval of the Engineer.

PART 2 – PRODUCTS

2.01 PIPING

A. Pipe and fitting sizes indicated are nominal inside diameter unless otherwise noted.

B. Pipe and Fitting Designation: Piping materials are identified by a Type designation in these Specifications. The Type designation identifies not only the pipe itself but the associated fittings, valves, and appurtenances and the installation and test procedures described for that Type. The designation of a particular Type shall indicate a complete installation including fittings, valves, joints, cleaning, and testing. The pipe and fitting materials for each Type designation shall be as specified herein and summarized in the Pipe Schedule.

C. Gaskets: Except where specified otherwise, gaskets shall be SBR rubber or NBR (Nitrile, Buna-N, or approved equal).

D. Unless specified otherwise herein, flange bolts and nuts, coupling bolts and nuts, tie rods, and all other piping hardware shall be 316 stainless steel. An anti-galling compound shall be applied to the threads of stainless steel bolts.

E. As specified on Pipe Schedule and Data Sheet(s) located at the end of this section.

F. All materials delivered to the jobsite shall be new, free from defects, and marked to identify installation location in addition to the material, class, and other appropriate data, such as thickness for piping.

G. 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.

2.02 JOINTS

A. All joints shall be restrained. Type of proposed restraint(s) for each joint shall be clearly indicated within piping submittals.

B. Grooved End System:

1. Rigid, except where joints are used, to provide flexibility, or where shown, furnish flexible type.

2. Flanges: When required, furnish with grooved-type flange adapters of same manufacturer as grooved end couplings.

C. Flanged Joints:

1. Flat-faced carbon steel or alloy flanges when mating with flat-faced cast or ductile iron flanges.

D. Threaded Joints: NPT taper pipe threads in accordance with ANSI B1.20.1.

E. Thrust Tie-Rod Assemblies:

1. NFPA 24; tie-rod attachments relying on clamp friction with pipe barrel to restrain thrust are unacceptable.

F. Mechanical Joint Anchor Gland Follower:

1. Ductile iron anchor type, wedge action, with break-off tightening bolts.

2. Ductile Iron Mechanical Joint Restraint shall be:

a. Basis of Design: Series 1100 Megalug as produced by EBAA Iron, Inc.

b. Stargrip Series 3000 as produced by Start Pipe Products.

c. RomaGrip as produced by Romac Industries, Inc.

d. Series B-15 as produced by EJ Prescott, Inc.

e. Or approved equal.

G. Flexible Mechanical Compression Joint Coupling for Drains and Gravity Piping:

1. Stainless steel, ASTM A 276, Type 305 bands.

H. Flanged Coupling Adapters:

1. Flanged adapters shall be made of ductile iron conforming to ASTM A 536 and have flange bolt circles that are compatible with ANSI/AWWA C110/A21.10, 125 lbs. Class 150 Bolt Pattern. All flange coupling adapters shall be restrained flange coupling adapters.

2. Restraint for flange adapter shall consist of multiple actuated gripping wedges to maximize restraint capability. Torque limiting screws shall be used to ensure proper initial set of gripping wedges. Sealing gaskets shall be constructed of EPDM.

3. The flange adapters shall be capable of deflection during assembly or permit lengths of pipe to be field cut to allow a minimum 0.6-inch gap between the end of the pipe and the mating flange without affecting the integrity of the seal.
4. All internal surfaces of the gasket ring (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213.
5. Exterior surfaces of the gasket ring shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16.
6. The flange adapter shall be
    a. Series 2100 Restrained Flange Coupling Adapter as produced by EBAA Iron, Inc.
    b. Style RFCA by Romac Industries, Inc.
    c. Or approved equal.

I. Rubber Expansion Joints:

1. Expansion joints and fittings shall alleviate piping stress and compensate for movement in the pipeline.
2. Material of Construction shall be EPDM and resistant to UV exposure.
3. Shall allow for a minimum of 3/4 inch of expansion and 3/4 inch of compression.
4. Shall allow for a minimum of 1/2 inch of deflection.
5. Shall allow for a change in temperature of up to at least 120 degrees Fahrenheit over a period of 12 hours.
6. Be rated for at least 20 PSI of pressure through the joint.
7. Integral flanges shall be incorporated to connect the joints to the pipe.
8. Shall be Red Valve Redflex J-1W, General Rubber Corporation Style 1101, or approved equal.

2.03 GASKETS

A. Gaskets: Except where specified otherwise, gaskets shall be SBR rubber or NBR (Nitrile, Buna-N, or approved equal).

B. Gasket Lubricant: Lubricant shall be supplied by pipe manufacturer and no substitute or “or-equal” will be allowed.

2.04 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.

2.05 PIPING INSULATION SYSTEMS

A. General: All work to be furnished and installed under this section shall include but not be limited to, providing insulation for the following:

1. External exposed piping, for freeze protection where shown on the Drawings. All external exposed non-gravity-draining liquid piping shall be insulated and heat traced. Exterior insulation shall have a weather and moisture protection cover.

B. Pipe Insulation:

1. Type A (Glass Fiber):

a. Owens Corning Fiberglass SSL II Pipe Insulation; ASTM C547; rigid molded, noncombustible, K(ksi) value of 0.23 at 75 degrees F.

b. Fittings, valves, and flanges for all sizes, external, exposed, shall be insulated with premolded fiberglass fittings securely fastened in place. Premolded insulation for pipe flanges, valves, and fittings shall be removable and replaceable type for ease of maintenance. “Zeston” type insulation with plastic cover may be used. Plastic cover shall be tacked in place and all joints, seams, and laps shall be taped watertight.

c. Maximum Service Temperature: 275 degrees F.

d. Jacket, Exterior Applications: Aluminum, 0.02-inch thick; smooth/embossed finish; Fasten with 0.015-inch thick aluminum bands 3/8-inch wide. Jacket shall be taped watertight for external exposed piping.

