# CONTRACT DOCUMENTS
# FOR THE
# CONSTRUCTION OF

# PROJECT NO. 20WA05
# WASHINGTON AVE BORE CROSSING

**CITY OF ROSEBURG**
**PUBLIC WORKS DEPARTMENT**
**DOUGLAS COUNTY, OREGON**

**MAY 2021**


**PREPARED BY:**
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**Portland, OR 97201**
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REGISTERED PROFESSIONAL ENGINEER
85861PE
OREGON
NOVEMBER 8, 2011
LUKE B. ERICKSON
EXPIRES: 12/31/2021

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**CITY OF ROSEBURG**
**ADVERTISEMENT FOR BID**

Project Name: **Washington Ave Bore Crossing**
Project Number: **20WA05**
Project Description: **750± lineal feet of 14" HDPE water main crossing using horizontal directional drilling methods, 415± lineal feet of restrained 12" ductile iron water pipe, appurtenant fittings, valves, connections, pipe abandonment, and related work**.

Non-Mandatory Prebid Meeting: Tuesday, May 11, 2021 at 2:00 p.m.
Location: Riverside Park parking lot
400 SE Oak Ave, Roseburg, OR 97470

All questions are due by 5:00 p.m. on Tuesday, May 18, 2021

Bids are due by 2:00 p.m. on Tuesday, May 25, 2021

All bids will be opened at 2:00 p.m.

Additional forms disclosing first tier subcontractors are due by 4:00 p.m.

No bids shall be received after this date and time.

Contact – Submit bids to:
City of Roseburg City Recorder
900 SE Douglas Ave.
Roseburg, OR 97470
(541) 492-6866

Address technical questions to:
Luke Erickson, PE
2000 SW First Avenue, Suite 410
Portland, OR 97201
(503) 384-2908
erickson@mcmjac.com

SOLICITATION DOCUMENTS: Solicitation documents, including contract terms, conditions, specifications, all attachments and/or addenda for the Invitation to Bid are available for review at the above contact address. Bid documents will not be mailed to prospective bidders, but may be downloaded from the Oregon Procurement Information Network (ORPIN) through the following internet address: http://orpin.oregon.gov/open.dll/welcome. Bidders without access to ORPIN may download the documents at a Plan Center or the City of Roseburg's website at www.cityofroseburg.org under "Bidding Opportunities."

Bidders must be licensed with the Oregon Construction Contractors Board and comply with City of Roseburg Municipal Code.

The resulting public works contract is subject to ORS 279C.800 to 279C.870 or the Davis-Bacon Act (40 U.S.C. 3141 to 3148). No bid will be considered unless the bid contains a statement that the bidder will comply with the provisions of ORS 279C.840 (Prevailing Wage Rates).

## INVITATION TO BID

The City of Roseburg will receive sealed bids or bids submitted via email marked **"Bid for Project No. 20WA05, Washington Ave Bore Crossing"** until the hour of 2:00 p.m. on **Tuesday, May 25, 2021**, at which time they will be publicly opened and read. When required by ORS 279C.370, bidders must submit a list of their first-tier subcontractors providing labor, or labor and materials, no later than 4:00 p.m. that same day. Bids shall be addressed and delivered to Amy L. Sowa, City Recorder, City Hall, 900 SE Douglas Avenue, Roseburg, Oregon 97470, or emailed to info@cityofroseburg.org. Any bids received after the 2:00 p.m. deadline for submission, or for which the list of first-tier subcontractors has not been submitted by 4:00 p.m. that same day, shall be considered nonresponsive and returned to the bidder. All bidders must list their "Construction Contractors Board" or "State Landscape Contractors Board" license number as required by ORS 701.021 or 671.530 on the bid form.

The proposed work generally consists of furnishing all labor, equipment, materials and supervision for the construction of a new potable water transmission main crossing the South Umpqua River and includes approximately 750 lineal feet of 14-inch diameter HDPE pipe installed using horizontal directional drilling (HDD) methods and approximately 415 lineal feet of restrained 12-inch diameter ductile iron (DI) pipe. Other Project work includes fittings, valves, combination air release valves and low point blow-off assemblies, connections to existing transmission main, abandonment of the existing 12-inch diameter steel waterline on the Washington Ave bridge and buried Asbestos Cement (AC) water pipe, surface restoration, pavement restoration, and performance of any other work indicated in the Contract Documents. The bids will be evaluated as ***unit price pursuant to OAR 137-049-0380(2)(b).*** The proposed work will require the bidder to meet the highest standards prevalent in the industry or business related to the work to be performed. Failure to meet such standards may result in a reduction or withholding of payment; require bidder to provide, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought. Technical questions regarding the work to be performed shall be addressed to: **Luke Erickson, PE, McMillen Jacobs Associates**. All questions are due by 5:00 p.m. on May 18, 2021.

Bids must be accompanied by a certified check, cashier's check, irrevocable letter of credit or Bid Bond in an amount equal to not less than ten percent (10%) of the total amount of the bid. Bidders shall state as part of the bid that the provisions of ORS 279C.800 to 279C.870 (Prevailing Wage Rates) shall be complied with; provided however, if the project is subject to the federal prevailing rates of wage under the Davis-Bacon Act (40 U.S.C. 3141 et seq.) or if the project is subject to both the state and federal prevailing rates of wage, the bid must contain a statement by the bidder that contractor and every subcontractor shall pay the higher of the applicable state or federal prevailing rate of wage to all workers on the project. Bidders must also certify as part of the bid that the requirements of ORS 279C.505(2) (Employee Drug Testing Program) shall be complied with. Each bid must contain a statement as to whether the bidder is a resident bidder, as defined in ORS 279A.120. Bidders are not required to be licensed under ORS 468A.720 (Asbestos Abatement). However, the successful bidder shall at all times during the project provide qualified staff on site that is able to identify asbestos containing material. Bidders are hereby notified there are underground pipelines and structures containing asbestos within the City of Roseburg. If any such material is encountered during the project, the bidder shall thereupon be required to notify the City and comply with all requirements of applicable laws and regulations. Unless exempt under ORS 279C.800 to 279C.870, the successful bidder must file a $30,000 Public Works Bond with the Construction

Contractors Board prior to beginning work on the project, and certify that all sub-contractors have also filed such bond. Bidders must agree to use recyclable products to the maximum extent financially feasible**. Bidders with 50 or more employees and for contracts over $500,000, are required to possess a certificate issued by the Department of Administrative Services for completion of pay equity training (NEW).**

The City of Roseburg may reject any bid not in compliance with all public bidding procedures and requirements, including the requirement to demonstrate the bidder's responsibility under ORS 279C.375(3)(b), may waive any irregularities, and may reject for good cause any or all bids upon a finding of the City it is the public interest to do so. The City may also cancel this invitation in accordance with OAR 137-049-0270.

Dated this 4th day of May, 2021.

**CITY OF ROSEBURG, DOUGLAS COUNTY, OREGON**
**/s/ Amy L. Sowa, City Recorder**

## INFORMATION TO BIDDERS

### 1. FORM OF BID

All bids must be made upon the blank Bid Form attached hereto and must give a price for each item and an aggregate amount or a lump sum price as required in the Bid Form.

