



Clean Water Services

**FIRST ADDENDUM TO INVITATION TO BID
FOR THE ROCK CREEK PRIMARY CLARIFIER NO. 4 PROJECT NO. 7012 CLEAN WATER
SERVICES**

ISSUED: MARCH 10, 2023

Clean Water Services' Invitation to Bid for Invitation to Bid - Rock Creek Primary Clarifier No. 4 Project No. 7012 dated February 20, 2023 (ITB) is hereby amended as follows:

ADDENDUM NO. 1 WILL BE POSTED IN 4 VOLUMES

1. **Change:** ADVERTISEMENT FOR BID:
 - a. **Bid Date is changed to April 18, 2023.** All locations which reference a bid date of "March 23, 2023" shall be changed to now read "April 18, 2023". No changes to time Bids are due to be submitted or method of bid submittal.
2. **Change:** Specification Replacement: Replace the following Specifications in the Contract Documents with those included in this Addendum as follows:
 - a. 00300 BID FORM
 - b. 00500 AGREEMENT
 - c. 02145 DEWATERING
 - d. 02300 EARTHWORK
3. **Change:** Drawing Replacement: replace the following Drawings in the Contract Documents with those included in this Addendum as follows:
 - a. G011, C041, C042, S302, M300, M301, M302, M303, M315, M332, I105
4. **Change:** Specification Section 00800 Supplementary
 - a. Delete Part SC-5.03.A.1.b.
5. **Change:** Specification Section 15050: Piping Valves and Accessories
 - a. Delete Part 2.06 D.3 Valve and Accessory System C
 - b. Replace Part 2.06 D.3 Valve and Accessory System C with the following:

3. Valve and Accessory System C: Applicable Service Condition: Alum, sample water, ferric chloride, chlorine gas and chlorine solution, hypochlorite, sodium hydroxide, polymer, sodium bisulfite.
 - c. Ball Valves Through 4-inch Size:
 - 1) Rating: 150 psi at 75°F.
 - 2) Type: Double union.
 - 3) Connections: Union, true union.
 - 4) Materials: PVC body, teflon seats and EPDM O-ring seals
 - 5) Manufacturers: Hayward, or equal.
 - d. Ball Valves Through 4-inch Size specifically for sodium hypochlorite:
 - 1) Rating: 150 psi at 75°F.
 - 2) Type: Double union.
 - 3) Connections: Flanged, union, or true union.
 - 4) Materials: PVC body, vented ball, teflon seats. FPM O-ring seals
 - 5) Manufacturers: Hayward, or equal.
 - e. Check Valves Double Union Type:
 - 1) Rating: 150 psi at 75°F.
 - 2) Type: Ball for horizontal or vertical service.
 - 3) Connections: Union ends for socket weld.
 - 4) Materials: PVC body, Viton O-ring seals and seats except provide EPDM for caustic service.
 - 5) Manufacturers: Hayward, or equal.
 - f. Diaphragm Valves: not used. If shown on the Drawings, replace Diaphragm Valves with Ball Valves, per this Valve System.
 - g. Strainers:
 - 1) Rating: 150 psi.
 - 2) Type: Wye-type basket strainers. Strainer screen size as recommended by feed pump supplier.
 - 3) Connections: Threaded.
 - 4) Materials: PVC.
 - 5) Manufacturers: Chemtrol, GF, or equal.
 - 6) Installation: Each to be installed with ball valve blowoff and piping to drain.
 - h. Pressure gauges shall be as specified for System B. Provide protector body and diaphragm and isolation valve materials appropriate for the chemical solutions to which they will be exposed.

6. **Change:** Specification Section 17050: Basic Measurement and Control Instrumentation

- a. Delete “(number of days to be determined based on project size)” located in Part 1.06 B.1 and Part 1.06 C.1,

7. **Change:** Drawing S305 Structural Primary Clarifier Details 1:

- a. Detail 1 Center Pier Slab and Detail 2 Sludge Sump:

DELETE: reference to 6” Thick Crushed Rock Layer.

REPLACE with 8” Thick Crushed Rock Layer.

The Crushed Rock subbase layer should be 8” across all portions of the Primary Clarifier bottom slab. This should be consistent with Detail 3/S301 Subgrade Preparation For Pile-Supported Structures.

8. Change: Drawings M011, M012, M314, M315, M316, M317, M318 :

- b. Titleblock Updates: Add the following initials to Designer/Checker/Approve boxes

DSN: FH

CHK: RR

APPD: RR

Except as modified in this Addendum, the ITB will remain in effect as originally written.

Clarifications, which do not modify the Contract Documents, are as follows:

1. **Clarification:** Pre-Bid Attendee list is included for reference
2. **Clarification:** Record drawings of existing infrastructure have been included for reference.
3. **Clarification:** Substitution or ‘or equal’ requests: See General Conditions Section 7.04 and 7.05 for details on how this process is handled in the contract.
4. **Clarification:** CAD files will not be provided during the Bid period.

**SECTION 00300
BID FORMS**

BID TO: Clean Water Services:

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents entitled Rock Creek WRRF Primary Clarifier No. 4 Treatment Expansion Project No. 7012 for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
2. Bidder accepts all of the terms and conditions of the Bidding Documents, Contract Documents, including without limitation those in the Advertisement for Bids and Instructions to Bidders, dealing with the disposition of the Bid security.
3. This Bid will remain open for 60 calendar days from the Bid due date unless otherwise required by law or for such longer period of time that Bidder may agree to in writing upon request of Owner. Bidder will enter into an Agreement within the time and in the manner required in the Advertisement for Bids and the Instructions to Bidders, and will furnish the insurance certificates, Payment Bond and, Performance Bonds required by the Contract Documents, and Owner's Subcontractor Public Works Bond Information Form.

4. **BIDDER'S REPRESENTATIONS**

4.1. In submitting this Bid, Bidder represents that:

- 4.1.1. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

<u>Addendum No.</u>	<u>Addendum Date</u>

(Bidder shall insert the number of each Addendum received.)

Failure to acknowledge receipt of Addenda may render the Bid non-responsive and may be cause for its rejection.

- 4.1.2. Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, Site, locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as Bidder deems necessary.

- 4.1.3. Bidder has visited the Site (or was offered the opportunity to visit) and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- 4.1.4. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- 4.1.5. Bidder has carefully studied: i) reports of explorations and tests of subsurface conditions at or contiguous to the Site and drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) which have been identified in Paragraph 5.03 of the Supplementary Conditions as containing reliable “Technical Data,”; and ii) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph 5.06 of the Supplementary Conditions as containing reliable “Technical Data.”
- 4.1.6. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs.
- 4.1.7. Based on information and observations referred to in paragraph above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) Bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- 4.1.8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- 4.1.9. Bidder has given Engineer written notice of conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- 4.1.10. The Bidding Documents are generally sufficient to indicate and convey understanding of terms and conditions for the performance of the Work for which this Bid is submitted.

5. BIDDER'S CERTIFICATION

5.1. Bidder certifies:

- 5.1.1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization or corporation.
- 5.1.2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
- 5.1.3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
- 5.1.4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Agreement. For the purposes of this paragraph:
 - 5.1.4.1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 5.1.4.2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish Bid prices at artificial noncompetitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 5.1.4.3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, noncompetitive levels; and
 - 5.1.4.4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Agreement.
- 5.1.5. Owner is tax exempt. Required sales and use taxes are included in the stated Bid prices for the Work unless provision is made herein for the Bidder to separately itemize the estimated amount of sales tax or if Instructions to Bidders state Owner is tax exempt.
- 5.1.6. Bidder will be bound by and comply with all of the applicable requirements of ORS 279C.800 to 279C.870 and the administrative rules of the Bureau of Labor and Industries (BOLI) regarding prevailing wage rates and will pay prevailing wage rates in accordance with 279C.840.

- 5.1.7. Neither Bidder nor their Subcontractors are on the BOLI list of persons having violated prevailing wage rate laws.
- 5.1.8. Bidder has not discriminated and will not discriminate, in violation of ORS 279A.110(1) against any disadvantaged business enterprise, a minority-owned business, woman-owned business, a business that a service-disabled veteran owns or an emerging small business that is certified under ORS 200.055, in awarding a required subcontract.
- 5.1.9. Bidder is not in violation of any tax laws described in ORS 305.385.
- 5.1.10. Bidder has established a drug-testing program for employees per ORS 279C.505 and that Bidder, if awarded the Agreement, will at the time of Agreement award represent and warrant to Owner that its employee drug-testing program remains in place and will continue in full force and effect for the duration of the Agreement.
- 5.1.11. In accordance with OAR 137-049-0200, Subcontractors performing work will be registered with the Construction Contractors Board before Subcontractor commences work.
- 5.1.12. Bidder shall comply with the prohibitions set forth in ORS 652.220 prohibiting discriminatory wage rates based upon an employee's membership in a protected class and acknowledges that compliance is a material element of the Agreement and failure to comply is a breach that entitles Owner to terminate the Agreement for cause.
- 5.1.13. Bidder's information contained in the Resident/Nonresident Bidder Status, Construction Contractor's Licensing and Public Works Bond Information sections is true and correct.
- 5.1.14. Owner shall not be liable for any expenses incurred by Bidder in preparing or submitting its Bid or in participating in the Bid evaluation/selection process.

6. BASIS OF BIDS

- 6.1. Bidder shall complete the Work in accordance with the Contract Documents for the price(s) described in the attached Bid Schedule.

7. TIME OF COMPLETION

- 7.1. Bidder agrees to complete the Work within the Contract Times stipulated in the Agreement and accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work, and any specified Milestones, within the Contract Times.

8. ATTACHMENTS TO THIS BID

8.1. The following documents are submitted with and made a condition of this Bid:

- Bid Schedule
- Bid Certificate
- Bid Bond
- Resident/Nonresident Bidder Status /Construction Contractor's Licensing and Public Works Bond Form
- First-Tier Subcontractor Disclosure Form

To all the foregoing, and including all Bid Forms contained in this Bid, the Bidder further agrees to complete the Work required under the Contract Documents within the Contract Time stipulated in the Contract Documents, and to accept in full payment therefore the Contract Price based on the Base Bid Price named in the Bid Forms.