2.06 BURIED PIPE WRAPPING AND WARNING TAPE

A. Wrap buried pipe with 8-mil polyethylene film in accordance with AWWA C 105.

B. Warning tape shall be provided and installed as shown on the Drawings.

2.07 DATA SHEETS

A. Data Sheets are provided at the end of this section for each type of pipe to be used. Additional general, material, and execution requirements are noted within the data sheet specific to each pipe material type.

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION

A. General: Pipe, fittings, 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. Sizes of valves and fittings are equal to 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. Data Sheets are provided at the end of this section for each type of pipe to be used. Additional general, material, and execution requirements are noted within the data sheet specific to each pipe material type.

C. Exercise great care to prevent injury to or scoring of the pipe, fitting, valve, and accessory lining and coating, as applicable, during handling, transportation, or storage. Do not store pipe on rough ground and do not roll the pipe on the coating. Any damaged pipe sections, specials, or fittings shall be repaired or replaced at the expense of the Contractor as satisfactory to the Engineer.

D. Carefully inspect each pipe, fitting, valve, and accessory before installation to ensure there is no defective workmanship or obstructions. Inspect the interior and exterior protective coatings and patch all damaged areas in the field or replace to the satisfaction of the Engineer.

E. Place or erect all piping to accurate line and grade and backfill, support, hang, or brace against movement as specified or shown on the Drawings, or as required for proper installation. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.

3.02 ORDERING AND INSTALLATION OF REINFORCED CONCRETE PIPE

A. Contractor shall perform excavations and field investigations to confirm existing pipe size and type prior to submission of any pipe material or layout submittals. Findings shall be submitted with each submittal.

B. Interstitial spaces between the pipe and concrete structures shall be packed with Non-Shrink Grout.

C. Per WSDOT Standard 9-05.3

3.03 INSTALLATION OF BURIED PIPE

A. Excavating, Bedding and Backfilling for Utilities: Section 31 23 33 – Earthwork.

B. All buried pipe shall be wrapped in polyethylene film. Continuously seal seams and overlaps with tape. Seal circumferential overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal any rips or cuts in the film with tape.

C. Provide each pipe with a firm, uniform bearing for its full length in the trench except at field joints. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.

D. Do not pull bell and spigot, gasketed joints more than 75 percent of the maximum deflection permitted by the pipe manufacturer.

E. Coat bolts on buried flanges or other buried appurtenances in accordance with Section 09 90 00. Wrap the appurtenance with polyethylene encasement and tape the encasement tightly closed to the pipe.

F. Where no pipe grade elevations are shown on the Drawings, install buried piping with at least 3 feet of cover to finished grade. Where piping crosses under buried electrical ducts, provide at least 4 feet 6 inches of cover. Provide 12-inch minimum separation between the buried pipes.

G. 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.

H. Securing in Place: By blocking, brackets, clamps or other approved methods to secure pipe in place to withstand test pressure without movement.

I. Install buried ductile iron pipe in accordance with AWWA C600.

J. 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.

K. 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.

L. Keep the trench in a dewatered condition during pipe laying.

3.04 INSTALLATION OF EXPOSED PIPE

A. Complete installation to present neat orderly appearance.

B. Do not block openings or passageways with piping.

C. Run piping parallel to walls of building or surrounding structures.

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, at each change of direction or alignment.

3. Support spacing shall not exceed the manufacturer’s recommendations.

4. Supports shall be located to allow for removal of valves without impact to and while maintaining in place the surrounding piping.

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.

3.05 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.

3.06 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.

3.07 FLANGED PIPE INSTALLATION

A. Tighten flange bolts so that gasket is uniformly compressed and sealed.

B. Do not distort flanges.

C. Leave flange bolts with ends projecting at least 3 threads or 1/8 to 3/8 inch beyond the face of nut after tightening, whichever is greater.

3.08 THREADED JOINT INSTALLATION

A. Threads: ANSI B2.1, NPT.

B. Cut threads full and clean with sharp dies.

C. Ream ends of pipe after threading and before assembly to remove burrs.

D. Leave not more than three pipe threads exposed at each connection.

E. Joint Sealer: Teflon thread tape.

3.09 COPPER PIPE INSTALLATION

A. Bending Pipe: Bending of pipe not allowed; use manufactured fittings.

B. Solder Joints:

1. Ream or file pipe to remove burrs.
2. Clean and polish contact surfaces of joint.
3. Apply flux to both male and female ends.
4. Insert end of tube into fittings full depth of socket.
5. Bring joint to soldering temperature, in as short a time as possible.
6. Form continuous solder bead around entire circumference of joint.

C. Brazed Joints:

1. Ream or file pipe to remove burrs.
2. Clean and polish contact surfaces of joint.
3. Apply flux to both male and female ends.
4. Insert end of tube into fittings full depth of socket.
5. Bring joint to brazing temperature, in as short a time as possible.
6. Form continuous bead of filler material around entire circumference of joint.

D. Unions: Use dielectric unions for all connections between copper and ferrous materials.

3.10 PVC PIPE INSTALLATION

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. Solvent Joints:

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.

C. Threaded Joints: Tighten by strap wrench to not more than one full turn beyond hand tight.

D. Pipe deflection shall not exceed 75 percent of that recommended by the manufacturer.

E. Pipe shall be cut square and perpendicular to the pipe axis.

3.11 CLEANING

A. Prior to testing, thoroughly clean the inside of each completed piping system of all dirt, loose scale, sand, and other foreign material. Cleaning shall be by sweeping, flushing with water, or blowing with compressed air or oil-free nitrogen gas, as appropriate for the size and type of pipe. Flushing shall achieve a velocity of at least 3 feet per second. The Contractor shall install temporary strainers, temporarily disconnect equipment, or take other appropriate measures to protect equipment while cleaning piping. Cleaning shall be completed after any pipeline repairs.

3.12 VENTS AND DRAINS

A. Manual air vents shall be provided at the high points of each reach of liquid pipelines. Air vents shall consist of stainless steel ball valve and stainless steel pipe return. Air vents shall be taken to the nearest floor with cock mounted 4 feet above the floor.