The City reserves the right to reject any or all bids or to accept the bid deemed in the best interest of the City. Without limiting the generality of the foregoing, the City may reject any bid which is incomplete, obscure or irregular; which omits any one or more items in the price sheet; in which unit prices are obviously unbalanced; or which is accompanied by an insufficient or irregular Bid Bond.

The bidder shall sign the Bid Form in the blank space provided therefore. All bids must contain the bidder's tax identification number. Bids made by a corporation, general or limited partnership, or L.L.C., shall contain the name and address of such organization, together with names and addresses of officers, partners or managing members. If the bid is made by a corporation, it must be signed by one of the corporate officers with the authority to sign for the corporation; if made by a partnership, by one of the partners.

All bids must be submitted at the time and place, and in the manner prescribed in the Invitation to Bid.

### 2. BID PROTEST; REQUEST FOR CHANGE OR CLARIFICATION

A bidder may protest, or request a change in items in the bid documents, including contract terms and conditions or specifications, by filing a written protest with the City not less than ten (10) calendar days prior to the bid submission deadline. Such written protest or request for change must include a detailed statement of the grounds for the protest and a statement of the desired changes to the contract terms and conditions or specifications.

The City shall not consider a bidder's protest or request for change after the deadline for submitting such protest or request. The City shall provide notice to the bidder if it entirely rejects the bidder's protest or request for change. If the City agrees with the bidder's protest or request, in whole or in part, the City shall issue a written Addendum to the bid documents or specifications.

Prior to the deadline for submitting a written protest or request for change, a bidder may request that the City clarify any provision of the bid documents. The City's clarification to a bidder, whether orally or in writing, shall not change the bid documents and is not binding on the City unless the City amends the bid documents by issuing a written addendum.

If a written addendum is issued by the City, all bidders must provide written acknowledgement, with their bids, of receipt of all issued addenda.

## 3. CONTRACT DOCUMENTS

The Contract Documents for this Project consist of, but are not necessarily limited to, the Invitation to Bid, Information to Bidders, Bid Form, Construction Contract including Exhibit "A" Standard City Contract Provisions, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder's Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), Pay Equity Compliance Certification (when applicable), General Conditions, Technical Provisions, Special Provisions, Standard Drawings, Specifications and Plans and Supplemental Specifications, all as required for the full execution and satisfactory completion of the Project. Any person contemplating the submission of a bid and being in doubt as to the meaning or intent of said Contract Documents should request of the City, in writing, an interpretation thereof. Any interpretation of said Contract Documents shall be made only in writing by the City.

## 4. ESTIMATE OF QUANTITIES

The estimate of quantities of work to be done as stated in the Bid Form, although stated with as much accuracy as possible, is approximate only and is assumed solely for the purpose of comparing bids. The quantities on which payments will be made to the Contractor are to be determined by measurement of the work actually performed and paid at the unit price bid, regardless of the amount of increase or decrease in the estimated quantities as specified in the Contract Documents. The City reserves the right to increase or diminish the amount of any class of work as may be deemed necessary.

## 5. CONSTRUCTION CONTRACTORS' BOARD - STATE LANDSCAPE CONTRACTORS' BOARD

All contractors bidding on public contracts must be licensed with the Construction Contractors' Board or the State Landscape Contractors' Board as required by ORS 701.021 or 671.530. Bids must be identified with the Contractors' Board license number. No bids will be considered without this information.

## 6. DISCLOSURE OF FIRST-TIER SUBCONTRACTORS

When a public improvement contract value is greater than $100,000, all bidders are required to disclose information about first-tier subcontractors, providing labor or labor and materials, when the contract amount of such first-tier subcontractor is equal to or greater than:

1) 5% of the project bid, or $15,000, whichever is greater; or
2) $350,000 regardless of the percentage of the total bid.

Bidders must disclose the following information about such subcontracts, on the First-Tier Subcontractor Disclosure Form provided by the City and included herein, within two hours of the bid submission deadline:

1) The subcontractor's name;

2) The subcontract dollar value; and
3) The category of work to be performed by the subcontractor.

Any bidder not using subcontractors subject to the above disclosure form, must write "NONE" on the Disclosure Form and sign and submit the form. The City will reject a bid if the bidder fails to submit the Disclosure Form before the deadline.

## 7. DRUG TESTING PROGRAM

ORS 279C.505(2) requires public improvement contracts to include a provision requiring contractors to demonstrate that they have an employee drug and alcohol testing program in place. All bidders are required to certify, on the Drug Testing Program Certification Form provided by the City and included herein, that they have such program in place. This certification will become part of the Contract if awarded and contractor will be required to maintain such program throughout the performance of the Contract. Failure to maintain a program shall constitute a material breach of the Contract.

## 8. PROMPT PAY POLICY - TIMELY PROGRESS PAYMENTS

ORS 279C.570 and 279C.580 require prompt payment to contractors and subcontractors and provides for settlement of compensation disputes between the parties. The City is required to automatically calculate and pay interest on invoices from the contractor when payments become overdue. The interest commences thirty (30) calendar days after receipt of the invoice from the contractor, or fifteen (15) calendar days after the payment is approved by the City, whichever is earlier. The rate of interest charged to the City on the amount due shall equal three times the discount rate on 90-day commercial paper, but shall not exceed 30 percent.

The City is also required to ensure that the contractor includes a clause in each subcontract that obligates the contractor to pay first-tier subcontractors for satisfactory performance under its contract. Contractors must pay subcontractors within ten (10) calendar days of receiving payment from the City. Contracts between primary contractors and subcontractors must also contain an interest penalty clause that obligates the contractor, if payment is not made to the subcontractor within thirty (30) calendar days after receipt of payment from the City, to pay the first-tier subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the subcontract payment clause. The contractor is also required to ensure that first-tier subcontractors include these requirements in each of its subcontracts with lower-tier subcontractors or suppliers.

If requested in writing by a first-tier subcontractor, within ten (10) calendar days after receiving the request, the contractor must provide the first-tier subcontractor, a copy of that portion of any invoice or request for payment submitted to the City, or pay document provided by the City to the contractor, specifically related to any labor or materials supplied by the first-tier subcontractor.

## 9. PRE-QUALIFICATION OF BIDDERS

When required, bidders shall pre-qualify under ORS 279C.430 and 279C.435, and shall submit the information requested on the form furnished by the City. This information shall be submitted at least ten (10) calendar days prior to the date of bid opening. Bidder qualifications are approved on a calendar year basis and must be renewed annually by filing a new pre-qualification application and obtaining approval after January 1 of each year. The City will accept the approval of qualifications granted from the Department of Transportation and the Department of Administrative Services, including the time periods used by those agencies.

## 10. BID BOND, PUBLIC WORKS BOND, PAYMENT BOND AND PERFORMANCE BOND

A Bid Bond, Public Works Bond Filing Certification, Payment Bond and Performance Bond shall be provided as specified in Subsection 5.4 of the General Conditions. No waivers, special requirements or emergency provisions have been established for this Contract.

## 11. PAY EQUITY COMPLIANCE CERTIFICATION (NEW)

ORS 279A.167 requires businesses with fifty (50) or more employees, and a contract valued at more than $500,000, to provide proof they are properly trained on Oregon's pay equity laws. A certificate proving the contractor has completed the training shall be provided as specified in Subsection 26 of the "Bid Form".