Dated: _____

Bidder: _____

By: _____
Name (Signature)

Name (Type or Print)

Title: _____

BID SCHEDULE

**Schedule of Bid Prices for
ROCK CREEK WRRF PRIMARY CLARIFIER NO. 4 TREATMENT EXPANSION,
PROJECT NO. 7012**

1. LUMP SUM WORK

1.1 Bidder proposes and agrees to accept as full payment the following bid amount for the Rock Creek WRRF Primary Clarifier No. 4 Treatment Expansion Project No. 7012 proposed within the Bidding Documents, and certifies that this amount is based upon the undersigned's own estimate of quantities and costs and includes sales, consumer, use, and other taxes, except as provided below, overhead and profit. Lump sum work includes the cost of all 'A'-listed Major Equipment in Section 3 and excludes the cost of all Unit Prices.

1.1. Lump Sum Bid Price: \$ _____

2. UNIT PRICE BID SCHEDULE:

2.1. Unit prices have been computed in accordance with Paragraph 13.03.C of the General Conditions.

2.2. Bidder acknowledges that the estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment of all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Unit Price Bid Schedule					
Item No.	Description	Estimated Quantity	Unit	Bid Unit Price	Extended Bid Unit Price
1.	Groundwater Observation Wells - All costs associated with supplying all necessary equipment, tools, materials, labor, and supervision required for mobilization and demobilization, installing, operating and maintaining the groundwater observation wells as necessary to meet the applicable contract requirements.	2	EA		
2.	Well Point Dewatering System - All costs associated with supplying all necessary equipment, tools, materials, labor, and supervision required	50	EA		

Unit Price Bid Schedule					
Item No.	Description	Estimated Quantity	Unit	Bid Unit Price	Extended Bid Unit Price
	for mobilization, demobilization, installing, developing, operating and maintaining the wellpoints, pumping, treatment and discharging systems as necessary to meet the applicable contract requirements.				
Total of Extended Bid Unit Prices					\$

3. MAJOR EQUIPMENT OPTIONS PRICE SCHEDULES

Bidder further agrees to accept as full payment for furnishing the items listed below, and any Work necessary to install the items, for the prices included in the “Option Price” column for each item. Additional instructions for the Bidders are as follows:

- 3.1. The Option Price shall include the quantity in the Bidding Documents and all associated requirements identified in the specification sections listed below as the responsibility of the contractor, equipment manufacturer and/or supplier.
- 3.2. The Bidder shall provide a price for the ‘A’-listed manufacturer.
- 3.3. If the Owner selects an option other than an ‘A’-listed manufacturer, the lump sum bid price will be modified by change order after Contract award.
- 3.4. Include in the Option Price for each Bidder-proposed option, the cost of Work, redesign and construction changes, including, but not limited to, electrical, mechanical, structural, and any other modifications to the Work necessary to make the several parts fit together and perform as specified.
- 3.5. Bidder may propose an “or equal” option for the ‘A’-listed Major Equipment where indicated by including the Manufacturer’s name for items where a blank has been provided.
- 3.6. Any schedule delays caused by Owner’s selection of an option other than the option included in the Base Bid Price will not constitute grounds for an adjustment to the Agreement.

Major Equipment Options Schedule		
Equipment for Primary Clarifiers (Specification No. 11195)		
Option	Manufacturer or Supplier	Option Price
A	WesTech	\$
B		\$

Major Equipment Options Schedule		
Diaphragm-Type Scum Pump Air Driven (Specification No. 11318)		
Option	Manufacturer or Supplier	Option Price
A	Ramparts	\$
B		\$

Major Equipment Options Schedule		
Recessed Impeller Pumps (For Grit and Sludge) (Specification No. 11319)		
Option	Manufacturer or Supplier	Option Price
A	Wemco	\$
B		\$

4. BASE BID SUMMARY

4.1. Insert the amount equal to the Lump Sum cost from Section 1.1 into the Base Bid Price blank provided below. The price shall be the actual cost of the Lump Sum work, which includes the sum of all 'A'-listed Major Equipment, and shall be greater than zero dollars.

4.2. Insert the Total of Extended Bid Unit Prices into the blank space provided in Section 2.2 of the Bid Form. The price shall be the actual cost of the Unit Price work and shall be greater than zero dollars.

4.3. Owner will award the Agreement to the lowest responsive, responsible Bidder submitting the lowest Base Bid Price, which includes the Lump Sum Bid Price Work, Total of Extended Bid Unit Prices, and all 'A'-listed Major Equipment.

BASE BID PRICE (BASIS OF AWARD)

\$ _____
(figures)

(words)
(The amount in words takes precedence.)

BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.
BIDDER (Name and Address):

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

OWNER:
Clean Water Services, 2550 SW Hillsboro Hwy, Hillsboro, OR 97123

BID
Bid Due Date:
Project (Brief Description Including Location): Rock Creek WRRF Primary Clarifier No. 4 Treatment
Expansion, Project No. 7012
Rock Creek Water Resource Recovery Facility, 3235 SE River Road, Hillsboro, Oregon 97123

BOND
Bond Number:
Date (Not later than Bid due date):

Penal sum _____
(Words)

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms of this Bid Bond, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER
(Seal)

SURETY
(Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

Title

By: _____
Signature

Title (Attach Power of Attorney)

Attest: _____
Signature

Title

Attest: _____
Signature

Title

Note: Above addresses are to be used for giving required notice.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of

Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

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

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

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

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

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

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

RESIDENT/NONRESIDENT BIDDER STATUS/CONSTRUCTION CONTRACTOR'S LICENSING AND PUBLIC WORKS BOND FORM

ROCK CREEK WRRF PRIMARY CLARIFIER NO. 4 TREATMENT EXPANSION PROJECT NO. 7012

Oregon law (ORS 279A.120) requires Owner, in determining the lowest responsible bidder, to add a percent increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to bidders in the state in which that bidder resides. Consequently, each bidder must indicate whether it is a resident or nonresident bidder. A resident bidder is a bidder who has paid unemployment taxes or income taxes in Oregon during the 12 calendar months immediately preceding submission of this bid, and has a business address in Oregon, and has stated in its bid whether the bidder is a "resident bidder." A "nonresident bidder" is a bidder who is not a resident bidder.

The bidder whose signature appears on the Bid Forms states that it is: (check one)

- 1. A resident bidder _____
- 2. A nonresident bidder _____

Indicate state in which bidder resides: _____

CONSTRUCTION CONTRACTOR'S LICENSING

Oregon law requires all contractors to be licensed with the Oregon Construction Contractors Board in order to submit a Bid to do work and to do work as a contractor. The bidder whose signature appears on the Bid Forms states it is licensed with the Oregon Construction Contractors Board.

Indicate Bidder's Construction Contractors Board License No. _____.

PUBLIC WORKS BOND INFORMATION

Name of Bidder's Public Works Bonding Company: _____

Address of Bidder's Public Works Bonding Company _____

Agent Name/Phone: _____

Bidder's Public Works Bond Number: _____

If exempt under ORS 279C. 836 (7), check the box:

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

FOR

**ROCK CREEK WRRF PRIMARY CLARIFIER NO. 4 TREATMENT EXPANSION
PROJECT NO. 7012**

Bid Closing: _____

Disclosure Submittal Deadline: 4:00 p.m. on _____

This form must be submitted at the location specified in the Advertisement for Bids on the advertised bid closing date and within two working hours after the advertised bid closing time.

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

Subcontractor Name	Dollar Value	Category of Work
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Failure to submit this form by the disclosure deadline will result in a nonresponsive bid. A nonresponsive bid will not be considered for award.

Form Submitted by (Bidder Name): _____

Contact Name: _____ Phone No.: _____

END OF BID FORMS

**SECTION 00500
AGREEMENT**

THIS AGREEMENT is dated as of the _____ day of _____, 20__ by and between Clean Water Services (Owner) and _____ (Contractor).

Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

1.1 Contractor shall complete the work as specified or indicated in Owner's Contract Documents (Work) entitled Rock Creek WRRF Primary Clarifier No. 4 Treatment Expansion Project No. 7012 (Project). The Work is generally described as follows:

- Demolition of existing reinforced concrete headworks, grit chambers, and rectangular clarifiers and associated process mechanical and electrical and instrumentation equipment; demolition of an existing recreational vehicle dump station and demolition of existing site vegetation, entry way parking lot, and miscellaneous demolition including process piping and electrical and instrumentation systems within the footprint of the new improvements.
- Construction of a new 140' diameter primary clarifier.
- Construction of a new primary clarifier pump gallery and extended reinforced concrete utilidor between existing primary clarifiers 2 and 3, connecting into the new primary clarifier pump gallery.
- Construction of a new Septage Receiving Station near the Influent Pump Station.
- Parking lot and entryway improvements.
- Grading, drainage, electrical, and associated yard piping to tie into the existing infrastructure.

ARTICLE 2. ENGINEER.

2.1 The Project has been designed by Kennedy/Jenks Consultants, Inc. (Engineer), who is to act as Owner's representative, assume duties and responsibilities, and has the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIMES.

3.1 Time of the Essence: Time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

3.2 Days to Achieve Substantial Completion and Final Completion:

3.2.1 The Work shall be substantially completed within the number of days indicated below from the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within the number of days indicated below after the date when the Contract Times commence to run.

Substantial Completion	470 calendar days
Final Completion	500 calendar days

3.3 Dates for Substantial Completion of Milestones:

3.5.1 The Work necessary to achieve the Milestone(s), as identified in Section 01140 Work Restrictions, shall be completed within the timeline identified below.

Milestone 1 – SPR and BWR Temporary Connections June 1, 2023 to August 1, 2023

ARTICLE 4. LIQUIDATED DAMAGES.

4.1 Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the time(s) specified in Article 3 herein, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in determining in a legal or other dispute resolution proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner the following amounts for each day that expires after the time specified in Article 3 herein:

<u>Contract Time</u>	<u>Liquidated Damages per Day</u>
1) Substantial Completion	<u>\$2,250</u>
2) Final Completion	<u>\$1,125</u>

In addition, Contractor shall pay damages of impacts to other contractors/suppliers affected by Contractor delays.

4.2 Owner shall recover liquidated damages by deducting the amount owed by Change Order or from the final payment or any retainage held by Owner. Owner will assess liquidated damage amounts cumulatively for failure to meet each Milestone, Substantial Completion or Final Completion of the Work date in Article 3 herein as applicable.

ARTICLE 5. CONTRACT PRICE

5.1. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents in current funds the amount(s) set forth in the conformed Bid Forms, which are included as an attachment to this Agreement. The contract price is as follows:

1.5.1. A Lump Sum of \$_____ for lump sum work, together with

2.5.1. The amount earned, as determined by actual quantities of work performed and paid for at the unit prices set forth in the Bid Forms, subject to additions and deductions, as provided for in the Contract Documents.

ARTICLE 6. PAYMENT PROCEDURES.