B. Manual drains shall be provided at the low points of each reach of liquid pipelines. Drains shall be piped to a collection point within 1 foot of the ground. Drain valves shall be threaded-end ball valves of the size specified.

3.13 FIELD QUALITY CONTROL

A. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.

B. Leakage Testing: As specified in Section 22 05 40 – Piping Leakage Testing.

C. Contractor shall be responsible for the costs of additional inspection and retesting by the Owner resulting from non-compliance.

3.14 PIPE PAINTING

A. Paint exposed interior and exterior pipe and immersed pipe as specified in Section 09 90 00 – Equipment and Piping Painting.

(PIPE DATA SHEETS FOLLOW)

DATA SHEET 22 13 16-DS1
Ductile Iron Pipe and Fittings

Pipe	Buried Liquid Service Using Push-On, Mechanical, or Proprietary Restrained Joints	AWWA C110/A21.10, and AWWA C151/A21.51, minimum pressure class conforming to Tables 51.1 and 51.3 for Type 4 trench, minimum thickness Class 53, 250 psi minimum working pressure.
	Exposed Pipe Using Grooved End and Flange Joints	AWWA C115/A21.15, and AWWA C151/A21.51, minimum thickness Class 52, 250 psi minimum working pressure.
Lining	Ceramic Epoxy	Protecto 401, Sewper Coat, or equal. Apply in accordance with manufacturer's recommendations.
Coating	Buried Piping	Asphaltic (bituminous) per AWWA C151/A21.51.
	Exposed, Embedded, and Submerged	Do not apply asphaltic coating. See Piping Schedule and Section 09 90 00 for appropriate coatings.
Fittings		Lined and coated same as pipe.
	Push-On	AWWA C110/A21.10 and C111/A21.11, gray or ductile iron, 250 psi minimum working pressure. American Cast Iron Pipe Co., Fastite Joint. U.S. Pipe and Foundry, Tyton Joint. Or approved equal.
	Mechanical	AWWA C110/A21.10, C111/A21.11, and C153/A21.53, gray or ductile iron, 250 psi minimum working pressure.
	Proprietary Restrained	AWWA C111/A21.11 and C153/A21.53, ductile iron, 250 psi minimum working pressure.
	Grooved End	AWWA C606 and C110/A21.10, ductile iron, 250 psi minimum working pressure. Victaulic or approved equal.
	Flange	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.
Joints	Push-On	250 psi minimum working pressure, AWWA C110/A21.10 and C111/A21.11. American Cast Iron Pipe Co., Fastite Joint. U.S. Pipe and Foundry, Tyton Joint. Or approved equal.
	Mechanical	250 psi minimum working pressure.
	Proprietary Restrained	150 psi minimum working pressure. Clow Corp., Super-Lock. American Cast Iron Pipe Co., Flex-Ring or Lok-Ring. U.S. Pipe, TR Flex. Or approved equal.
	Grooved End	Rigid type radius cut conforming to AWWA C606, 250 psi minimum working pressure.
	Flange	125-pound flat face or 250-pound raised face, ductile iron, threaded conforming to AWWA C115/A21.15. Gray cast iron will not be allowed.

(Data Sheet Continues)

DATA SHEET 22 13 16-DS1
Ductile Iron Pipe and Fittings (Continued)

Couplings	Grooved End	250 psi minimum working pressure, malleable iron per ASTM A 47 or ductile iron per ASTM A 536.
	Grooved End Adapter Flanges	250 psi minimum working pressure, malleable iron per ASTM A 47 or ductile iron per ASTM A 536.
Bolting	All Buried Pipe and Hardware	ASTM F 593, 304 Stainless Steel.
	All Above Grade Exposed Pipe and Hardware	ASTM F 593, 316 Stainless Steel
	All Pipe and Hardware Located in Valve Vaults and the Wet Well	ASTM F 593, 316 Stainless Steel
Gaskets	Push-On, Mechanical, and Proprietary Restrained Joints	Rubber conforming to AWWA C111/A21.11.
	Grooved End Joints	Halogenated butyl conforming to ASTM D 2000 and AWWA C606.
	Flanged, Water and Sewage Service	1/8-inch thick, red rubber (SBR), hardness 80 (Shore A), rated to 200 degrees F, conforming to ANSI B16.21, AWWA C207, and ASTM D 1330, Grades 1 and 2.
		Full face for 125-pound flat-faced flanges, flat-ring type for 250-pound raised-face flanges. Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange.
		Gasket pressure rating to equal or exceed the system hydrostatic test pressure.
Joint Lubricant		Manufacturer's standard.

DATA SHEET 22 13 16-DS6
Stainless Steel Pipe and Fitting – General Service

Pipe	2-Inch and Smaller	Schedule 40S: ASTM A 312/A 312M, Type 316 seamless, pickled, and passivated.
	2-1/2 Through 6-Inch	Schedule 10S: ASTM A 778 Rev A “as-welded” grade, Type 316L.
Joints	2-Inch and Smaller	Threaded or flanged at equipment as required or shown.
	2-1/2-Inch and Larger	Butt-welded or flanged at valves and equipment.
Fittings	2-Inch and Smaller	Threaded Forged: 1,000 CWP, ASTM A 182/A 182M Rev C Grade F316L.
	2-21/2-Inch and Larger	Butt-Welded: ASTM A 774/A 774M Grade 316L conforming to MSS SP-43, “as-welded” grade, pickled and passivated; fitting wall thickness to match adjoining pipe; long radius elbows unless shown otherwise.
Branch Connections	2-Inch and Smaller	Tee or reducing tee in conformance with Fittings above.
	2-1/2-Inch and Larger	Butt-welding tee or reducing tee in accordance with Fittings above.
Flanges	All	Forged Stainless Steel: ASTM A 182/A 182M Rev C Grade F316L, ANSI B16.5 Class 150 of Class 300, slip-on weld neck or raised face.
Unions	2-Inch and Smaller	Threaded Forged: ASTM A 182/A 182M Rev C Grade F316, 2,000-pound or 3,000-pound WOG, integral ground seats, AAR design meeting the requirements of ANSI B16.11, bore to match pipe.
Bolting	All	Type 316 stainless steel, ASTM A 320/A 320M Grade B8M hex head bolts, and ASTM A 194/A 194M Grade 8M hex head nuts.
Gaskets	All Flanges	Flanged, Water, Air, and Sewage Service: 1/8-inch thick, unless otherwise specified, red rubber (SBR), hardness 80 (Shore A), rated to 200 degrees F, conforming to ANSI B16.21, AWWA C207, and ASTM D 1330, Grades 1 and 2. Flanged, Hot Air and Fuel Gas Service: 1/8-inch-thick, unless otherwise specified, homogeneous black rubber (EPDM), hardness 60 (Shore A), rated to 300 degrees F, conforming to ANSI B16.21 and ASTM D 1330 Steam Grade. Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange.
Thread Lubricant	2-Inch and Smaller	Teflon tape.