## 12. HIGHEST STANDARDS OF WORK AND CONSEQUENCES FOR FAILURE

The work to be performed must meet the highest standards prevalent in the industry or business most closely related to the work to be performed. Failure to meet such standards may result in consequences including, but not limited to a reduction or withholding of payment; a requirement that bidder perform, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought.

## 13. CONDITIONS OF WORK

Bidders must make their own determination of the nature of the work proposed under this Contract, the local conditions which can be encountered in this area, and all other matters which can in any way affect the work proposed under this Contract. It shall also be the bidder's responsibility to be thoroughly familiar with the Contract Documents. Failure to make the examination necessary for this determination or to examine any form, instrument or document of the Contract shall not release the bidder from the obligations of this Contract.

## 14. REVIEW OF BIDS; BASIS FOR AWARD; NOTICE OF INTENT TO AWARD; AND RIGHT TO PROTEST AWARD

In reviewing all bids received and determining the lowest responsible bidder, the City reserves the right to take into account and give reasonable weight to the extent of the bidder's experience on work of the nature involved, on the bidder's record as to

dependability in carrying out of contracts, and evidence of present ability to perform the Contract in a satisfactory manner.

The City may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all such information and data for this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the Contract, to complete the work contemplated therein, and to do so in a timely manner. The City specifically reserves the right to reject a bid from a bidder who, at the time bids are opened, has failed to complete work in a timely manner under a contract previously awarded to the bidder by the City. Conditional bids will not be accepted.

In accordance with ORS 279A.120(2)(b), in determining the lowest responsible bidder, the City shall, for the purpose of awarding the Contract, add a percentage increase on the bid of a non-resident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

Within forty-five (45) calendar days after the bid opening, the City will accept one of the bids or reject all of the bids received. If the City intends to accept one of the bids, it shall issue a Notice of Intent to Award the Contract to all bidders. The City's award will not be final until seven (7) calendar days after the date of the notice if no protest is filed; or if a protest is filed, until the City provides a written response to all timely-filed protests that denies the protest and affirms the award.

A bidder may submit a formal written protest to the City's Notice of Intent to Award the Contract within seven (7) calendar days of the date of the City's Notice of Intent. The written protest must specify the grounds upon which the protest is based and must show that the protesting party is an adversely affected or aggrieved bidder. A bidder is adversely affected or aggrieved only if the bidder is eligible for award of the Contract as the responsible bidder submitting the lowest responsible bid, is next in line for award and claims that all lower bidders are ineligible for award in accordance with law.

Such protest must be submitted to the City Recorder, 900 SE Douglas, Roseburg, OR 97470. Any protest received after the 7-day deadline will not be considered. The City Recorder shall forward such protest to the City Manager who shall have the authority to settle or resolve the protest by written decision.

## 15. EXECUTION OF CONTRACT, BONDS AND DAMAGES FOR FAILURE TO EXECUTE

The bidder whose bid is accepted will be required to appear within ten (10) calendar days after notice that the Contract has been awarded to bidder and to execute the Contract with the City for the full and complete performance of all work specified, and as required by Subsection 5.4 of the General Conditions, deliver the Public Works Bond Filing Certification form, the Payment Bond to assure payment of the obligations incurred in the performance of the Contract and the Performance Bond and to ensure performance of the Contract.

Should the successful bidder fail or refuse to execute the Contract and furnish the Public Works Bond Filing Certification form, Payment Bond and/or Performance Bond when required, then the Bid Bond deposited by said bidder shall be retained by the City as liquidated damages.

## 16. COMMENCEMENT DATE AND EXPIRATION DATE OF CONTRACT

This Contract shall be in effect from the time the Contract is signed until the Project is completed. The Contractor must be capable of commencing construction on the work contemplated in the Contract Documents within ten (10) calendar days after the execution of the Contract and receipt of the City's notification to proceed and shall complete the same within the time specified in the bid.

## 17. DURATION OF BIDS; RETURN OF BID BONDS

All bids will be binding until the later of:

1) the day the contract is executed; or
2) sixty (60) calendar days after the date of bid opening.

Bid bonds will be returned to unsuccessful bidders not later than the date on which the bids are no longer binding.

## 18. PUBLIC RECORDS

These Contract Documents and each bid received in response to it, together with copies of documents pertaining to the award of a contract shall be kept on file as a public record by the City Recorder; provided however, such records shall not be disclosed until after the notice of intent to award the contract has been issued.

## 19. RECORDS REVIEW; CONFIDENTIALITY

After notice of intent to award the resulting contract has been issued, all bids shall be available for public inspection except for those portions of a bid that the bidder designates in its bid as trade secrets or as confidential proprietary data in accordance with applicable state law. If the City determines such designation is not in accordance with applicable law, the City shall make those portions available for public inspection. The bidder shall separate information designated as confidential from other non-confidential information at the time of submitting its proposal. Prices, makes, models or catalog numbers of items offered, scheduled delivery dates and terms of payment are not confidential, and shall be publicly available regardless of a bidder’s designation to the contrary.

## 20. MATERIALS CONTAINING ASBESTOS

Materials containing asbestos may be present in underground pipe systems. All appropriate Federal, State, County and Municipal rules, regulations and guidelines must be followed when working with asbestos containing material. Non friable material must be handled, transported and disposed of in a way that prevents it from becoming friable

and releasing asbestos fibers. If AC pipe is shattered, damaged or badly weathered, it is considered to be friable and will likely release asbestos fibers. A DEQ licensed asbestos abatement contractor using DEQ certified workers must remove all friable asbestos material. Any and all permits and fees that are required by the DEQ, Douglas County and any other regulatory agency must be obtained and paid for by the Contractor prior to disposing of the asbestos containing material. For information about asbestos rules, contact the DEQ Western Region office in Medford, Oregon.

## BIDDER'S CHECK LIST

**Bidder's attention is called to the following forms, which must be executed in full as required with the bid:**

**A.** **BID FORM(S):** Each bidder shall complete the Bid Form(s). Prices must be shown in the spaces provided and must be expressed in figures.

**B.** **BID BOND:** This form is to be executed by bidder and bidder's Surety. The amount of cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond shall not be less than 10% of the total Bid amount.

**C.** **FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM:** When required by law, this form must be submitted by the bid submission deadline, at which time bids will be opened and read, or within two (2) working hours of such submission deadline. If no subcontractors for labor or for labor and materials will be used, the bidder must write "NONE" on the disclosure form, sign and submit the form as required. Failure to submit this form within two hours of the bid submission deadline will result in the bid becoming non-responsive and such bid will be returned to the bidder.

**D.** **DRUG TESTING PROGRAM CERTIFICATION FORM:** This form must be submitted with the bid to demonstrate that bidder has an employee drug and alcohol testing program in place and will continue to keep the program in place throughout the duration of performing the Contract awarded.

**E.** **PUBLIC WORKS BOND PRE-BID NOTICE & CERTIFICATION FORM:** This form must be submitted with the bid to demonstrate contractor's awareness of and intended compliance with the requirement to file a Public Works Bond with the Construction Contractors Board prior to beginning work on the project if awarded the bid.