6.1 Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2 Progress Payments and Retainage: Prior to Final Completion, Owner will retain from progress payments and any incentive payment, five percent of the value of the work completed unless Owner approves a surety bond per Article 6.4. Contractor may elect to have Owner retain the monies in one of the forms specified in Article 6.3 or Article 6.4 by completing a Selection of Retainage Option Form. For Contracts that exceed \$500,000, Owner will deposit the cash retainage withheld in an interest-bearing escrow account as required by ORS 279C.570(2) unless Contractor has selected one of the forms in Article 6.3 or Article 6.4. Contractor shall execute such documentation and instructions respecting the interest-bearing escrow account as the Owner may require to protect its interests, including but not limited to a provision that no funds may be paid from the account to anyone without the Owner's advance written notification. Interest earned on the account shall accrue to the Contractor. Amounts retained and interest earned will be included in the final payment made according to Paragraph 15.01.C.6 of the General Conditions, unless otherwise specified in the Contract. Owner will make progress payments on account of the Contract Price on the basis of Contractor's Application for Payment on the date of each month as established in the preconstruction conference during performance of the Work as provided herein. All such payments will be measured by the Schedule of Values established as provided in Paragraph 2.05 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided in the General Conditions.

6.3 In lieu of retainage, Contractor may elect on the Selection of Retainage Option Form to have accumulated funds deposited by Owner, as provided in ORS 279C.560, in an interest-bearing account. Interest on such an account would accrue to Contractor. Costs incurred by Owner as a result of this option will be deducted from Contractor's final payment.

6.4 In lieu of retainage Contractor, with the approval of Owner, may elect on the Selection of Retainage Option Form to deposit a surety bond for all or any portion of the retainage in a form acceptable to Owner. Such bond and any proceeds therefrom shall be made subject to all claims and liens as provided for in ORS 279C.550 to 279C.620. Costs incurred by Owner as a result of this option will be deducted from Contractor's final payment.

6.5 Upon Substantial Completion, Owner will pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less retainage and such amounts as Engineer will determine in accordance with Paragraph 15.01.C.6 of the General Conditions and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as

shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.6 Final Payment:

- 6.6.1 Upon Final Completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner will pay the remainder of the Contract Price as recommended by Engineer as provided in Paragraph 15.06.

ARTICLE 7. INTEREST

7.1 Monies not paid when due as provided in Article 15 of the General Conditions shall bear interest at the rate as provided for in ORS 279C.570.

7.2 Interest on retainage withheld by Owner, if any, will be paid in accordance with Article 6.2.

ARTICLE 8. PREVAILING WAGE RATES/BOLI FEE/PUBLIC WORKS BOND REQUIRED.

8.1 The Project is a public works project. Contractor agrees that the provisions required by ORS 279C.830 pertaining to Contractor's payment of prevailing wage rates shall be included as part of this Agreement. Contractor must pay workers in each trade or occupation that Contractor or its Subcontractors or other person who is a party to the Contract uses in performing all or part of the Contract not less than the specific minimum hourly rate of wages in accordance with ORS 279C.838 and 279C.840 and shall require its Subcontractors to pay at such rates. The applicable Oregon prevailing wage rates for such workers are incorporated by reference in Section 00810, Oregon Prevailing Wage Rates. Contractors shall include in every subcontract a provision requiring subcontractors to pay their workers at such rates.

8.2 Owner will be responsible for paying the fee required by ORS 279C.825 to the Commissioner of the Bureau of Labor and Industries.

8.3 Before starting any Work on the Project, Contractor and every Subcontractor performing Work on the Project must have a public works bond filed with the Construction Contractors Board, unless exempt under ORS 279C.836(4), (7), (8), or (9). Contractor must require in every subcontract that the Subcontractor have a public works bond filed with the Construction Contractors Board before starting Work on the Project unless exempt under ORS 279C.836(4), (7), (8), or (9).

ARTICLE 9. CONTRACTOR'S REPRESENTATIONS

9.1 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- 9.1.1 Contractor has examined and carefully studied the Contract Documents and any other related data identified in the Bidding Documents.

- 9.1.2 Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- 9.1.2.1 Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- 9.1.2 Contractor has carefully studied: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) if any, which have been identified in Paragraph 5.03 of the Supplementary Conditions as containing reliable “Technical Data”, and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site which have been identified in Paragraph 5.06 of the Supplementary Conditions as containing reliable “Technical Data.”
- 9.1.3 Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on 1) the cost, progress, and performance of the Work; 2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and 3) Contractor’s safety precautions and programs.
- 9.1.4 Based on the information and observations referred to above, Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- 9.1.5 Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- 9.1.6 Contractor has given Engineer written notice of conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- 9.1.7 The Contract Documents are generally sufficient to indicate and convey understanding of terms and conditions for performance and furnishing of the Work.

ARTICLE 10. CONTRACT DOCUMENTS.

10.1 The Contract Documents which comprise the entire Agreement between Owner and Contractor concerning Work are:

10.1.1 This Agreement

10.1.2 Conformed Bid Forms

10.1.3 Executed Performance and Payment Bonds

10.1.4 Copy of Public Works Bond from Contractor.

10.1.5 Contract Specifications: Divisions 00 and 01 (Except Section 00030, Advertisement to Bid, and Section 00100, Instructions to Bidders); Divisions 02 through 17

10.1.6 Contract Drawings

10.1.7 General Conditions.

10.1.8 Supplementary Conditions

10.1.9 Specifications as listed in the table of contents of the Project Manual

10.1.10 Drawings consisting of 163 sheets with each sheet bearing the following general title: "Rock Creek WRRF Primary Clarifier No. 4 Treatment Expansion, Project No. 7012"

10.1.11 Addenda numbers ___ to ___, inclusive

10.1.12 Selection of Retainage Option Form if applicable

10.1.13 Permits from outside agencies

10.2 There are no Contract Documents other than those listed in this Article.

10.3 The Contract Documents may only be amended, modified, or supplemented as provided in Article 11 of the General Conditions.

ARTICLE 11. ASSIGNMENT.

11.1 Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

11.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this

restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

ARTICLE 12. PAYROLL AND CERTIFIED STATEMENT FILING AND ADDITIONAL RETAINAGE.

- 12.1 Contractor or Contractor's surety, and every subcontractor or subcontractor's surety, shall file with Owner written payroll and certified statements (Certified Payrolls) that accurately and completely contain the payroll records for each week during which the Contractor or subcontractor employs a worker on a public works project. The Certified Payrolls shall contain the information required and conform to the requirements set forth in ORS 279C.845 and Oregon Administrative Rule 839-025-0010. Contractor shall file the Certified Payrolls with Owner once a month by the fifth business day of the following month. Once construction starts Contractor shall file a Certified Payroll with Owner containing the notation "No Work" each week that Contractor does not work on the Project.
- 12.2 Owner shall retain 25 percent of any amount earned by Contractor, in addition to other retainage, on the Work until Contractor has filed with Owner the required Certified Payrolls. Owner shall pay Contractor the amount retained under this Section within 14 days after the Contractor files the required Certified Payrolls required by this Article regardless of whether a subcontractor has failed to file Certified Payrolls. Owner is not required to verify the truth of the contents of the Certified Payrolls filed by Contractor.
- 12.3 Contractor shall retain 25 percent of any amount earned by a first-tier subcontractor on the Work until the subcontractor has filed with Owner the required Certified Payrolls. Contractor shall verify that the first-tier subcontractor has filed the Certified Payrolls before the Contractor may pay the subcontractor any amount retained under this Article. Contractor shall pay the first-tier subcontractor the amount retained under this Article within 14 days after the subcontractor files the Certified Payrolls required by this Article. Neither Owner nor Contractor is required to verify the truth of the contents of the Certified Payrolls filed by the first-tier subcontractor.

ARTICLE 13. MISCELLANEOUS

- 13.1 Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.
- 13.2 Severability: Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- 13.3 This Agreement, and any Change Orders may be executed in several counterparts, each of which will be an original, all of which will constitute one and the same instrument. An electronic signature will be considered an original. The individuals signing this Agreement, and any future Change Orders or amendments certify that they are authorized

to execute this Agreement and any future Change Order or amendments on behalf of Contractor and Owner, respectively.

IN WITNESS WHEREOF, Owner and Contractor have caused this Agreement to be executed the day and year first above written.

OWNER

CONTRACTOR

CLEAN WATER SERVICES

By _____
Chief Executive Officer or Designee

By _____

Title _____

APPROVED AS TO FORM

Clean Water Services Counsel

SECTION 02145

DEWATERING

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies the requirements for the design, installation, maintenance, operation, and removal of dewatering systems, and all work necessary to control, handle, satisfactorily treat, if required, and dispose of groundwater and surface water, and all other water including construction generated water that may be encountered, as required for performance of the Work.

1.02 QUALITY ASSURANCE

- A. Referenced Standards: This Section incorporates by reference the latest revision of the following documents. These references are a part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
 - 1. Environmental Protection Agency (EPA):
 - a. 40 CFR 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants.
 - b. 40 CFR 261 - Identification and Listing of Hazardous Waste.
 - c. 40 CFR 403 - General Pretreatment Regulations for Existing and New Sources of Pollution
 - 2. Water Resources Department of Oregon:
 - a. OAR 690-200 - Well Construction and Maintenance.
 - b. OAR 690-205 - Water Well Supply Well Construction Standards; Licensing.
 - c. OAR 690-210 - Water Supply Wells.
 - d. OAR 690-220 - Abandonment of Wells.
 - e. OAR 690-240 - Construction, Maintenance, Alteration, Conversion, and Abandonment of Monitoring Well, Geotechnical Holes and Other Holes in Oregon.
 - f. OAR 340-041 - Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon.
 - g. OAR 340-040 - Groundwater Quality Protection.

1.03 DEFINITIONS

- A. Construction-Generated Wastewater: Groundwater, perched water, surface water, precipitation, water generated from maintenance or cleaning of equipment, and all other water collected in dewatering systems associated with the Work.
- B. Active Dewatering: A dewatering method that intercepts and conveys groundwater away before entering the excavation. An active dewatering system remains in operation during construction such that groundwater levels remain below the base of the excavations.
- C. Passive Dewatering: A dewatering method that captures and conveys away groundwater upon entering the excavation.