DATA SHEET 22 13 16-DS7
Polyvinyl Chloride (PVC) Pipe and Fittings

Pipe, Pressure and Ventilation	All	Schedule 80 PVC (unless indicated otherwise): Type I, Grade I or Class 12454-B conforming to ASTM D 1784 and ASTM D 1785. Threaded Nipples: Schedule 80 PVC.
Pipe, Gravity Sewer	All	ASTM 3034 (4"-15"), ASTM D 1784 Cells Class 12454 or 12364, ASTM F 477, ASTM D 3212, ASTM D 2321, SDR 35 or 26 to Match Existing.
Pipe, Stormwater	All	ASTM D 1785 Schedule 40 PVC.
Fittings, Pressure	All	As Specified Under Pipe Above: ASTM D 2466 and ASTM D2 467 for socket-weld type and ASTM D 2464 for threaded type.
Fittings, Gravity Sewer	All	Solvent socket-weld except where connection to valves and equipment may require future disassembly.
Fittings, Stormwater	All	Fittings shall be injection-molded tees or factory solvent-welded saddle tees. Saddles fastened to pipe with external bands are not acceptable on any new system unless specifically approved by the Engineer.
Joints, Pressure	All	Solvent socket-weld except where connection to valves and equipment may require future disassembly.
Joints, Gravity Sewer	All	Rubber gasketed joints, ASTM D 3212 with gasket per ASTM F 477.
Joints, Stormwater	All	Rubber gasketed joints, ASTM D 3212 with gasket per ASTM F 477.
Flanges, Pressure	All	One-piece, molded-hub type, PVC flat-face flange in accordance with fittings above, 125-pound ANSI B16.1 drilling.
Bolting, Pressure	All	Flat-Face Mating Flange or in Corrosive Areas: ASTM A 193/A 193M Rev A, Type 316 stainless steel Grade B8M hex head bolts and ASTM A 194/A 194M, Grade 8M hex head nuts. With Raised-Face Mating Flange: Carbon steel ASTM A 307 Grade B square head bolts and ASTM A 563 Grade A heavy hex head nuts.
Gaskets, Pressure	All	Flat-Face Mating Flange: Full-faced 1/8-inch-thick ethylene propylene (EPR) rubber. Raised-Face Mating Flange: Flat ring 1/8-inch ethylene propylene (EPR) rubber, with filler gasket between outside diameter of raised face and flange outside diameter to protect the flange from bolting moment.
Solvent Cement, Pressure	All	As recommended by the pipe and fitting manufacturer conforming to ASTM D 2564.
Thread Lubricant, Pressure	All	Teflon tape.

DATA SHEET 15200-DS10
Copper and Copper Alloy Tubing and Fittings

Tubing	Seamless, conforming to ASTM B88 Rev A as follows:	Water (exposed): Type L, hard drawn.
Fittings		Commercially-pure wrought copper, socket joint, conforming to ASTM B 75, dimensions conforming to ANSI B16.22.
Flanges		Commercially-pure wrought copper, socket joint, conforming to ASTM B 75, faced and drilled 150-pound ANSI B16.24 standard.
Bolting		ASTM A 307, carbon steel, Grade A hex head bolts, and ASTM A 563, Grade A hex head nuts.
Gaskets		1/16-inch-thick non-asbestos compression type, full face, Cranite, Johns-Manville.
Filler Material	Soldered Joints, 2-1/2-Inch or Less	Material: 95-5 wire solder (95 percent tin, 5 percent antimony), conforming to ASTM B 32, Grade 95TA. Do not use cored solder.
	Brazed Joints 3-Inch or Greater	Material: BCup-5 (14.5 to 15.5 percent silver, 4.8 to 5.2 percent phosphorus, remainder copper), conforming to ANSI/AWS A5.8.

DATA SHEET 22 13 16-DS11
High-Density Polyethylene (HDPE) Pipe and Fittings

Pipe and Fittings, General	All	Resin: PE 4710 HDPE meeting ASTM D 3350 cell classification 445574C. PPI Listing: Listed in Plastics Pipe Institute (PPI) TR-4 with a standard grade HDB rating of 1600 psi at 73°F. Potable Water: Listed for potable water per NSF/ANSI 61. Manufacturers: Performance Pipe, a Division of Chevron Phillip Chemical Company LP; J-M Manufacturing Company, Inc.; Or Approved Equal.
Pipe, Stormwater and Sewer, Dimensions	1-1/4-Inch to 3-Inch	AWWA C901-96 and to the requirements of ASTM D 3035.
	4-Inches or Greater	ASTM F714 and AWWA C906-15
Pipe, Water, Dimensions	2-Inches or Smaller	IPS size: ASTM D 2239 for inside diameter control CTS size: ASTM D 2737 for outside diameter control
Pipe, Marking	All	Per ASTM F 714 and/or AWWA C906. Marking shall indicate the pipe's Pressure Rating (PR) and/or Pressure Class (PC)
Fittings, Stormwater and Sewer, Fabricated	All	Made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock or molded fittings. With all necessary stiffeners and supports to allow of installation. Pressure Rating: Equal to or greater than the full-service pressure rating of the mating pipe. Testing: In accordance with AWWA C906.
Fittings, Stormwater and Sewer, Flange Adapters	All	Throughbore length: Sufficient clamp in butt fusion-joining machine without need of a stubend holder. Sealing surface: Machined with v-shaped serrations.
Fittings, Stormwater and Sewer, Back-up Rings and Flange Blots	All	Back-up Rings: Provided for all Flange adapters and pressure rated equal to or greater than the mating pipe. Back-up Ring Bore: Chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts: Grade 3 or higher.
MJ Adapters	4-inch to 16-Inch	Provided with Stainless Steel Stiffener where shown or specified.
	14-Inch or Greater	Provided with Heady Duty Brack-up Ring Kits.
	18-Inch or Greater	Provided with Stain Steel Stiffener.
Joints, Stormwater and Sewer, Heat Fusion Joining	All	Between plain end pipes and fittings: Made by butt fusion. Joints between the main and saddle branch fittings: Made using saddle fusion. Factory Joints: All joints shall be provided by the manufacturer. Field Joints: If required for shipping / installation and approved by the Engineer for the specific location(s), fusion procedures as recommended by the Manufacturer may be performed and provided by the Contractor. The Contractor shall ensure that persons making heat fusion joints have received training in the Manufacturer's recommended procedure. The Contractor shall maintain records of trained personnel, and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