**F.** **PAY EQUITY COMPLIANCE CERTIFICATION FORM (NEW): If applicable pursuant to Section 11 of "Information for Bidders",** this form must be submitted with the bid to demonstrate contractor has completed required training regarding pay equity and the prohibition against discrimination in compensation or wage benefits.

**The following forms are to be executed after the Contract is awarded, prior to beginning work on the project:**

**A.** **CONSTRUCTION CONTRACT:** This agreement is to be executed by the successful bidder.

**B.** **PERFORMANCE BOND AND PAYMENT BOND:** Both a Performance Bond and a Payment Bond are to be executed by the successful bidder and bidder's Surety Company and submitted at the time the Contract is executed.

**C.** **PUBLIC WORKS WAGE CERTIFICATION FORM:** This form is to be completed in accordance with state law and submitted monthly during the duration of the contract, by the fifth business day of the following month, with request for payment.

**D.** **CERTIFICATE OF INSURANCE:** This certificate is to be executed by the successful bidder and bidder's insurance company and submitted at the time the Contract is executed.

**E.** **PUBLIC WORKS BOND FILING CERTIFICATION:** This form is to be executed by the successful bidder and submitted at the time the Contract is executed to certify if Contractor has filed the required Public Works Bond or elected not to file the Bond due to qualifying under ORS 200.055.

## BID FORM

**City of Roseburg**
**900 SE Douglas Avenue**
**Roseburg, Oregon 97470**

The undersigned bidder has carefully examined the Contract Documents for the construction of the

***Project No. 20WA05***
***Washington Ave Bore Crossing***

referred to in the Invitation to Bid dated May 4, 2021, inviting bids on such Project and also the site of the Project. Bidder will provide all necessary labor, equipment, tools, apparatus and other means of construction, do all the work and furnish all the materials called for by said Contract Documents in the manner prescribed therein to provide a complete Project.

The undersigned bidder understands that the quantities of work as shown herein are approximate only, unless noted otherwise, and are subject to increase or decrease. The bidder offers to perform the work, at the unit price stated in the following schedule, whether the quantities are increased or decreased.

| Item No. | Description | Unit* | Estimated Quantity | Unit Price ($) | Estimated Total Price ($) |
|---|---|---|---|---|---|
| 1 | Mobilization (excludes HDD Mobilization), Bonds, Insurance and Demobilization | LS | 1 | | |
| 2 | Erosion Control | LS | 1 | | |
| 3 | Pollution Control | LS | 1 | | |
| 4 | Traffic Control | LS | 1 | | |
| 5 | Potholing for Utilities | LS | 1 | | |
| 6 | Furnish & Install Restrained 12-inch Class 52 Ductile Iron Pipe with Class B Backfill | LF | 275 | | |
| 7 | Furnish & Install Restrained 12-inch Class 52 Ductile Iron Pipe with CLSM & Class B Backfill | LF | 140 | | |
| 8 | Furnish & Install 14-inch DR 11 HDPE Pipe by Horizontal Directional Drilling Methods | LF | 750 | | |
| 9 | Furnish & Install Restrained Ductile Iron Fittings | LS | 1 | | |
| 10 | Furnish & Install 12-inch Gate Valve, MJ | EA | 1 | | |
| 11 | Furnish & Install 2-inch Air Release Valve | EA | 1 | | |

| Item No. | Description | Unit* | Estimated Quantity | Unit Price ($) | Estimated Total Price ($) |
|---|---|---|---|---|---|
| 12 | Furnish & Install Sampling Station | EA | 1 | | |
| 13 | Furnish & Install Concrete Anchor Wall | EA | 2 | | |
| 14 | Furnish & Install Precast Concrete Vault | LS | 1 | | |
| 15 | Connection to Existing Water Main, West Side | LS | 1 | | |
| 16 | Connection to Existing Water Main, East Side | LS | 1 | | |
| 17 | Connection to Existing Fire Hydrant | LS | 1 | | |
| 18 | Replace Existing Water Service Piping to Meter Box | LS | 1 | | |
| 19 | Furnish & Install New Water Service | LS | 1 | | |
| 20 | HDPE to DI Transition | EA | 2 | | |
| 21 | Testing, Flushing & Disinfection | LS | 1 | | |
| 22 | Existing Pipe Removal & Abandonment | LS | 1 | | |
| 23 | Concrete Sidewalk Replacement | SY | 35 | | |
| 24 | Concrete Curb & Gutter Replacement | LF | 50 | | |
| 25 | Temporary Trench Patch Paving, HMAC, 2-inch Thick | TON | 5 | | |
| 26 | Permanent Trench Patch Restoration, HMAC, Level 3, ½-inch, Dense | TON | 45 | | |
| 27 | 2-inch Deep, Grind & Inlay, HMAC, Level 3, ½-inch | SY | 265 | | |
| 28 | Surface Restoration | LS | 1 | | |
| | | | | **Total Bid Price** | |

Abbreviations:
LS – Lump Sum LF – Lineal Feet EA – Each TON – Tons SY – Square Yard

**The undersigned also declares and agrees as follows:**

**1.** That the only persons or parties interested in this bid are those named herein, that the bid is in all respects fair and without fraud, and that it is made without any connection or collusion with any person making another bid on this Contract.

**2.** That the bidder, and any subcontractor upon which the bidder is relying, have carefully examined and had an opportunity to comment on, the Contract Documents for the construction of the proposed improvements including a full set of the plans and specifications, including all addenda thereto; that bidder has personally inspected the contemplated construction area or areas; that bidder is satisfied as to the adequacy and completeness of the plans and specifications, the feasibility of the work described therein, quantities of materials, items of equipment and conditions of work involved, including the fact that the description of work and materials as included herein are approximate only; and that this bid is made according to the provisions and under the terms of the Specifications which are hereto attached and hereby made a part of this bid.

**3.** All of the Specifications and Plans which are listed herein have been examined by the undersigned bidder and the terms and conditions thereof are hereby accepted.

**4.** It is understood that the Plans may be supplemented by additional Drawings and Specifications in explanation and elaboration of the Plans and it is agreed that such Supplemental Drawings, when not in conflict with those referred to in Paragraph 3 above, will have the same force and effect as if completed and attached hereto, and that when received, will be considered a part of the Contract Documents.

**5.** It is understood that all work will be performed under the price schedule outlined herein and that all services, materials, labor and equipment and all work necessary to complete the Project in accordance with the Plans and Specifications shall be furnished for the prices named in the bid. If there is a change in the scope of work or work which cannot be properly classified under the price schedule, then bidder agrees to do this work as "extra work". The undersigned bidder agrees to do any extra work and furnish materials, and to accept as full compensation therefore at such prices as may be agreed upon in writing by the City and the Contractor before extra work begins. Each party binds itself to agree to reasonable prices.

**6.** It is understood the work to be performed must meet the highest standards prevalent in the industry or business most closely related to the work to be performed. It is further understood that failure to meet such standards may result in consequences including, but not limited to, a reduction or withholding of payment; a requirement that bidder perform, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought.

**7.** The bidder agrees that if this bid is accepted, the bidder will, within ten (10) calendar days after the notification of acceptance, execute the Construction Contract with the City in the form of Contract specified, and will, at the time of execution of the Contract, deliver to the City the Performance Bond, Payment Bond and Public Works Bond Filing Certification form as required herein, and will furnish all the materials necessary to

complete the Project in the manner, in the time and according to methods as specified in the Specifications and required by the City.