- D. Dewatering Well: An active dewatering method that includes a drilled hole in the ground with casing, well screen, and filter material that includes its own motorized pump in the casing or screen to allow extraction of Groundwater.
- E. Sump: An excavated pit, which extends below the Subgrade, with a pump and filter material that are used to prevent the pumping of formation material and to collect groundwater inflows. Sump dewatering is a passive dewatering method.
- F. Wellpoint: An active dewatering method which utilizes a short slotted or perforated screen attached to a riser pipe with an internal drop tube. Typically, wellpoints are installed at close intervals and attached to a common header and vacuum pump.
- G. Observation Well: A non-pumping well used to observe the elevation of groundwater.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01330.
- B. Groundwater Control Plan (GWCP) shall be developed by a Professional Civil, or Geotechnical Engineer, or a certified engineering geologist (CEG) licensed in the State of Oregon, and shall be submitted to the Owner's Representative at least twenty-one (21) working days prior to the Work and shall include the following:
 - 1. Drawings and complete design analysis for the external and internal groundwater control systems, including system equipment and installation and abandonment (with identified licensed well driller) and observation well typical materials such as screens, riser pipe, filters/sand packs, and installation.
 - 2. A narrative of the type of dewatering system(s) proposed with a discussion of how the system(s) may be modified or augmented to handle more flow or increase drawdown of the water table. Proposed dewatering systems must be consistent with acceptable dewatering methods described in Section 1.06 of this specification. Show the pump types and sizes selected, header surface piping layout, primary and backup power systems, details of discharge piping if crossing roads including methods of protecting the pipe and traffic and other related information.
 - 3. The proposed route of the discharge pipeline compatible with the Contractor's work plan, and the discharge point. The proposed route shall be approved by the Owner's Representative.
 - 4. A narrative description of the permitting requirements, installation sequence and methods as well as operation and maintenance procedures and observation of groundwater levels.
 - 5. Details on collected water treatment facilities as needed and methods to dispose of the collected water.
 - 6. A narrative description that describes the procedure and timing of decommissioning of the dewatering system including final abandonment of groundwater control wells and groundwater observation wells including piezometers installed during explorations.
 - 7. GWCP shall be prepared by prepared, signed, and sealed by a qualified Professional Civil or Geotechnical Engineer (PE) or Certified Engineering Geologist (CEG).

- C. Product Data:
 - 1. Manufacturer's catalogs for proposed equipment detailing the basis of operation, operating and maintenance instructions and manuals, product descriptions, and ratings in terms of size and capacity.
 - 2. Manufacturer catalogs for proposed materials, and supplies identifying their type, description, and properties.
 - 3. Product information on flowmeter(s) and chart recorder. Calibration documentation for flow meters. Chart(s) for flowmeter chart recorder.
- D. Contractor-obtained permits necessary for the installation of the dewatering elements and discharging.
- E. Dewatering system designer qualifications. Include a list of past groundwater control projects during the past five (5) years showing date of work, location, project name and Owner, and type of groundwater control system(s) used.
- F. Drilling logs and well diagrams:
 - 1. Submit drilling logs that include the following:
 - a. Drilling method(s).
 - b. Location numbering.
 - c. Surface elevation.
 - d. Drilling conditions.
 - e. Soil and rock descriptions.
 - f. Groundwater conditions.
 - g. Borehole depth.
 - 2. Provide descriptions of filter pack material to be used in pumped groundwater control wells and groundwater observation wells that include manufacturer's or supplier's statement that material is free of clay, silt, dirt, organic or other foreign matter.
- G. Groundwater control and groundwater observation well decommissioning documentation.
- H. Evidence of State of Oregon license for well driller responsible for installation and abandonment of wells, well points, and observation wells.

1.05 SITE CONDITIONS

- A. Geotechnical investigations for design purposes for this project were made by McMillen Jacobs Associates in the Geotechnical Data Report dated August 26, 2022. The Contractor shall make its own interpretations, deductions, and conclusions as to the nature of the materials to be excavated and shall accept full responsibility thereof.
- B. Methods of dewatering shall be determined by the Contractor.
- C. Locate dewatering facilities where they shall not interfere with utilities and construction Work to be performed by others or Plant operations.
- D. Modify dewatering procedures, which cause, or threaten to cause, damage to new or existing facilities, so as to prevent further damage. Control the rate of dewatering to avoid all objectionable settlement and subsidence.
- E. Comply with all applicable requirements and provisions of local, federal and/or state laws or regulations. Obtain authorization, as required, prior to discharge of groundwater, and comply with the sampling, testing, monitoring, and reporting requirements specified therein.

1.06 SYSTEM REQUIREMENTS

A. General:

1. Coordinate dewatering design with excavation and shoring design. Recognize the changes in groundwater conditions and their effects in the slope stability and earth pressures in the excavation support system design.
2. Large seasonal fluctuations in groundwater levels shall be anticipated at the Project site. Acceptable dewatering methods include passive dewatering systems (such as engineered sumps) and active dewatering systems (such as wellpoints and wells installed at locations/areas as needed).
3. Design, provide, install, operate, maintain, and decommission dewatering systems as necessary to remove and dispose of all surface water, groundwater, perched water, and incidental water (including water inside the existing pipeline bedding and trench backfill) entering excavations, trenches, or other parts of the Work.
4. **Install, monitor, maintain and decommission at least two (2) groundwater level observation wells to record and verify the groundwater levels inside the excavations.**
5. For the Primary Clarifier excavation, control water to maintain excavation slope stability, allow subgrade preparation, placement of geotextile fabric on native subgrade, placement of **Structural Fill** granular pad, pile installation **and base slab construction**, and continually thereafter until the structures are built and backfilled to the extent that no damage from hydrostatic pressure, loss of fines, flotation, siltation, or other cause will result. During installation of pile foundation, **groundwater levels shall be maintained at all times below the bottom of the excavation.**
6. **For excavations required for the new pipe installation and structure construction extending below Elevation 145 feet, groundwater shall be lowered using active dewatering systems (such as wellpoints) to a minimum of 2 feet below the lowest excavation subgrade as verified in the new Contractor installed observation wells before the commence of excavation in these areas.**
7. **The assumed inflow rates from groundwater, perched water and incidental seepage into the excavation are a maximum 300 gallons per minute for the steady state flow and 600 gallons per minute for the peak flow.**
8. Within pipelines excavations, control water to allow subgrade preparation, placement of geotextile fabric on native subgrade, placement of stabilization material and/or drainage collection layer as required, installation of pipe bedding, pipe systems, and trench backfill materials to the extent that no damage from hydrostatic pressure, loss of fines, flotation, siltation, or other cause will result. During installation of trench materials, water levels shall be maintained at all times within the trench stabilization and bedding materials.
9. Flowmeters shall measure and record collected water volume (gallon per minute average daily and peak daily) once per day at an appropriate location along discharge lines to measure flow rates prior to discharge.
10. Control and settlement points shall be provided and monitored to confirm that adjacent existing facilities are not adversely affected by excavation, shoring installation and extraction, dewatering, and groundwater control.
11. During excavation, an intermediate and temporary sump pump system shall be used as necessary to control groundwater, perched water, and incidental water as the excavation proceeds to the final subgrade level and until the sump pumping **and wellpoint** systems at the bottoms have been constructed and **are** operational.

12. Design facilities to treat and to discharge water of the minimum quality required by local, State, and Federal regulations and applicable permits.
 13. Avoid settlement or damage to existing facilities, completed Work, or adjacent property.
 14. Maintain operation of dewatering system until complete structure -- including walls, slabs, beams, struts, and other structural elements -- has been constructed; concrete has attained its specified compressive strength; and backfill has been completed to 3 feet above normal static groundwater level at the site.
 15. Systems shall not be shut down between shifts, on holidays, or weekends, or during work stoppages.
 16. Provide standby power to ensure continuous dewatering in case of power failure. Standby generators shall be well-insulated and meet nuisance noise requirements defined in Environmental Protection.
 17. Contractor shall be the primary contract for any alarms related to the dewatering operations, including the generator.
- B. Do not discharge waters exhibiting visible oil, grease, trash, and/or other hazardous substances.
 - C. Prevent odors, vectors, and other nuisances of waste origin beyond Work limits.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Furnish and maintain all materials, tools, equipment, facilities, and services as required for providing the necessary dewatering work and facilities.
- B. All materials for the dewatering system shall conform to the requirements of these Specifications and any specifications, notes, or requirements contained in the Contractor's GWCP.
- C. Materials may be new or used, but they shall be in good serviceable condition, free of defects and other capacity or strength-reducing deficiencies.
- D. **Raiser Pipes:**
 1. **Wellpoints: 2-inch diameter PVC (minimum Schedule 40).**
 2. **Monitoring wells: 2-inch diameter PVC (minimum Schedule 40).**
- E. **Screen:**
 1. **Well points: 2-foot long, machine-slotted PVC (minimum Schedule 40), 0.010-inch slots, to the depths shown on the Drawings.**
 2. **Monitoring wells: 10-foot long, machine-slotted PVC (minimum Schedule 40), 0.010-inch slots, to the depths shown on the Drawings.**
- F. **Centralizers:**
 1. **Well points: Install immediately above the top of the screen.**
- G. **Filter Pack:**
 1. **Well points, monitoring wells, and sumps: clean, well rounded, washed 10×20 uniform silica sand free from silt, clay, and other deleterious material.**
- H. **Seals:**
 1. **Well points and monitoring wells: Chapter 690-210 and 240 OAR.**

- I. The Contractor shall provide, operate, and maintain as necessary sufficient sediment settling tanks, such as Baker Tanks or approved equal, capable of treatment and temporary storage of pumped water. Contractor shall provide necessary redundant/backup storage and treatment for continuous operation of system at all pumping flow rates.

PART 3 - EXECUTION

3.01 DEWATERING

- A. Dewatering systems shall be installed to collect, treat, and dispose of all surface water, perched water, water migrating along existing buried utilities, and groundwater that enters excavations, trenches, or other parts of the Work.
- B. The Contractor has the option to perform a slug test or full-scale pump test prior to excavating in order to verify adequacy of Contractor-designed dewatering system. However, if the system as designed is incapable of maintaining a dewatered excavation, the Contractor shall modify the system as required at no additional cost to the Owner.
- C. Any wellpoints and wells shall be installed, developed, and abandoned meeting the requirements of Federal, State and Local codes.
- D. Configuration and sizing of the dewatering system shall take into account run-off from areas adjacent to the Work where existing drainage patterns are interrupted.
- E. Excavation shall not commence until the dewatering system is installed and the discharge volume is steady. During excavation, if groundwater is encountered, excavation activities shall be halted until modifications to the dewatering system have been made such that it is able to control the groundwater inflow.
- F. Contractor shall assume complete responsibility for prevention of damage to the existing facilities from potential settlement caused by the dewatering operation. The Contractor shall assume full responsibility for mitigation of these damages at no additional costs to the Owner.
- G. Contractor shall secure all necessary permits for the installation of the dewatering elements and discharging.
- H. Within excavation, control water to allow subgrade preparation, foundation construction, and excavation backfill to the extent that no damage from hydrostatic pressure, loss of fines, flotation, siltation, or other cause will result.
- I. All excavations shall be kept free from water and all construction shall be in the dry.
 1. It shall be presumed that the presence of groundwater will require dewatering operations. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering all excavations. At all times, Contractor shall have sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
 2. Dewatering system details shall be determined by Contractor and its dewatering designer and shall be approved by the Owner's Representative.
 3. Obtain necessary permits for the required dewatering systems.
 4. Sump pumps within the excavation shall be installed within screened sumps.