		Butt Fusion of Unlike Wall Thickness of One SDR Difference: Butt fusion shall be performed between pipe ends, or pipe ends and fitting outlets that have the same outside diameter and are not different in wall thickness by more than one Standard DR. Butt Fusion of Unlike Wall Thickness of More Than One SDR Difference: Made with a transition nipple, a short length of the heavier wall pipe with one end machined to the lighter wall, or by mechanical means or electrofusion.
Joints, Stormwater and Sewer, to Concrete Structures		Installed within a minimum penetration diameter 8 inches larger than the pipe exterior diameter. Pipe ends shall be provided with minimum 1/2-inch-thick, 3-inch-high Seep Ring, Void space packed with non-shrink grout.
Joints, Stormwater and Sewer, Other Joints	All	Flanged connections: Flange adapters and back-up rings. Mechanical couplings: Designed for joining polyethylene pipe or for joining polyethylene pipe to another material. MJ Adapters: Stiffener shall be provided in bore of polyethylene pipe when an OD compression mechanical coupling is used and when connecting plain end PE pipe to a mechanical joint pipe, fitting, or appurtenance. External clamp and tie rod restraint shall be installed where PE pipe is connected to the socket of a mechanical joint pipe, fitting or appurtenance. Electrofusion. The installation instructions of the joining device manufacturer shall be observed.
Pipe and Fittings, Installation, General	All	Installation shall be in accordance with ASTM D 2774, Manufacturer's recommendations, and the other requirements of the Contract Documents. Where conflicts exist the most stringent requirements shall take precedent.
Pipe and Fittings, Installation, Bedding	All	Bedding: Laid on grade and on a stable foundation. Unstable trench bottom soils removed. On 6-inch foundation or bedding of compacted Class I material. Groundwater: Removed from trench before laying the foundation or bedding for the pipe. Trench in rock or stony soil: Excavated to 6 inches below pipe bottom grade, and brought back to grade with compacted Class I bedding.
Pipe and Fittings, Installation, Backfilling	All	Embedment soil type and particle size per ASTM D 2774. Embedment placed and compacted to at least 90% Standard Proctor Density in 6-inch lifts to at least 6 inches above the pipe crown. Haunch areas below the pipe springline completely filled and free of voids.
Pipe and Fittings, Installation, Shear and Bending Load Protection	All	Per ASTM D 2774, connections protected. Areas surrounding connections embedded in properly placed, compacted backfill, in combination with a protective sleeve or other mechanical structural support to protect the polyethylene pipe against shear and bending loads.

DATA SHEET 15200-DS12
Reinforced Concrete Pipe and Fittings

Pipe	All	ASTM C 76, Per WSDOT Standard 9-05.3.
Installation	All	ASTM C 1476, Per WSDOT Standard 9-05.3.
Gaskets	All	Rubber gaskets per AASHTO M198, Per WSDOT Standard 9-05.3.
Joints to Concrete Structures	All	Interstitial spaces packed with Non-Shrink Grout, Per WSDOT Standard 9-05.3.
Connections to Existing Pipe	All	Bell and Spigot, per WSDOT Standard 9-05.3.

END OF SECTION

Table 22 13 16.01-1. Pipe Schedule[a]

Piping System per Contract Drawings	Service	Size (In.)[b]	Material	Section 22 13 16 Data Sheet	Installation	Joint Type	Lining/Coating[c]	Test Pressure and Type (psig-x)	Remarks[d]
D	Drain	All	PVC	DS7	BUR	HU	Bare/Bare	PC	
SDFM	Storm Drain Force Main	All	DI	DS1	EXP	FL/GR	Epoxy/Paint	75-H	Minimum Thickness Class 52 Provide thrust restraint on all joints.
SDFM	Storm Drain Force Main	All	DI	DS1	BUR	MJ, FL where indicated	Epoxy/Asphaltic	75-H	Minimum Thickness Class 53 Provide thrust restraints on all joints.
SSD	Screened Storm Drain	All	DI	DS1	EXP	FL/GR	Epoxy/Paint	75-H	Minimum Thickness Class 52 Provide thrust restraint on all joints.
TSD	Treated Storm Drain	All	DI	DS1	EXP	FL/GR	Epoxy/Paint	75-H	Minimum Thickness Class 52 Provide thrust restraint on all joints.
TSD	Treated Storm Drain	All	DI	DS1	BUR	MJ, FL where indicated	Epoxy/Asphaltic	75-H	Minimum Thickness Class 53 Provide thrust restraints on all joints.
SD	Storm Drain	All	RCP	DS12	BUR	HU	Bare/Bare	G	Contractor shall excavate and identify the existing RCP Type and confirm the diameter of the existing pipe.
SD	Storm Drain – From Existing OWS to Basin C Wet Well	48	HDPE	DS11	BUR	BF	Bare/Bare	G	Necessary Bend / Offset shall be Factory Fabricated. Minimum DR26 Pipe.
TSD	Sample Port	1	SST	DS6	EXP	THD	Bare/Bare	75-H	See detail on drawings.
ALL	Manual Air Relief Vents; Manual Drains	1	SST	DS6	EXP	THD	Bare/Bare	75-H	See specification requirements for locations.
WP WNP	Water – Potable Water – Nonpotable	≤ 2”	COP PVC	DS10 DS7	EXP BUR	SB SW	Bare/Bare Bare/Bare	150-H	Provide thrust restraint on all joints. Match existing where encountered.