**8.** The cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond shall be payable to the City to the extent of 10% of the amount of the bid in case this bid is accepted by the City and the undersigned shall fail or refuse to execute the Contract and furnish a Payment Bond, a Performance Bond or the Public Works Bond Filing Certification form as required by the Specifications within the time limit named therein after notification that said bid is accepted, all in accordance with the provisions of this bid and the Plans and Specifications which are a part hereof.

**9.** All items for the Contract for which forms are provided herein have been completed in full by the showing of prices for each and every item thereof, and for the showing of other information indicated by the Bid Form.

**10.** Bidder agrees to begin work within ten (10) calendar days after the execution of the Contract proposed herein and receipt of the City's notification to begin work and to complete work in all respects within one hundred twenty (120) calendar days after "Notice to Proceed" has been issued by the City.

**11.** In the event the bidder is awarded the Contract and fails to complete the Project within the time limit or extended time agreed upon, as more specifically set forth in the General Conditions, liquidated damages shall be paid to or withheld by the City pursuant to Paragraph 4 of the Construction Contract (Time of Performance - Liquidated Damages) at the rate of five hundred Dollars ($500) per day, until the Project has been completed as provided in the General Conditions.

**12.** The undersigned bidder hereby states, as part of this bid, that the applicable provisions of Oregon's Prevailing Wage Law (ORS 279C.800 to 279C.870) and the Federal Prevailing Wage Law (Davis-Bacon Act, 40 U.S.C. 3141-3148), shall be complied with. When the Project is subject to both the State and Federal Prevailing Wage Laws and rates, workers in each trade will be paid the higher of the two rates.

**13.** The undersigned bidder and bidder's subcontractors shall comply with ORS 656.017, which requires them to provide Workers' Compensation coverage for all their subject workers.

**14.** The undersigned bidder hereby states, as part of this bid, that bidder shall comply with ORS 279C.505(2) which requires bidder to have an employee drug testing program in place.

**15.** The undersigned bidder and bidders' subcontractors shall comply with ORS 279C.570 and 279C.580, which require timely progress payments for public improvement projects and provide interest penalties for late payment.

**16.** The undersigned bidder hereby states, as part of this bid, bidder and bidder's subcontractors shall comply with the provisions of Exhibit "A" - "Standard City Contract Provisions".

**17.** If the bidder is awarded the Contract for this work, the name and address of the Surety who will provide the Payment Bond, Performance Bond and Public Works Bond (if required) will be:_____.

**18.** The name and address of the bidder who is submitting this bid is: _____, which is the address to which all communications pertinent to this bid and the Contract shall be sent. The bidder's email address is:_____.

**19.** The names of the principal officers of the corporation submitting this bid or of the partnership, or of all parties interested in this bid as principals are as follows: _____.

**20.** The undersigned bidder acknowledges that Addenda No. _____ through _____ have been delivered to bidder and have been examined as part of the Contract Documents.

**21.** In the prosecution of this work, the bidder proposes to use the subcontractors listed on the First-Tier Subcontractor Disclosure Form presented within two working hours of the bid submission deadline as set forth in the Invitation to Bid. Any bidder not using subcontractors subject to the above referenced Disclosure Form shall indicate "NONE" on the Disclosure Form and sign and submit the form as required.

**22.** Declaration of Residency: I "am" or "am not" (circle one) a "resident bidder" as defined by ORS 279A.120, a contractor that has paid unemployment taxes or income taxes in Oregon during the 12 calendar months immediately preceding submission of the bid, has a business address in this state and has stated in the bid whether the bidder is a "resident bidder" pursuant to ORS 279A.120.

**23.** The bidder's Construction Contractors' Board License Number or Landscape Contractors' Board License Number is: _____.

**24.** Bidder's Tax Identification Number: _____. Email:_____.

**25.** Public Works Bond: If the bid is accepted, prior to beginning work on the project, the bidder will file with the Construction Contractors Board, a Public Works Bond in the amount of $30,000 with a corporate surety authorized to do business in the State of Oregon; and before permitting a subcontractor to begin work on the project, the bidder will verify that the subcontractor has also filed the aforementioned bond. If the bidder, as a certified disadvantaged, minority, women or emerging small business enterprise, elects not to file the Public Works Bond, bidder will file written verification of such certification with the Construction Contractors Board and provide the Board and the City of Roseburg with notice of such election.

**26**. **If applicable** pursuant to Section 11 of "Information for Bidders", the undersigned bidder hereby states, as part of this bid, that bidder has completed pay equity compliance training and received a certificate of completion from the Oregon Department of Administrative Services. **(NEW)**

**If sole Proprietor or Partnership:**

In witness hereto, the undersigned has set his/her hand this _____ day of _____, 2021.

Printed name of bidder:_____

Signature of bidder:

_____

Title:_____

**If Corporation:**

In witness whereof, the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this ____ day of _____, 2021.

Name of Corporation:_____

Printed name of person signing:_____

Signature:_____

Title:_____

Attest: _____
Secretary

## STANDARD BID BOND

We, _____, "as Principal,"
(Name of Principal)
and _____, an _____Corporation,
(Name of Surety)

authorized to transact Surety business in Oregon, as "Surety," hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns to pay unto the City of Roseburg ("Obligee") the sum of ($_____) _____ dollars.

WHEREAS, the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (No. _____) for the project identified as:
_____ which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten percent (10%) of the total amount of the bid pursuant to the procurement document and ORS 279C.365(5) for competitive bidding or 279C.400(5) for competitive proposals.

NOW, THEREFORE, if the proposal or bid submitted by Principal is accepted, and if a contract pursuant to the proposal or bid is awarded to Principal, and if Principal enters into and executes such contract within the time specified in the procurement document and executes and delivers to Obligee its good and sufficient performance bond, payment bond and public works bond as required by Obligee within the time fixed by Obligee, then this obligation shall be void; otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, we have caused this instrument to be executed and sealed by our duly authorized legal representatives this _____ day of _____, 2021.

PRINCIPAL: _____ SURETY: _____

By _____ BY ATTORNEY-IN-FACT:
Signature

_____ _____
Official Capacity Name

Attest: _____ _____
Corporation Secretary Signature

_____
Address

_____
City State Zip

_____
Phone Email

## FIRST TIER SUBCONTRACTOR DISCLOSURE FORM INSTRUCTIONS

**Instructions for First-Tier Subcontractor Disclosure:**

Bidders are required to disclose information regarding certain first-tier subcontracts (ORS 279C.370). Specifically, when the contract amount of a first-tier subcontract furnishing labor or labor and materials would be great than or equal to: (1) 5% of the project bid, but at least $15,000; or (2) $350,000 regardless of the percentage, the bidder must disclose the following information about that subcontract either in its bids submission, or within two hours after bid closing:

**(A)** The subcontractor's name;

**(B)** The category of work that the subcontractor would be performing; and

**(C)** The dollar value of the subcontract.

If the bidder will not be using any subcontractors that are subject to the above disclosure requirements, the bidder is required to indicate "NONE" on the accompanying form.