5. Install at least **two** groundwater monitoring well, or as many as necessary, to ensure excavations within shoring lines shown on Project plans are kept free from water and that construction can proceed in the dry.
 6. Subgrade Stabilization Material consisting of clean, free-draining crushed 2" – ¼" aggregate, as defined in Section 02300 "Earthwork", may be used as the drainage layer for in-trench dewatering.
 7. Dewatering operations shall be continuous, so that the excavated areas shall be kept free from water at the trench subgrade level during construction, while concrete sets and achieves full strength, and until backfill has been placed to a sufficient height to anchor the Work against possible flotation.
 8. Control groundwater to prevent softening of the bottom of excavations or formation of "quick" conditions or "boils."
 9. Design and operate dewatering systems to prevent migration or removal of the natural soils.
 10. When dewatering near a river, lake, stream, or wetland, conform to the requirements of applicable permits. When the presence of water or other conditions in the excavated area would be detrimental to the purpose of the Work, obtain approval of the Owner's Representative for the temporary measures required to correct or care for the condition.
 11. The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new Work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, they shall be removed by the Contractor.
 12. If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum and below the noise level requirements of applicable permits.
 13. Prevent disposal of sediments from the soils to adjacent lands or waterways by employing whatever methods are necessary, including settling basins.
- J. If water or other conditions encountered require permanent correction or care not anticipated by the Contract and not due to the Contractor's neglect or method of operation, immediately notify the Owner's Representative.
- K. At all times, have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outages. Have available at all times competent workpersons for operation of the pumping equipment. Control surface runoff to prevent entry or collection of water in excavations. Keep all excavations free of water when concrete is being deposited or during placement of backfill.
- L. Dispose of water in accordance with Section 01560 "Temporary Environmental Controls".
- M. Shut off dewatering system at a slow rate and release ground water to its static level in such a manner as to maintain the undisturbed state of natural foundation soils. Prevent disturbance of compacted backfill and flotation or movement of structures, pipelines, and other utilities.

3.02 DISCHARGE OF CONSTRUCTION GENERATED WASTEWATER

- A. Manage discharge of construction-generated wastewater into a public sewer, public sump, or body of surface water for a duration of 6 months or less. Plans to discharge wastewater for a duration exceeding 6 months shall undergo a more intensive application, review and operations process. Plans shall cover all Work

necessary to design, permit, provide, operate, maintain, monitor, restore, and remove all machinery, appliances, and equipment required to perform this Work.

B. Discharge Permit:

1. Apply for and obtain a wastewater Discharge Permit(s) from the applicable jurisdictional agency before discharging any wastewater into a public sewer, public sump or body of surface water. Do not begin discharge until the appropriate permitting agency/agencies has reviewed the Discharge Permit application(s) and has issued written authorization to proceed including any specific conditions that apply. All applications shall include a copy of the proposed GWCP and, if applicable, a copy of the project environmental site assessment.
2. The approved Discharge Permit may restrict discharge of wastewater to a quantity containing less than a specified maximum daily load for a distinct set of parameters such as Total Dissolved Solids (TDS) or Total Suspended Solids (TSS). Any specified daily load limits shall apply to the Project as a whole and not to individual discharge location(s) unless otherwise specified. Limits specified by the Discharge Permit will be determined based on likely site pollutants and/or pollutants of concern for the receiving system. Design, operate, and maintain a containment and discharge system to control the flow rate, solids, or other pollutants in accordance with limitations specified by the applicable Discharge Permit.

C. Groundwater Control Plan (GWCP) Modifications:

1. Upon discovery or receipt of notice that any discharge exceeds GWCP limitations, immediately stop all discharge, modify the process described in the GWCP and submit a GWCP modification proposal for review.
2. If breakdown, accident, acts of nature, or any other condition cause the release of any pollutant, excessive solids load or wastewater volume, take the following actions:
 - a. Immediately take action to stop, contain, and correct the problem.
 - b. Immediately notify the Owner's Representative.
 - c. Within five (5) calendar days after such a non-compliance event, submit a detailed written report describing the breakdown, the actual quantity of resultant wastewater discharged, the corrective action taken, the steps taken to prevent recurrence, proposed GWCP modifications, if necessary, and any other pertinent information.
 - d. Implement all approved corrective measures and retest the discharge system before restarting any operations. The Owner's Representative will observe all retesting and review the system for use. If necessary, modify discharge operations during unusually severe weather conditions or as directed.

D. Design and Construction:

1. Design and select materials and equipment for implementing the GWCP in a manner that will yield compliance with the Discharge Permit. Incorporate equipment and/or procedures to record total daily discharges.
2. Install properly sized totalizing flow meters on all pumps to accurately log the total daily discharge volume. Do not install flow meters closer than four feet from any bend in the pump discharge line.
3. Install and maintain fittings for sampling purposes in all of the discharge line(s). Locate fittings downstream of storage facilities but upstream from the approved disposal location(s). Fittings shall be fully accessible and provide

the Owner's Representative opportunity to safely obtain one-liter samples of wastewater. Detail sampling locations in the GWCP.

E. Operation:

1. Give one (1) calendar day notice before initiating discharge operations. Record daily total amount of wastewater discharged at all location(s). Submit a weekly report to the Owner's Representative summarizing discharge rates and volumes at each location(s) for the previous seven calendar days. Contractor shall complete all monitoring required to meet Discharge Permit requirements. Owner's Representative will review Contractor's log and other documentation periodically.
2. Collect and analyze representative samples from all discharge location(s). Samples will be taken downstream from any storage or treatment facility. Sampling will continue throughout wastewater discharge.
3. Retain all records relating to the Discharge Permit for a minimum of three years after Acceptance and Final Payment. Extend this retention throughout the course of any unresolved litigation pertaining to the discharge of pollutants, or when a regulatory authority (e.g., DEQ or EPA) requests this information.
4. Pre-treat all wastewater containing solids or pollutant concentrations exceeding the specified maximum Daily Load limit(s). Dispose of all wastewater in such manner as to prevent injury to public or private property or nuisance or menace to the public. Control the entry or collection of surface runoff to prevent contamination of discharged wastewater. Pipe all wastewater from the Site to the approved discharge point(s). Do not convey any wastewater in open ditches or trenches. Protect all pipe outlets to avoid damage at the discharge location.

F. Enforcement:

1. The Contractor shall be solely responsible for any civil penalties that may be assessed for any gross violation of the Discharge Permit or Discharge Authorization conditions.

3.03 SYSTEM PROTECTION

- A. Take all reasonable and necessary precautions to provide continuous and successful system operation.
- B. Clearly mark and protect all pumped groundwater control wells, header pipes, discharge lines, observation wells, and other system components to prevent damage from vehicles or equipment.

3.04 SYSTEM DECOMMISSIONING AND REMOVAL

- A. The Contractor shall employ Oregon State licensed well drillers per OAR 690-205 for the abandonment of wells, observation wells and other dewatering facilities in accordance with OAR 690. Contractor is responsible for the abandonment of the existing observation wells noted in the Drawings and all new installations done by the Contractor in accordance with OAR 690-240.
- B. The Contractor shall not abandon or remove any wells, observation wells, or other dewatering and groundwater control systems without prior written authorization of the Owner's Representative and shall provide Owner's Representative minimum 24-hour notice prior to abandonment.

- C. The Contractor shall submit written documentation of abandonment of all wells, observation wells, or other similar penetrations below the ground surface including unique identification number, location coordinates, date and time of abandonment, the names of the Contractor's personnel performing the abandonment and the Owner's Representative observing the abandonment.
- D. Cost of abandonment shall be considered incidental to the Work.

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Earthwork includes: clearing and stripping; procurement of on-site and imported fill materials; excavating, placing and compaction of fill and backfill materials; structural excavating and backfilling; transportation and storage of excess earthwork materials; disposal of unsuitable, waste and surplus materials; restoration of excavation and trench surfaces; and subsidiary work necessary to complete the grading of developed areas to conform with required lines, grades, and slopes.
- B. This Section specifies aggregate materials for a variety of uses including aggregates for use under structures and pavements, backfill around below-grade structures, pipe bedding, backfill of trenches, fill for asphalt-surfaced roadways and parking areas.
- C. Definitions
 - 1. Compaction – The degree of compaction is specified as a percentage of the maximum dry density of the soil or fill materials. Prior to compaction testing on-site, the maximum dry density of the soil or fill materials must first be determined through laboratory testing (e.g., ASTM D1557).
 - 2. Excavation Slope – Defined as an inclined surface formed by removing material from below existing grade.
 - 3. Embankment Slope – Defined as an inclined surface formed by placement of material above existing grade.
 - 4. Over excavation – Excavation beyond the limits shown in the Drawings.
 - 5. Structural Backfill – Soil, sand, rock, or a mixture as specified herein which is placed against walls of structures to achieve final grade.
 - 6. Structural Fill – Material specified herein which is placed primarily under structures and supports their loads.
 - 7. Pipe Zone Bedding – Material specified herein which is placed and compacted in the zone around the pipe within the excavated trench.
 - 8. Trench Zone Backfill – Material specified herein which is placed and compacted in the zone above the pipe zone.

1.02 QUALITY ASSURANCE

- A. This Section contains references to the following documents. They are a part of this Section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this Section as if referenced directly. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
 - 1. ASTM International (ASTM):
 - a. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - b. ASTM D558 – Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures

- c. ASTM D1140 – Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75 micrometer, [µm]) Sieve.
 - d. ASTM D1556 – Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - e. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft³).
 - f. ASTM D2419 – Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 - g. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
 - h. ASTM D4318 – Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - i. D3786 – Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
 - j. D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- 2. Oregon Department of Transportation (ODOT):
 - a. Oregon Standard Specifications for Construction (OSSC), 2021 edition.
 - b. ODOT Manual of Field Test Procedures, 2020 edition.
 - 3. State of Oregon:
 - a. Oregon Administrative Rules (OARs).
 - b. Oregon Revised Statutes (ORS), Chapter 757 Utility Regulation Generally.
 - 4. McMillen Jacobs Associates:
 - a. Geotechnical Data Report dated August 26, 2022, for the Rock Creek Advanced Wastewater Treatment Facility Primary Clarifier No. 4 Project, Hillsboro, Oregon.