[a] 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.

[b] 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.

[c] Coating systems per Spec Section 09 90 00 – Equipment and Piping Painting. “Asph” for ductile iron pipe denotes asphaltic coating per the Specifications.

[d] Operating temperature is ambient or normal water temperature unless otherwise shown.

– Notes continue on next page –

Size
“>“ Greater Than
“<“ Less Than
“≥“ Greater Than or Equal To
“≤“ Less Than or Equal To
“All” All Sizes

Material
“BPS” Black Steel Pipe
“CCS” Concrete Coated Steel
“CISP” Cast Iron Soil Pipe
“CLDI” Cement-Lined Ductile Iron
“COP” Copper
“DI” Ductile Iron
“FRP” Fiberglass Reinforced Plastic
“GLDI” Glass-Lined Ductile Iron
“GSP” Galvanized Steel Pipe
“PIP” Pre-Insulated Pipe
“POLY” Polyvinyl Chloride
“PVC” Polyvinyl Chloride
“RCP” Reinforced Concrete Pipe
“SST” Stainless Steel
“STL” Mill Type Steel
“WS” Fabricated Welded Steel

Installation
“EXP” Exposed (interior or exterior)
“BUR” Buried
“SUB” Submerged
“EMB” Embedded (in concrete)
“All” All Installations

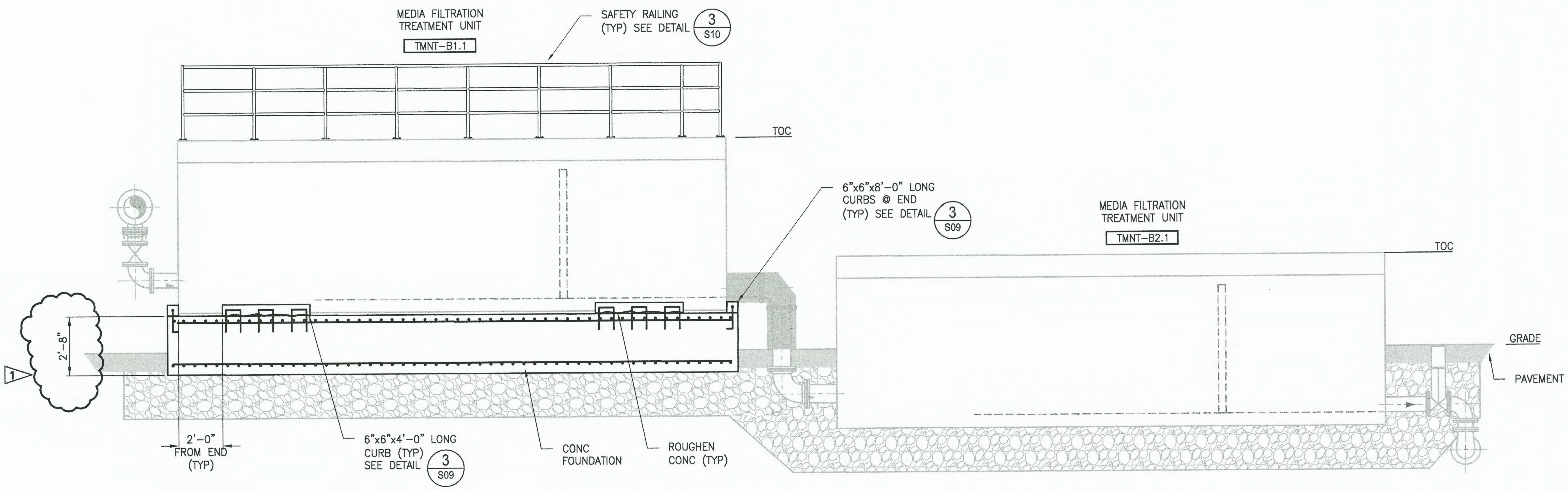
Joint Type
“BF” Butt Fusion
“BW” Butt Welded
“EF” Electrofusion
“FL” Flanged
“GR” Grooved
“HU” Hub and Spigot
“MJ” Mechanical Joint
“O” O-Ring
“PRJ” Proprietary Restrained Joint
“SB” Solder/Braze
“SF” Socket Fusion
“SW” Socket Welded
“THD” Threaded
“W” Welded

Test Type
“G” Gravity Test
“H” Hydrostatic Test
“IS” In Service
“P” Pneumatic Test
“PC” Test per Uniform Plumbing Code