**THE CONTRACTING AGENCY MUST REJECT A BID IF THE BIDDER FAILS TO SUBMIT THE DISCLOSURE FORM WITH THIS INFORMATION BY THE STATED DEADLINE (OAR 137-049-0360).**

**** The subject form is on the following page.***

## FIRST TIER SUBCONTRACTOR DISCLOSURE FORM

**PROJECT NAME: Washington Ave Bore Crossing**

**BID #: 20WA05**

**BID CLOSING: DATE: _____ TIME: _____**

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

List below: the name of each subcontractor that will be furnishing labor or labor and materials and 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)

| NAME OF SUBCONTRACTOR | 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 #:**_____

**********

**Form Received in the City Recorder's Office:**

**Time:** _____ **Date:** _____ **By:** _____

**EMPLOYEE DRUG TESTING PROGRAM**
**CERTIFICATION FORM**

**BIDDER'S NAME:**_____

**PROJECT NAME & NUMBER: Washington Ave Bore Crossing, Project No. 20WA05**

ORS 279C.505 (2) provides that every public improvement contract contain a condition that the Contractor shall demonstrate that an employee drug testing program is in place. The City's award of the Contract for which this certificate is required is conditioned, in part, upon the Bidder's demonstration of compliance with the provisions of ORS 279C.505(2). If the Bidder named above is awarded the Contract, this certificate shall become a part of, and shall constitute a continuing representation and warranty under, the Contract.

To induce the City to award the Contract to the Bidder, the undersigned, as the duly authorized representative of the Bidder, hereby represents and warrants, on behalf of the above named Bidder:

**1.** That Bidder has and enforces, and at all times during the term of the Contract will have and enforce, a written employee drug testing policy that at a minimum, requires compliance with the Oregon Department of Transportation Commercial Drivers License drug testing regulations;

**2.** A copy of the Bidder's current written employee drug testing policy will be available for inspection by the City at any time upon the City's request; and

**3.** The Bidder understands and agrees that its representations and warranties herein will become a continuing part of the Contract and that breach of any of the foregoing will be sufficient grounds for disqualification under 279C.440(2)(d).

The City shall not be liable, either directly or indirectly, in any dispute arising out of the substance or procedure of Bidder/Contractor's drug testing program. Nothing in this drug testing provision shall be construed as requiring Bidder/Contractor to violate any legal, including constitutional rights of any employee, including but not limited to, selection of which employees to test and the manner of such testing. The City shall not be liable for Bidder/Contractor's negligence in establishing or implementing, or failure to establish or implement, a drug testing policy, or for any damage or injury caused by Bidder/Contractor's employees acting under the influence of drugs while performing work covered by the Contract. These are Bidder/Contractor's sole responsibilities.

In witness whereof, the Bidder has caused this document to be executed by its duly authorized representative on the date shown below.

**Signature:**_____

**Printed Name, Title:**_____

**Date:**_____

**PAY EQUITY COMPLIANCE TRAINING**
**CERTIFICATION FORM**
**(NEW)**

**BIDDER'S NAME:**_____

**PROJECT NAME & NUMBER: Washington Ave Bore Crossing, Project No. 20WA05**

ORS 279A.167(1) provides that the Oregon Department of Administrative Services shall establish a program to certify that a person that intends to submit a bid or proposal for a public contract understands the prohibition set forth in ORS 652.220 and in other laws or rules that prohibit discrimination in compensation or wage payments. Following completion of the course, a certificate of completion will be provided. This certification is recommended for ANY contractor in the state of Oregon, and **required for any contractor who employs fifty (50) or more people, and for a contract valued at more than $500,000**. Information on how to receive this certification can be found by clicking here.

To induce the City to award the Contract to the Bidder when the certification is required, the undersigned, as the duly authorized representative of the Bidder, hereby represents and warrants, on behalf of the above named Bidder:

**1.** That Bidder has completed the training on pay equity as outlined in ORS 652.220; and

**2.** A copy of the Certificate of Completion of the pay equity compliance training will be available for inspection by the City at any time upon the City's request.

In witness whereof, the Bidder has caused this document to be executed by its duly authorized representative on the date shown below.

**Signature:**_____

**Printed Name, Title:**_____

**Date:**_____

**CITY OF ROSEBURG**
**PUBLIC WORKS BOND - PRE-BID NOTICE AND CERTIFICATION**

I, the undersigned contractor, hereby certify that if awarded the contract for which I am submitting this bid, prior to beginning work on such Project, unless exempt under ORS 279C.800 to 279C.870, I will file with the Construction Contractors Board, a Public Works Bond in the amount of $30,000 with a corporate surety authorized to do business in the State of Oregon. I further certify that before permitting a subcontractor to start work on the Project upon which I am submitting this bid, I will verify that the subcontractor has also filed such Public Works Bond or has elected not to file such bond as allowed by state law. The Public Works Bond shall provide that the contractor or subcontractor will pay claims ordered by the Bureau of Labor and Industries to workers performing labor upon public works projects. The bond shall be a continuing obligation and remain continuously in effect.

If, as a contractor, I qualify as a disadvantaged, minority, women, disable veteran or emerging small business enterprise certified under ORS 200.055 and I have elected not to file the aforementioned Public Works Bond, I hereby certify that I will file written verification of such certification with the Construction Contractors Board. I also certify that before beginning any work on the Project, I will provide the City of Roseburg and the Construction Contractors Board written notice that I have elected not to file the Public Works Bond. If so certified under ORS 200.055, I understand that my election not to file the Public Works Bond will expire one year from the date it was filed and that a claim for unpaid wages may be filed against the payment bond I submitted on the Project.

I further certify that I understand the Public Works Bond described above is in addition to any other bond that I am required to provide, or that may be required of a subcontractor, for this Project.

**Project Name: Washington Ave Bore Crossing**

**Project Number: 20WA05**

**Contractor's Printed Name:**_____

**Contractor's Signature:**_____

**Dated:**_____

**CITY OF ROSEBURG**
**CONSTRUCTION CONTRACT**
**[PROJECT #]**

Dated: _____

Parties: City of Roseburg ("CITY")
A municipal corporation in the State of Oregon
900 SE Douglas Avenue
Roseburg, OR 97470

and

[Name of Company] ("CONTRACTOR")

Additional Independent Contractor Information:

A. Type of Entity: ☐ Sole Proprietorship ☐ Partnership ☐ Limited Liability Company ☐ Corporation
B. Address:
C. Telephone:
D. Fax No:
E. Email:
F. Construction Contractor Board No.

This Contract is made and entered into this _____ day of _____, 2021, by and between _____hereinafter called the "Contractor", and the City of Roseburg, a municipal corporation of the State of Oregon, hereinafter called the "City".

**WITNESSETH**

That the Contractor and City, for the consideration hereinafter described agree as follows:

**1. WORK TO BE PERFORMED.** The Contractor agrees to do all the work and furnish all necessary labor, materials, tools and equipment for the completion of the **Project # - _____,** in accordance with the bid made by the Contractor on the ____ day of _____, 2021, all in full compliance with the Contract Documents referred to herein, and guarantees all materials and workmanship for one year after acceptance of the project.