1.03 QUALITY ASSURANCE

- A. Source Quality Control: Furnish all bedding material from a single source throughout the work unless otherwise approved. Test import materials proposed for use demonstrating that the materials conform to the specified requirements. Submit results to the Engineer at least ten (10) days prior to delivery. Tests shall be performed by an independent testing laboratory.
- B. Field Quality Control:
 - 1. The Owner or Engineer will:
 - a. Review materials proposed for use.
 - b. Observe native soil subgrades, prepared subgrades for structures, pipelines and other new facilities, site grading and borrow operations.
 - c. Observe placement and compaction of fill and review compaction reports.
 - d. Review results of independent testing laboratory tests
 - 2. The Owner will hire an independent laboratory to perform the following tasks:
 - a. Test materials proposed for use and submit results to the Engineer.
 - b. Test soils during placement of fill as directed by the Engineer and submit results to the Engineer.
 - 3. The Contractor shall:
 - a. Provide material testings and certifications for all imported and supplied materials prior to delivery to the site.

- b. Be responsible for costs of additional inspection, rework, and re-testing resulting from non-compliance.
 - c. Be responsible for coordination with third party testing agency to comply with testing frequency specified herein.
- C. Testing Methods (Oregon Projects):
 - 1. Testing shall conform to the requirements of the ODOT Standard Specifications.
 - 2. Field testing procedures shall be in accordance with the ODOT Manual of Field Test Procedures (MFTP).
 - 3. Non-field-testing procedures shall be in accordance with the ODOT Non-Field-Tested Materials Acceptance Guide (NTMAG).
 - 4. References to these two documents can be found in the ODOT Standard Specifications Sections 00165.30 and 00165.35, respectively.
- D. Samples: Contractor shall notify Engineer a minimum of forty-eight (48) hours before obtaining samples. Engineer may choose to be present while samples are obtained. Contractor shall endeavor to collect samples from source stockpiles. Contractor shall notify Engineer prior to sample collection that samples will be collected from source stockpiles or will be provided in sacks from the source management in cases where access cannot be granted to Contractor and Engineer for sample collection directly from stockpiles. Contractor shall make available to Engineer the source(s) of all Crushed Aggregate and Import Fill materials a minimum of thirty (30) days prior to bringing any materials onsite.
- E. Contractor shall not excavate, construct embankments, or fill until all the required submittals have been reviewed and approved.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01330.
- B. Excavation Plan and Schedule
- C. Samples of fill materials to be used shall be submitted two (2) weeks in advance of use, to the approved, independent testing laboratory for testing. Samples shall consist of 0.5 cubic feet of each type of material.
- D. Test results certificate shall be provided to the Engineer verifying the materials furnished have been tested and meet the project specifications, per OSSC Section 00165.
- E. Product Data:
 - 1. Potholing Report.
 - 2. Gradation report(s) for bedding material and import backfill materials.
 - 3. Compaction Reports
 - 4. Geotextile fabric indicating fabric and installation procedure.
- F. Samples and Test Results:
 - 1. Furnish, without additional cost to the Owner, such quantities of bedding material and/or import materials as may be required by the Engineer for test purposes. Cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. Tests shall be performed within 60 days of the submission. All material furnished and all work performed shall be subject to rigid inspection. Submit test results following product review submittal requirements. No material shall be delivered to the site until it has been favorably reviewed by the Engineer. No

material shall be used in construction work until it has been inspected in the field by the Engineer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Scheduling of deliveries shall be coordinated with the Owner prior to material arriving onsite so as not to interrupt existing plant/facility operation.
- B. If access to private property is required, coordination with private owners is required prior to material arriving onsite.
- C. Earthwork materials shall be stored as indicated on the Drawings or in a location confirmed in writing by the Owner. Written approval from the Owner shall be provided if alternative storage locations are to be used.
- D. Contractor shall protect stockpiled material so that it's not contaminated, does not become saturated and is identifiable.

1.06 SUBSURFACE INVESTIGATIONS

- A. Geotechnical investigations for design purposes for this project were made by McMillen Jacobs Associates in the Geotechnical Data Report dated August 26, 2022.
- B. While the records of data obtained may be considered by the Contractor to be correct, any interpretations, conclusions or recommendations made in the reports are for information to the Design Engineer and are not a part of the Contract Documents. Therefore, these report interpretations, conclusions, and recommendations should not be used by bidders as a basis for their bids.
- C. The bidders may make additional subsurface investigations at the site prior to the bidding of the project at their cost. Prior to making any drillings or excavations, the bidder shall secure permission from the Owner, and property owners if on private property.

PART 2 - PRODUCTS

2.01 COARSE AGGREGATE MATERIALS

- A. Subgrade Stabilization Material: Shall consist of crushed 2-inch to 1/4-inch open-graded aggregate conforming to the requirements of OSSC Section 00330.16.
- B. Pipe Bedding:
 - 1. 3/4-inch minus, dense graded aggregate conforming to the requirements of OSSC Section 02630.10 and having less than 5 percent by weight passing the No. 200 sieve.
- C. Pipe Zone Material:
 - 1. 3/4-inch minus, dense graded aggregate conforming to the requirements of OSSC Section 02630.10 and having less than 5 percent by weight passing the No. 200 sieve.
- D. Trench Zone Material:
 - 1. Beneath structures: Either 1-inch minus or 3/4-inch minus gravel or crushed rock meeting the requirements for Class B Backfill material as specified in OSSC Section 00405.14.

2. For trenches or backfill not below structures: Gravel or crushed rock meeting the requirements for Class B Backfill or Class D Backfill material as specified in OSSC Section 00405.14.
 3. Beneath paved areas: Either 1-inch minus or ¾-inch minus gravel or crushed rock meeting the requirements for Class B Backfill material as specified in OSSC Section 00405.14 or Conditioned Select Native material meeting the criteria specified in Part 3.06 B.
- E. Structural Fill: Either 1-inch minus or ¾-inch minus, dense graded aggregate conforming to the requirements of OSSC Section 02630.10.
 - F. Wall Backfill: Shall conform to requirements of **Open-Graded Aggregate**, unless otherwise specified or shown on the Drawings.
 - G. Aggregate Base: Shall conform to requirements of Structural Fill, unless otherwise specified or shown on the Drawings.
 - H. Open-Graded Aggregate: **1-inch minus**, open-graded aggregate used for backfilling behind below-grade structures and retaining structures conforming to the requirements of OSSC Section 02630.11.
 - I. Riprap: Class 50 Riprap per OSSC Section 00390.
 - J. Special Filter Material/Drain Rock:
 1. As backfill for around perforated drains and other subsurface drains.
 2. Meeting requirements per OSSC Section 02610.10.
 - K. Aggregate Base: Shall conform to requirements of Structural Fill, unless otherwise specified or shown on the Drawings.
 - L. Recycled Concrete: Processed concrete from onsite demolition activities that meets the following requirements:
 1. Sound concrete free from rebar and debris
 2. 1-1/2-inch minus, dense graded aggregate conforming to the requirements of OSSC Section 02630.10 and having less than 5 percent by weight passing the No. 200 sieve
- 2.02 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
- A. As specified in Section 02065, Controlled Low Strength Material
- 2.03 SELECT NATIVE FILL
- A. Shall be free of deleterious materials, clods, organic matter, and rocks larger than 2 inches, with moisture content within 2 percent of optimum, and conform to Class A materials per OSSC Section 00405.14.
- 2.04 LANDSCAPE FILL
- A. Shall consist of imported or moisture conditioned native soil free of salts, weeds, or other materials harmful to plant growth. Material shall have a pH range of 5.5 to 7 (ASTM D5268) with a minimum 4-percent organic material content. Clay, silt, and/or sand content shall be less than 60 percent by mass.
- 2.05 TOPSOIL MATERIALS
- A. As specified in OSSC 0140.14.

2.06 DRAINAGE AND SEPARATION GEOTEXTILE

- A. Drainage and separation geotextiles shall be used in conjunction with footing drains and under drain systems as specified in the Drawings and shall meet the requirements for Type 1, nonwoven fabric in Table 02320-1 in OSSC Section 02320.20. Installation and material shall conform to ODOT specifications. Acceptable products include Mirafi 140N, Mirafi RS280i, Amoco 4545, or equal.

2.07 REINFORCEMENT GEOTEXTILE

- A. Reinforcement geotextile shall be installed beneath subgrade stabilization material when conditions warrant over excavation (see Section 02300 paragraph 3.04.B), and installed over the prepared subgrade prior to structural fill. When used for subgrade stabilization, a geotextile providing both separation/filtration and reinforcement shall be used, such as Mirafi RS380i or equivalent. Reinforcement-only geotextiles should meet the requirements for Type 2, woven riprap geotextiles in Table 02320-2 in OSSC Section 02320.20. Installation and material shall conform to ODOT specifications.