END OF SECTION

BINDING EDGE

Attachment N



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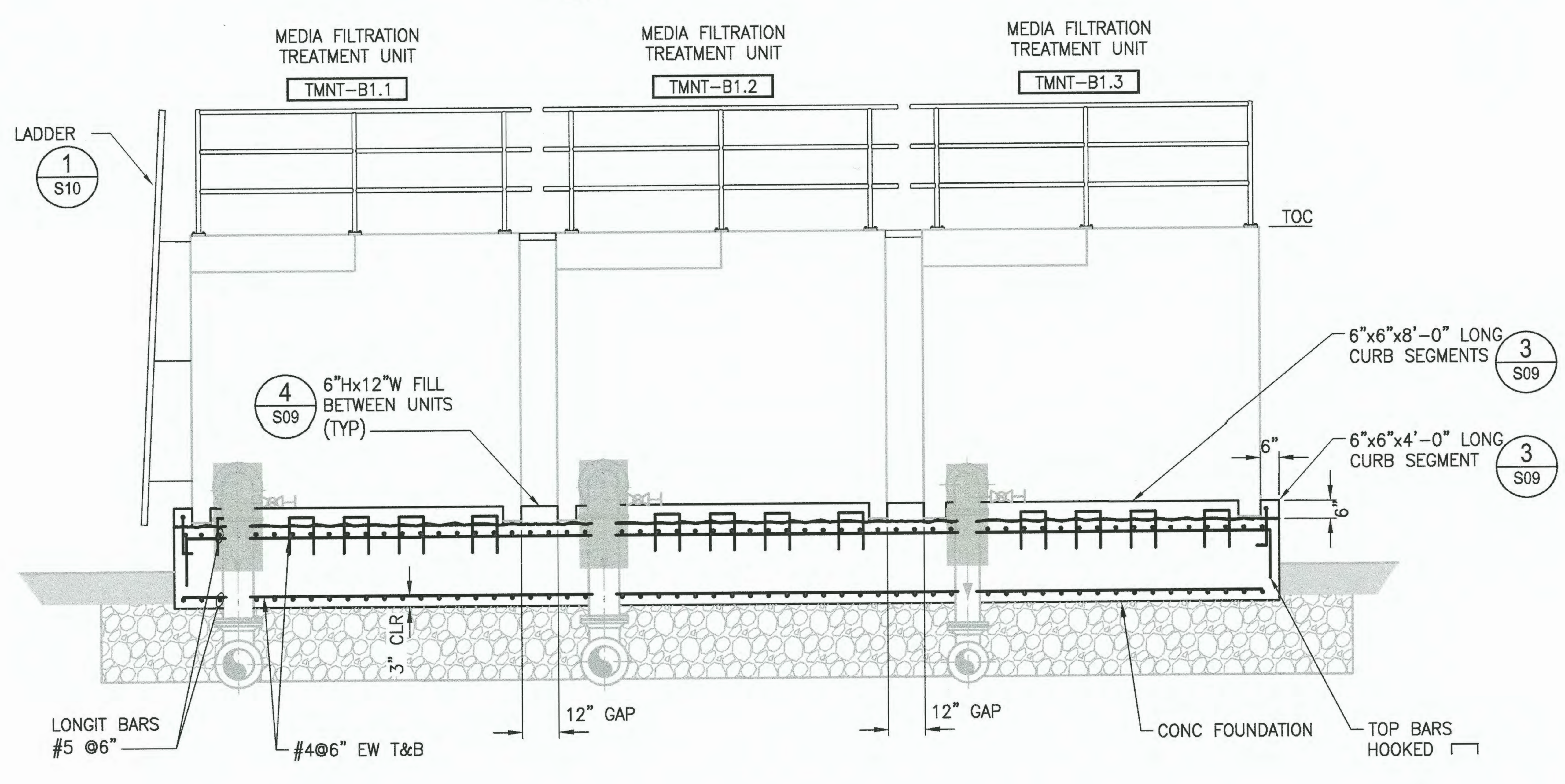

B S02 DETAIL/SECTION
SCALE: 3/8"=1'-0"

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR PROVISION OF ALL NON-OWNER PROVIDED STRUCTURAL ITEMS. THE ITEMS THAT THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING INCLUDE, BUT ARE NOT LIMITED TO: SLOPED GROUT AND FILL WITHIN THE OVERFLOW CHAMBER IN WET WELL (SEE MECHANICAL SHEETS), HANDRAIL, CAST-IN-PLACE FOUNDATIONS, LADDERS, COVER PLATES, ALL SHEETING AND SHORING, PIPE SUPPORTS, BUOYANCY COLLARS, TREMIE MUD SLAB, AND ALL NECESSARY ACCESSORIES AND APPURTENANCES IN ORDER TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION.

Port of Tacoma
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MARK:	REVISION:	BY:	APPR:	DATE:
1	ADDENDUM 2	DP	SW	5/3/18

STEVEN A. WAGNER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
MAY 3, 2018

BS APR 2018	CHECKED BY DATE
SAW APR 2018	PROJ. ENGR DATE
APPROVED: 5/08/18	DIRECTOR ENG. DATE
PRINTED BY: peterden May 03, 2018	
PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA 98401-1837	

WEST SITCUM STORMWATER TREATMENT
STRUCTURAL SECTION - BASIN B

TOWNSHIP: 21N	RANGE: 3E	SECTIONS: 33 & 34
DAT-HRZ: WA83-S	VERT: MLLW	
PARCEL: SEE G02	DRAWING SCALE: AS NOTED	

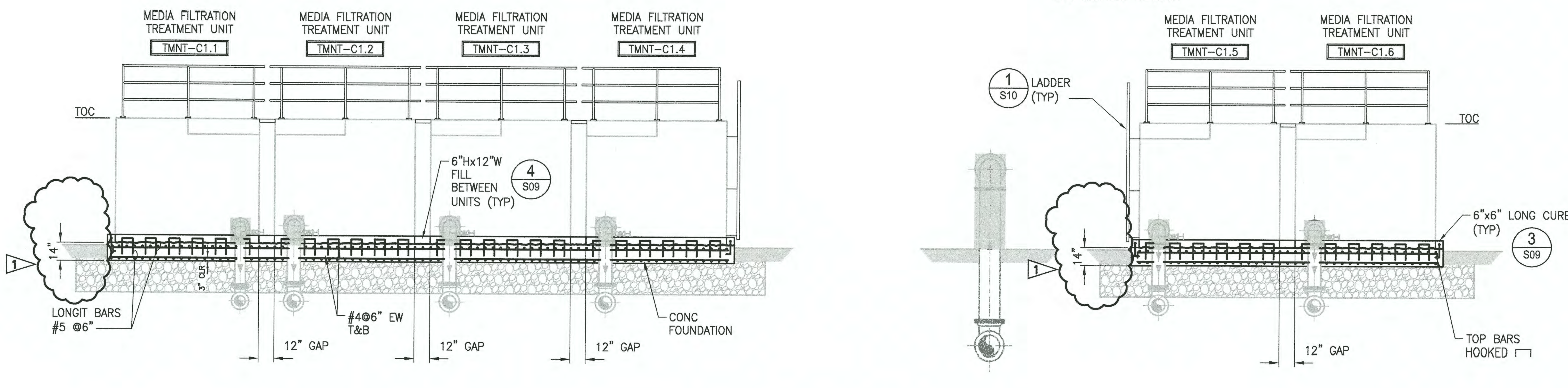
6583
S05
SH 22 OF 47

CONT/CONS:	070664
M. ID:	201024.01
PHASE:	BID SET

PORT OF TACOMA FILE: U:\PSO\Projects\Clients\8001-NW Seaport Alliance\553-8001-001 West Sitcum\99Svcs\CADD\DWG\PS8001001S-05