**2. CONTRACT DOCUMENTS.** The Contract Documents include the City's Invitation to Bid, Information to Bidders, the Bid Form signed by the Contractor, this Construction Contract with Exhibit A, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder's Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), General Conditions, Technical Provisions, Special Conditions, Standard Drawings, Specifications and Plans and Supplemental Specifications, all as required for the full execution and satisfactory completion of the work. All of the Contract Documents are incorporated herein by this reference and made a part of this Contract.

**3. PAYMENT.** In consideration of the faithful performance of the work herein described, the City agrees to pay the Contractor **(insert cost/bid amount)** as payment in full per the provisions of the Contract Documents.

**4. TIME OF PERFORMANCE - LIQUIDATED DAMAGES.** The Contractor shall commence work under this Contract upon receiving notification to proceed from the City. The Contractor agrees that the work under this Contract shall be completed within one hundred twenty (120) calendar days after notification to begin work. If the Contractor fails to complete the Project within the time hereinbefore mentioned, or in the extended time agreed upon, liquidated damages shall be paid to or withheld by the City at the rate of five hundred dollars ($500) per day until the Project is completed. It has been agreed that the damages arising from a delay in completion would be difficult to ascertain with any degree of accuracy, even after the Project is completed. It has also been agreed that the amount of liquidated damages specified herein is a reasonable forecast of just compensation for the harm that will be caused by a delay in completion of the Project. Any such sum which the Contractor may be obligated to pay under the terms of this Paragraph is paid as liquidated damages, and not as a penalty.

**5. COMPLIANCE WITH LAW.** The Contractor shall comply with all local, state and federal laws, ordinances and regulations applicable to contracts covering municipal contracts, and shall make prompt payment of all amounts that may be due from said Contractor in the way of taxes, other governmental charges or lawful deductions, and shall make prompt payment of all labor and materials and shall save the City harmless from any damages or claims whatsoever in the performance of the Contract. Contractor and all subcontractors agree to comply with the City's Standard Contract Provisions, attached as Exhibit A and incorporated herein by this reference, and Roseburg Municipal Code Regulations relating to business registration.

**6. NOTICE.** Any notice required or permitted by this Contract must be delivered and served personally, or alternatively, deposited in the United States mail, postage prepaid, registered or certified, return receipt requested, addressed to the parties as shown below:

| **CITY:** | **CONTRACTOR:** |
|---|---|
| City of Roseburg | _____ |
| ATTN: City Manager | _____ |
| 900 SE Douglas Avenue | _____ |
| Roseburg OR 97470 | _____ |

Such notice, if mailed within the State of Oregon, shall be deemed delivered upon the second day following the date postmarked. If mailed outside the State of Oregon, notice shall be deemed delivered upon the fifth day following the date postmarked.

**7. GOVERNING LAW; VENUE LOCATION.** Oregon law shall be applied to all actions relating to the Contract, and the venue in any such action shall lie in the Circuit Court of Douglas County, Oregon.

**IN WITNESS WHEREOF, the parties hereto have executed this Contract the day and year first above written.**

| **CITY** | **CONTRACTOR** |
|---|---|
| _____ | _____ |
| **Nicole Messenger** | **(Authorized Signature)** |
| **City Manager** | **Title:**_____ |
| **Date:**_____ | **Date:**_____ |
| | _____ |
| **ATTEST:** | **Tax Identification Number** |
| | **Email:**_____ |
| _____ | |
| **Amy L. Sowa, City Recorder** | |

**EXHIBIT "A"**
**STANDARD CONTRACT PROVISIONS**
**PREVAILING WAGE CONTRACT**
**(ORS 279C.800 - 279C.870)**

The following provisions, if applicable, are hereby included in and made a part of the attached public contract which is subject to Prevailing Wage Laws and rates, between the City of Roseburg and the Contractor named therein as provided for in the Roseburg Code, Oregon Revised Statutes, and Federal laws, rules, regulations, and guidelines. If a Contractor or Subcontractor violates the provisions below, the City may, at its option, terminate the contract or a subcontract and said Contractor or Subcontractor in such event shall forfeit all rights under the contract except to payment for actual labor and materials furnished to the City. The City may waive in whole or in part any forfeitures or sanctions provided in this Exhibit.

**1. PREFERENCE FOR OREGON GOODS AND SERVICES; NONRESIDENT CONTRACTOR REPORT TO DEPARTMENT OF REVENUE - ORS 279A.120:**

**1.1** For purposes of awarding the contract the City will:

**1.1.1** give preference to goods and services that have been manufactured or produced in Oregon if the price, fitness, availability and quality are otherwise equal; and

**1.1.2** add a percentage increase to the bid of a non-resident bidder equal to the percentage, if any, of the preference given to the contractor in the same state in which the contractor lives.

**1.2** As used in this Section:

**1.2.1** "nonresident contractor" means a contractor that is not a resident contractor;

**1.2.2** "resident contractor" means a contractor that has paid unemployment taxes or income taxes in the state of Oregon during the twelve (12) calendar months immediately preceding submission of the bid for the contract; has a business address in this state; and stated in the bid for the contract that it was not a "resident bidder" under ORS 279A.120.

**1.3** If the Contractor is a nonresident contractor and the contract price exceeds $10,000, the Contractor shall promptly report to the Department of Revenue on forms to be provided by the Department, the total contract price, terms of payment, length of contract and such other information as the Department may require before the Contractor may receive final payment on the public contract. The City shall satisfy itself that the requirement of this Subsection has been complied with before it issues a final payment on the contract.

**2. PAYMENT OF LABORERS AND MATERIALMEN, CONTRIBUTIONS TO INDUSTRIAL ACCIDENT FUND, LIENS, AND WITHHOLDING TAXES - ORS 279C.505(1):** The Contractor shall:

**2.1** Make payment promptly, as due, to all persons supplying to such Contractor, labor or material for the performance of the work provided for in the contract.

**2.2** Pay all contributions or amounts due the Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the contract.

**2.3** Not permit any lien or claim to be filed or prosecuted against the City of Roseburg or any subdivision thereof on account of any labor or material furnished.

**2.4** Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

**3. PAYMENT OF CLAIMS BY PUBLIC OFFICERS - ORS 279C.515:**

**3.1** If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the contract as such claim becomes due, the public officer or officers representing the City of Roseburg may pay such claims to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of the contract. The payment of a claim in the manner authorized shall not relieve the Contractor or his/her surety from his or her obligations with respect to any unpaid claims.

**3.2** If the Contractor or a first-tier Subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the contract within thirty (30) days after receipt of payment from the City of Roseburg or the Contractor, the Contractor or first-tier Subcontractor shall owe the person the amount due plus interest charges commencing at the end of the 10-day period that payment is due under ORS 279C.580(4) and ending upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest charged to the Contractor or first-tier Subcontractor on the amount due shall equal three times the discount rate on 90-day commercial paper in effect at the Federal Reserve Bank in the Federal Reserve District that includes Oregon on the date that is thirty (30) calendar days after the date when payment was received from the City of Roseburg or from the Contractor, but the rate of interest shall not exceed 30 percent. The amount of interest may not be waived.

**3.3** If the Contractor or Subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The Contractor shall announce the foregoing in any Subcontract issued.