2.08 DETECTION MATERIALS

- A. Warning Tape: 3-inch-wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Warning Tape colors shall follow the uniform color code per American Public Works Association (APWA) and shall not be placed more than 12 inches above top of pipe.
 - 1. Provide: Terra Tape® Standard; T. Christy Enterprises, Inc. TA.ND.3-COLOR-CODE; or equal.
 - 2. Acceptable Manufacturers: Reef Industries, Inc., 9209 Almeda Geona Road, Houston, TX 77075. (800) 231-6074. (<https://www.reefindustries.com/>). T. Christy Enterprises, Inc., 655 E. Ball Road, Anaheim, CA 92805. (714) 507-3300, Fax (714) 507-3310. (<https://tchristy.com/>). color code per American Public Works Association (APWA).
- B. Detection Tape: Plastic metallic type consisting of a blue color-coded polyethylene or melinex film, a solid core aluminum foil detection layer and other layers as required. The tape shall be resistant to acids, alkalines, and other components likely to be encountered in soils. It shall be designed for both conductive and inductive locating procedures. Detection tape colors shall follow the uniform color code per American Public Works Association (APWA).
 - 1. Provide: Terra Tape® Sentry Line ® Detectable; T. Christy Enterprises, Inc. TA.DT.3-COLOR-CODE; or equal and any accessories as required by manufacturer.
 - 2. Manufacturers: Reef Industries, Inc., 9209 Almeda Geona Road, Houston, TX 77075. (800) 231-6074. (<https://www.reefindustries.com/>). T. Christy Enterprises, Inc. 655 E. Ball Road, Anaheim, CA 92805. (714) 507-3300, Fax (714) 507-3310. (<https://tchristy.com/>), or equal.
- C. Tracer Wire: Tracer wire shall be #12 AWG Copper Clad Steel insulated by high molecular weight high density polyethylene (HMWPE) and shall be installed on all pipe. Attach wire with 2-inch-wide tape, taped at 12-inch intervals. Property ground tracer wire at all dead ends and stubs. Tracer wire shall follow the uniform color code per American Public Works Association (APWA).
 - 1. Provide: Copper Clad Steel Tracer Wire by KrisTech, or Solid Tracer Wire by T. Christy's

2. Manufacturers: KrisTech West Coast, 14765 Carmenita Road, Norwalk CA. 90650. (562) 456-3340. (<https://www.kristechwire.com/>), T. Christy Enterprises, Inc.,

PART 3 - EXECUTION

3.01 GENERAL

- A. Site Access: Access to the site will be over public and private roads. Exercise care in the use of such roads and repair at own expense any damage thereto caused by Contractor's operations. Such repair shall be to the satisfaction of the Owner or agency having jurisdiction over the road. Take whatever means are necessary to prevent tracking of mud onto existing roads and keep roads free of debris.
- B. Traffic Regulation: Provide such flagmen, patrols, pilot cars, drivers, lighted barricades, flares, lights, warning signs, and safety devices as may be required for control of traffic adjacent to all areas of work. A minimum of one lane of traffic shall be kept open at all times on public roads. Refer to Section 01550 for Traffic Regulation.
- C. Barriers: Barriers shall be placed at each end of all excavations and at such places along excavations as may be necessary to warn all pedestrian and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely restored.
- D. Access: Free access must be maintained to all fire hydrants, water valves and meters, and private driveways.
- E. Demolition of Pavement: Where trenching or excavation occurs in paved areas, the pavement shall be scored and broken ahead of the trenching or excavation operation. The extent of paving removed shall be limited to the minimum necessary for the excavation. All existing asphalt or concrete surfacing shall be saw cut vertically in a straight line and removed from the jobsite prior to starting the trench excavation. This material shall not be used in any fill or backfill.
- F. Dust Control: Take proper and efficient steps to control dust.
- G. Permits: Refer to General Conditions.
- H. Storage of Materials: Excavated materials unsuitable for backfill shall not be stored on existing streets and shall be disposed of immediately. Neatly place excavated materials far enough from the excavation to prevent stability problems. Keep the materials shaped to cause the least possible interference with plant operations and drainage.
- I. Temporary Pavement: Place temporary pavement or first lift of permanent pavement on trenches in existing streets within 24 hours after the trench has been backfilled. Maintain temporary pavement until permanent pavement is to be placed.
- J. Existing Facilities: Maintain access to existing facilities to permit continued operation. Maintain access for firefighting equipment and to fire hydrants.
- K. Survey and stake all structures, piping, pipeline appurtenances, roads, staging areas, etc. and establish their locations and elevations. Perform other layout work as required to control and complete the Work.

- L. Take care not to excavate beyond the limits shown as there shall be no additional payment to the Contractor for excavations beyond the limits shown in the Drawings not coordinated with the Engineer.
- M. Excavation Support: As required by Section 02350, Excavation Support.
- N. Control of Trench Water and Groundwater Dewatering: As specified in Section 02145, Dewatering.
- O. Excavate and dispose of all materials of whatever nature encountered, including all obstructions, that would interfere with the proper execution and completion of the Work. Removal of these materials shall conform to the lines and grades indicated or ordered.
- P. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving.
- Q. Provide erosion control protection in accordance with Section 01560.

3.02 EXISTING UTILITIES

- A. General: The known existing buried utilities and pipelines are shown on the Drawings in their approximate location. The Contractor shall exercise care in avoiding damage to all utilities as he will be held responsible for their repair if damaged. There is no guarantee that all utilities or obstructions are shown, or that locations indicated are accurate. Utilities are piping, conduits, wire, cable, ducts, manholes, pull boxes, and the like, located at the project site.
- B. Potholing:
 - 1. Contact all affected utility owners and request them to locate their respective utilities prior to the start of "potholing" procedures. The utility owner shall be given 7 days written notice prior to commencing potholing. Equivalent adopted electronic notices using utility owner online platforms are also acceptable. If a utility owner is not equipped to locate its utility, the Contractor shall locate it.
 - 2. Clearly paint the location of all affected utility underground pipes, conduits, and other utilities on the pavement or identify the location with suitable markers if not on pavement. In addition to the location of metallic pipes and conduits, non-metallic pipe, ducts, and conduits shall also be similarly located using surface indicators and detection tape if present and shall then be similarly marked.
 - 3. After the utility survey is completed, commence "potholing" to determine the actual location and elevation of all utilities where crossings, interferences, or connections to new pipelines or other facilities are shown on the Drawings, marked by the utility companies, or indicated by surface signs. Prior to the preparation of piping shop drawings, or the excavating for any new pipelines or structures, the Contractor shall locate and uncover these existing utilities including services and laterals to a point 1 foot below the utility. Submit a report identifying each underground utility and its depth and location. Any variation in the actual elevations and the indicated elevations shall be brought to the Engineer's attention and noted on the Contractor's record drawings.
 - 4. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workmen or damage to electrical ducts or conduits. Similar precautions shall be exercised around gas lines, telephone, and television cables.

5. Excavations shall have a surface dimension of no more than 18-inch by 18-inch. Air spades and vacuum excavators shall be used to limit the size of the excavation and damage to adjacent facilities. Backfill after completing potholing. In existing streets, pave with 1 inch of cold mix asphalt concrete.
- C. Interferences:
1. If interferences occur at locations other than shown on the Drawings, the Contractor shall notify the Engineer, and a method for correcting said interferences shall be supplied by the Engineer. Payment for interferences that are not shown on the Drawings, nor which may be inferred from surface indications, shall be in accordance with the provisions of the General Conditions. If the Contractor does not expose all required utilities prior to shop drawing preparation, he shall not be entitled to additional compensation for work necessary to avoid interferences, nor for repair to damaged utilities.
 2. Any necessary relocations of utilities, whether shown on the Drawings or not, shall be coordinated with the affected utility.
- D. Shutdowns: Planned utility service shutdowns shall be accomplished during period of minimum use. In some cases, this may require night or weekend work. Such work shall be at no additional cost to the Owner. Program work so that service will be restored in the minimum possible time and shall cooperate with the utility companies in reducing shutdowns of utility systems to a minimum.
1. Disconnections: No utility shall be disconnected without prior written approval from the utility owner. When it is necessary to disconnect a utility, the Contractor shall give the utility owner not less than seventy-two (72) hours' notice when requesting written approval. The Contractor shall program his work so that service will be restored in the minimum possible time.
- E. Overhead Facilities: There may be existing overhead electric and telephone transmission lines at the site. These overhead utilities are not shown on the Drawings. Extreme caution shall be used when working in the vicinity of overhead utilities to prevent injury to workmen or damage to the utilities. Contractor shall review the site and overhead utilities, and how they relate to the Work, and factor these limitations into the bid price.
- F. Existing gas, water, plant drain, and sewer laterals to onsite buildings are not specifically shown on the Drawings but do exist. Protect all service laterals from damage due to construction operations. If any laterals are damaged, notify the Owner and the affected utility immediately. The cost of repair shall be borne by the Contractor.

3.03 SITE EXCAVATION AND GRADING

- A. The maximum allowable temporary excavation/cut slope is 1½H:1V.
- B. Blasting is not permitted.
- C. Protect excavations from surface water runoff by placing sandbags or other means to promote runoff of precipitation away from work areas and to prevent ponding of water in excavations.
- D. Complete excavations in small sections that can be backfilled at the end of the day to reduce exposure to wet conditions.
- E. Grade the site to the elevations shown on the Drawings. Grading shall be uniform and shall provide drainage from all areas to collection points. Finished surfaces

shall be smooth and compacted. Grade surfaces to drain away from structures at a minimum of 2 percent, unless otherwise noted in the Drawings.

1. Fine Grading Tolerances:
 - a. Turf or Unpaved Area: $\pm\frac{1}{2}$ inch.
 - b. Walks: To a tolerance of $\frac{1}{4}$ inch when tested with a 10-foot straight edge.
 - c. Pavements: To a tolerance of $\frac{1}{4}$ inch when tested with a 10-foot straight edge.
- F. Preparation of Ground Surface for Embankments or Fills:
 1. Scarify to a minimum 6-inch depth in proposed embankment and fill areas.
 2. Where ground surface is steeper than one vertical to five horizontal, plow surface in a manner to bench and break up surface so that fill material will bind with existing surface.
 3. Clear and grub the embankment footprint to an extent of 10 feet beyond the toe of the embankment slope.
 4. Remove roots, tree stumps, and other vegetation to a depth of 6 inches and backfill the hole with structural fill.
- G. Protection of Finish Grade:
 1. During construction, shape and drain embankment and excavations.
 2. Maintain ditches and drains to provide drainage at all times.
 3. Protect graded areas against action of elements prior to acceptance of work.
 4. Reestablish grade where settlement or erosion occurs.
- H. Embankments and Fills:
 1. Construct embankments and fills at locations and to grade indicated.
 2. Compact by sheepsfoot, pneumatic rollers, vibrators, or by other equipment as required to obtain specified density.
 3. Control moisture for each layer necessary to meet requirements of compaction.
- I. Ditches and Swales:
 1. Cut ditches accurately to the cross sections and grades shown.
 2. Trim all roots, stumps, rock, and other foreign matter from the sides and bottom of the ditches.
 3. Where filter fabric is installed within an earthen or rock-lined drainage swale or channel, overlap filter fabric a minimum 12 inches with upstream fabric placed over downstream fabric. Join seams per manufacturer recommendations.
- J. Compact materials in accordance with Paragraph 3.06 unless otherwise specified or shown on the Drawings.
- K. Gravel Areas: Place gravel material onsite to finished grade elevations as shown on the Drawings, unless otherwise noted.
- L. Landscaped Areas: Use Landscape Fill in the top 2 feet of areas to be landscaped.

3.04 EXCAVATION FOR STRUCTURES, ROADWAYS, AND PIPELINES

- A. All excavation for structures, roadways, and pipelines shall be done to the dimensions and levels indicated on the Drawings or specified herein. Excavate to such width outside the lines of the pipeline and structure to be constructed as may be required for proper working methods, inspection, and the erection of forms and the protection of the Work.