NOTES:

1. CONTRACTOR SHALL VERIFY DIMENSIONS, ELEVATIONS AND LOCATIONS PRIOR TO CONSTRUCTION.
2. PIPE SUPPORTS NOT SHOWN. PROVIDE PIPE SUPPORTS ON ALL PIPING WHERE NECESSARY.
3. ALL JOINTS AND COUPLINGS SHALL BE RESTRAINED.
4. ALL PIPE PENETRATIONS THROUGH WALLS AND SLABS REQUIRE MODULAR MECHANICAL SEALS WITH TIGHTENING BOLTS INSIDE STRUCTURE.
5. CSBC, SEE SPECIFICATIONS FOR MATERIAL AND INSTALLATION REQUIREMENTS.
6. SCARIFY 2' OF EXISTING MATERIAL AND RECOMPACT TO 95% MAX DRY DENSITY.
7. CAST-IN-PLACE CONCRETE PAD TO 1' BELOW GRADE. SEE STRUCTURAL FOR PAD DETAILS.
8. CONTRACTOR IS RESPONSIBLE FOR PROVISION OF ALL NON-OWNER PROVIDED STRUCTURAL ITEMS. THE ITEMS THAT THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING INCLUDE, BUT ARE NOT LIMITED TO: SLOPED GROUT AND FILL WITHIN THE OVERFLOW CHAMBER IN WET WELL (SEE MECHANICAL SHEETS), HANDRAIL, CAST-IN-PLACE CONCRETE FOUNDATIONS, LADDERS, COVER PLATES, ALL SHEETING AND SHORING, PIPE SUPPORTS, BUOYANCY COLLARS, TREMIE MUD SLAB, AND ALL NECESSARY ACCESSORIES AND APPURTENANCES IN ORDER TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION.



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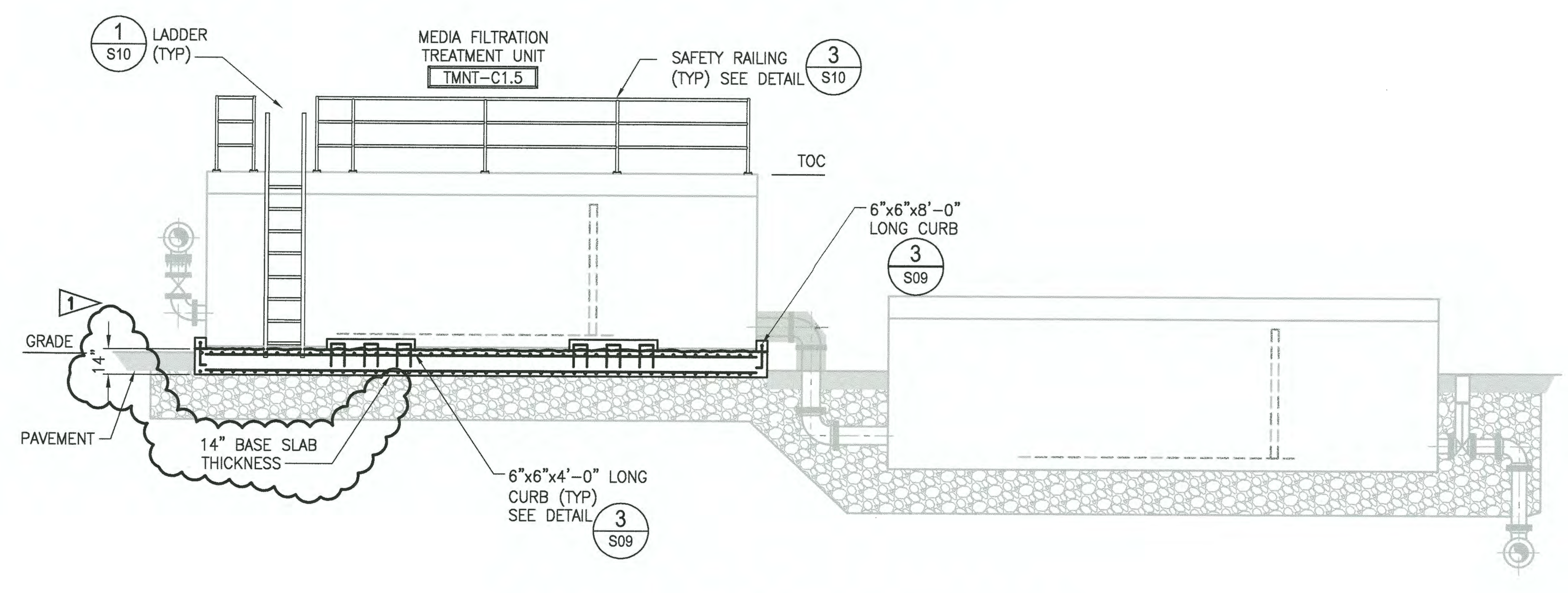

B DETAIL/SECTION
S03
SCALE: 1/4"=1'-0"

BINDING EDGE

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STRUCTURAL SECTION - BASIN C

TOWNSHIP: 21N	RANGE: 3E	SECTIONS: 33 & 34
DAT-HRZ: WA83-S	VERT: MLLW	
PARCEL: SEE G02		DRAWING SCALE: AS NOTED

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SH 23 OF 47

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