1. No additional compensation will be made for removal of rock or any other material due to difficulty of excavation.
- B. Take care to preserve the native subgrade surfaces in an undisturbed condition. If the Contractor overexcavates or disturbs the subgrade surfaces, without written authorization of the Owner's Representative, Contractor shall replace such subgrade material with additional Subgrade Stabilization Material, Structural Fill, or other material approved by the Owner's Representative in a manner that will show by test an equal subgrade or foundation bearing value with the undisturbed foundation material. No additional payment will be made for the added quantity of materials used because of overexcavation.
- C. Inspection of Excavation: Notify the Owner's Representative when excavation for the structures, roadways, and pipelines are complete. No geotextiles, imported material layers, forms, reinforcing steel, concrete, or precast structure shall be placed until the excavation subgrade and subsequent import material compacted surfaces have been inspected by the Owner's Representative.
- D. Where unsatisfactory material is encountered at the subgrade level below the pipe, road, or structural excavations, it shall be removed and replaced with Subgrade Stabilization Material as directed by the Owner's Representative and compacted as specified. A reinforcement geotextile per Section 2.07 of this specification shall be placed below and Subgrade Stabilization Material as shown on the Drawings and as directed by the Owner's Representative. Payment for removal and replacement of such unsatisfactory material directed by the Owner's Representative shall be made in accordance with the appropriate provisions of the Contract Documents.
- E. Primary Clarifier No. 4 Subgrade Protection and Granular Pad
1. Provide an 8-inch-thick Structural Fill granular pad.
 2. Place a layer of geotextile separation fabric installed directly on the prepared subgrade. The overlap at the edges and ends of fabric rolls should be a minimum of 2 feet.
 3. Excavation to subgrade level and placement of geotextile fabric and crushed rock should be done in stages, such that the exposed subgrade is covered as soon as possible after exposure. If the subgrade becomes disturbed during excavation, the disturbed areas should be over-excavated to firm subgrade, and the filter fabric placed on the final subgrade surface.
 4. Compaction of the crushed rock shall be conducted with a roller in the static mode only to minimize disturbance to the subgrade.
 5. After the granular pad is in place and auger-cast piles have been installed, the granular pad should be cleaned of drilling spoils to the maximum extent possible.
 6. Replace removed material to restore an 8-inch-thick Structural Fill granular pad. The granular pad shall prevent migration of concrete into the crushed rock layer.
- F. Pipeline Trench Excavations
1. Excavation for pipe and other utilities such as duct banks shall be in open cut. The trench shall be as wide as necessary for sheeting and bracing and the proper performance of the work up to the maximum width permitted by the typical cross-sections shown on the Drawings. The bottom of the trench shall be constructed to the grades and shapes indicated on the Drawings.
 2. Do not advance open trench more than 50 feet ahead of installed pipe.

3. Accurately grade the bottom of the trenches to provide uniform bearing and support for each section of the pipe or conduit at every point along its entire length, except for the portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints, and as hereinafter specified. Dig bell holes and depressions for joints after the trench bottom has been graded. For the pipe to rest on the bedding for as nearly its full length as practicable, bell holes and depressions shall be only of such length, depth, and width as required for properly making the joint. Remove stones as necessary to avoid point bearing.
4. The trench shall not be backfilled until the Engineer reviews the pipe and bedding installation.
5. Grade trenches so that they are uniformly sloped between the pipe elevations shown on the Drawings. If no elevations are shown on the Drawings, provide 3 feet of minimum cover. Comply with the minimum and maximum trench widths shown on the Drawings. Notify the Engineer if the trench width exceeds the maximum allowable width for any reason.
6. For all piping or conduits to be placed in any excavated and backfilled area, such as at manholes or for building connections, the structural backfill shall be first compacted to a level at least 3 feet from the top of the piping or conduit elevation and then retrenched to pipe grade.
7. Provide secured ladders for access to the trench by construction and inspection personnel. Additional secured ladders shall be provided to any structure or pipe that must be inspected and tested. Failure to provide safe inspection access shall void initial inspection and follow up inspection shall not be performed until proper safe access is provided to the items to be inspected.

3.05 BACKFILL UNDER AND ADJACENT TO STRUCTURES

- A. Compact materials in accordance with Paragraph 3.06 unless otherwise specified or shown on the Drawings.
- B. Backfill Adjacent to Structures
 1. Do not place backfill against structures until at least twenty-eight (28) days after concrete was placed, or until concrete has achieved a minimum strength of 2,500 psi. Concrete strength shall be demonstrated by field-cured cylinders tested at the Contractor's cost, prepared and tested in accordance with ASTM C31 and ASTM C39.
 2. Do not place backfill against hydraulic structures until the structure has passed the specified leakage tests.
 3. Place Structural backfill **under structures and place Wall Backfill adjacent to structures** in uniform, level layers, not exceeding 12 inches thick measured before compaction. Bring backfill up uniformly on all sides of the structure, and on both sides of buried walls.
- C. Backfill for Walls Below Grade
 1. **Wall Backfill** should be placed **within a 5-foot zone behind all walls and adjacent to structures. Wall Backfill should be placed** in horizontal lifts not exceeding 12 inches in loose thickness. Only light, hand-operated compaction equipment (e.g., jumping jack, walk-behind vibratory plate compactor) shall be used within 5 feet of walls below grade. Loose lift thickness shall not exceed 6 inches within 5 feet behind below-grade walls and structures.

2. Beyond the 5-foot wide zone from the wall, the backfill within the influence of new or existing structure foundations (within 1H:1V extending downward from the outside edge of the respective foundation) shall conform to the dense graded Structural backfill.
3. Backfill areas beyond the 5-foot zone that will not be subject to loading from new or existing structures or pipeline trenches can be Select Native Fill.

D. Structural Fill Under Structures

1. Place a layer of Structural Fill under structures to the lines, grades and minimum thicknesses shown on the Drawings. Unless shown specifically otherwise in the Drawings, do not use Structural Fill material as backfill above the elevation of the highest base slab of the structure.

3.06 COMPACTION

- A. The following compaction test requirements shall be in accordance with ASTM D1557 or procedural methods according to OSSC with modifications as described in the table notes below. Where agency or utility company requirements govern, the highest compaction standards shall apply.

FILL MATERIAL/TYPE	MAXIMUM LOOSE LIFT THICKNESS	RELATIVE COMPACTION	MOISTURE CONTENT
Subgrade Stabilization Material	12 inches	Procedural, see Note 1	Not Applicable
Pipe Bedding	8 inches	90 percent, see Note 3	Within $\pm 4\%$ of optimum
Pipe Zone Material	8 inches	90 percent	Within $\pm 2\%$ of optimum
Trench Zone backfill - beneath paved areas and structures	12 inches	92 percent	Within $\pm 2\%$ of optimum
Trench Zone backfill - beneath nonpaved areas	12 inches	90 percent	Within $\pm 4\%$ of optimum
Structural Fill	12 inches	92 percent	Within $\pm 2\%$ of optimum
Open-Graded Aggregate	12 inches, see Note 2	88-90 percent, see Note 2	Within $\pm 4\%$ of optimum
Select Native I - beneath paved areas	12 inches	92 percent	Within $\pm 2\%$ of optimum
Select Native - beneath nonpaved areas	12 inches	90 percent	Within $\pm 2\%$ of optimum

Note 1: Procedural method according to OSSC Section 00330.43(a) and...43 (d) with the following modifications: compaction by hand methods or small equipment such as non-vibrating mechanical or pneumatic tampers, walk-behind or self-propelled, small static rollers; max loose lifts 8 to 12 inches; and min, 3 coverages of approved equipment, if required.

Note 2: For open-graded aggregate placed as wall backfill within 5 feet of the walls for structures, compaction shall be via hand compaction methods described in Note 1 and with a limit static weight of less than 1,000 pounds. Loose lift thicknesses may need to be decreased in these areas.

Note 3: The portion directly beneath the pipe invert should be lightly compacted with static roller.

- B. Use of Select Native Soils beneath paved areas must meet the compaction requirements identified in the table in Section 3.06 A, or either of the following 2 items:

1. A minimum of 90 percent relative compaction if the contractor constructs hardscaped surfacing and/or buried utilities a minimum of 6 months after the final lift of Select Native Material had been placed as fill.

2. A minimum of 92 percent relative compaction when Select Native is amended with a minimum of 4 percent cement. Maximum dry density and optimum moisture content of the mixture to be determined by ASTM D558.

3.07 DISPOSAL OF EXCAVATED MATERIAL

- A. Dispose of excavated material not suitable for reuse as onsite backfill offsite in accordance with the requirements of OSSC Section 00290. All costs of disposal shall be borne by the Contractor.

3.08 STOCKPILING OF MATERIALS

- A. Stockpile in sufficient quantities to meet Project schedule and requirements.
- B. Separate soil and aggregate materials with dividers or stockpile individually to prevent mixing. Prevent intermixing of soil types or contamination.
- C. Direct surface water away from stockpile site to prevent erosion or deterioration of materials. Cover stockpile areas as necessary to comply with erosion control criteria.
- D. Stockpile unsuitable hazardous materials on impervious liner and cover to prevent erosion and leaching, until properly disposed of.

3.09 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.10 FIELD QUALITY ASSURANCE

- A. Quality Assurance Testing to be completed by Owner or Owner's quality assurance testing agency in accordance with Section 01450, Quality Control.
- B. Costs of all originally scheduled field quality assurance tests and inspections resulting in passing conditions shall be paid by Owner. Should any originally scheduled test or inspection fail to meet requirements of the Contract Documents, the Contractor shall be responsible for the costs of retesting or re-inspection of Work including inspector's and tester's time and trips.
- C. Owner will perform additional tests until compaction meets or exceeds requirements.
- D. Provide Owner's and Engineer's Representatives, and inspectors with immediate access for Owner's testing and observation of soils-related work.
- E. Ensure excavations are safe for workers, Owners, and Owner's and Engineer's Representatives, Owner's testing agency personnel, and inspectors.
- F. Should any test or inspection fail to meet requirements, perform corrective work necessary to bring the Work into compliance with the requirements of the Contract Documents.
- G. Frequency of Compaction Testing:
 1. Minimum of one compaction test every 200 feet lineal feet of trench within the pipe zone and trench zone, every 2 vertical feet.
 2. Minimum of one compaction test per each lift for of every 2,500 square feet of structural fill below structures, behind walls, and at manhole and vault locations.

3. Minimum one compaction test per each lift for every 100 feet of road embankment.

END OF SECTION