**4. HOURS OF LABOR - ORS 279C.520:** No person shall be employed for more than 10 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or when the public policy absolutely requires it, and in such cases the employee shall be paid at time and a half pay:

**4.1** For all overtime worked in excess of 8 hours a day or 40 hours in any one week, when the work week is five consecutive days, Monday through Friday; or

**4.2** For all overtime in excess of 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday; and

**4.3** For all work performed on Saturday and on any legal holiday specified in ORS 279C.540, or all holidays specified in a collective bargaining agreement.

The Contractor must give notice to employees who perform work on the contract, in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, the number of hours per day and days per week that the employees may be required to work.

## 5. PAYMENT FOR MEDICAL CARE AND ATTENTION TO EMPLOYEES - ORS 279C.530:

**5.1** The Contractor shall promptly as due, make payment to any person, co-partnership or association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service.

**5.2** The Contractor, its subcontractors, if any, and all employers providing work, labor or materials under this Contract who are subject employers under the Oregon Workers' Compensation Law shall comply with ORS 656.017, which requires them to provide workers' compensation coverage that satisfies Oregon law for all their subject workers. Out-of-state employers must provide workers' compensation coverage that complies with ORS 656.126 for their workers. Employer's Liability Insurance with coverage of not less than $500,000 each accident shall be included.

## 6. PAYMENT TO SUBCONTRACTORS - ORS 279C.580:

**6.1** The Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier Subcontractor, including a material supplier, for the purpose of performing the public contract:

**6.1.1** A payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) calendar days of payment by the City out of such amounts as are paid to the Contractor by the City of Roseburg under the contract; and

**6.1.2** An interest penalty clause that obligates the Contractor, if payment is not made within thirty (30) calendar days after receipt of payment from the City of Roseburg, to pay to the first-tier Subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract pursuant to Paragraph 6.1.1 of this Subsection. A Contractor or first-tier Subcontractor shall not be obligated to pay an interest penalty if the only reason that the Contractor or first-tier Subcontractor did not make payment when payment was due is that the

Contractor or first-tier Subcontractor did not receive payment from the City of Roseburg or Contractor when payment was due. The interest penalty shall be:

**6.1.2.1** For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

**6.1.2.2** Computed at the rate specified in ORS 279C.515(2).

**6.2** The Contractor shall include in each of its subcontracts, for the purpose of performance of such contract condition, a provision requiring the first-tier Subcontractor to include a payment clause and an interest penalty clause conforming to the standards set forth in Paragraphs 6.1.1 and 6.1.2 and requiring each of its Subcontractors to include such clauses in their subcontracts with each lower-tier Subcontractor or supplier.

**6.3** None of the provisions of this Section 6 are intended to prevent the Contractor or any Subcontractor from including in its contracts the provisions described in ORS 279C.580(5) and (6).

**7. <u>PROHIBITION OF DISCRIMINATORY WAGE RATES BASED ON SEX - ORS 652.220</u>**: The Contractor shall not:

**7.1** Discriminate between employees on the basis of a protected class in the payment of wages or other compensation for work of comparable character, the performance of which requires comparable skills;

**7.2** Pay wages or other compensation to any employee at a rate greater than that at which the employer pays wages or other compensation to employees of a protected class for work of comparable character, the performance of which requires comparable skills. This section does not apply where:

**(a)** Payment is made pursuant to a seniority or merit system which does not discriminate on the basis of a protected class; or
**(b)** A system measures earnings by quantity or quality of production, including piece-rate work; or
**(c)** Travel is necessary and regular for the employee; or
**(d)** Education, training, experience, or any combination of factors account for the entire compensation differential.

**7.3** Discriminate in the payment of wages or other compensation against any employee because the employee has filed a complaint in a proceeding, has testified or is about to testify, or because the employer believes that the employee may testify in any investigation, proceedings or criminal action pursuant to ORS 652.210 to 652.235.

**8. <u>DRUG TESTING - ORS 279C.505(2)</u>:**

**8.1** The Contractor shall demonstrate that an employee drug testing program is in place at the time of submitting its bid, and that such program will be maintained throughout the contract period, including any extensions. The failure of Contractor to have, or to

maintain such a drug testing program is grounds for rejection of a bid or immediate termination of the contact.

**8.2** The City of Roseburg shall not be liable, either directly or indirectly, in any dispute arising out of the substance or procedure of Contractor's drug testing program. Nothing in this drug testing provision shall be construed as requiring Contractor to violate any legal, including constitutional, rights or any employee, including but not limited to, selection of which employees to test and the manner of such testing. The City shall not be liable for Contractor's negligence in establishing or implementing, failure to establish or implement a drug testing policy, or for any damage or injury caused by Contractor's employees acting under the influence of drugs while performing work covered by the contract. These are Contractor's sole responsibilities and nothing in this provision is intended to create any third party beneficiary rights against the City.

## 9. PREVAILING WAGE PROVISIONS - ORS 279C.800 - 279C.870; 40 U.S.C. 3141 – 3148:

**9.1** The hourly rate of wage to be paid by the Contractor and all Subcontractors to workers under the contract shall not be less than the prevailing rate of wage for an hour's work in the same trade or occupation in the locality where the labor is performed as set forth in the specifications for the public contract; provided however, if the public contract is also subject to the Federal Prevailing Wage Rate pursuant to the Davis-Bacon Act (40 U.S.C. 3141 - 3148), then the higher of the two rates shall be paid. The Contractor will comply with the provisions of ORS 279C.840 and all applicable provisions of ORS 279C.800 to 279C.870 and/or the Davis-Bacon Act, 40 U.S.C. 3141 - 3148.

**9.2** The Contractor or the Contractor's surety and every Subcontractor or the Subcontractor's surety shall file certified statements with the City in writing using the form prescribed by the Commissioner of the Bureau of Labor and Industries certifying the hourly rate of wage paid each worker whom the Contractor or the Subcontractor has employed in the Work under the contract and further certifying that no worker employed under such public contract has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract. The certified statement shall be verified by the oath of the Contractor or the Contractor's surety or Subcontractor or the Subcontractor's surety that the Contractor or Subcontractor has read the certified statement and knows the contents thereof and that the same is true to the Contractor's or Subcontractor's knowledge. The certified statements shall set out accurately and completely the payroll records for the prior week including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid.

**9.3** Each certified statement shall be delivered or mailed by the Contractor or Subcontractor to the City. A true copy of the certified statement shall also be filed at the same time with the Commissioner of the Bureau of Labor and Industries. Certified statements for each week during which the Contractor or Subcontractor employs a worker under the public contract shall be submitted once a month, by the fifth business day of the following month. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 to 279C 870. The City shall retain 25% of the amount earned by the Contractor if the certified statements are not submitted

as required. The City shall pay the Contractor the amount retained within 14 days after the Contractor files the certified statements regardless of whether a Subcontractor has failed to file the required certified statements. The Contractor shall retain 25% of any amount earned by a first-tier Subcontractor until the Subcontractor has filed with the City, the required certified statements. The Contractor shall verify the first-tier Subcontractor has filed the certified statements before the Contractor may pay the Subcontractor any amount retained. The Contractor shall pay the first-tier Subcontractor the amount retained within 14 days after the Subcontractor files the required certified statements.

**10. PUBLIC WORKS BOND REQUIREMENTS - ORS 279C.836:**

**10.1** If the public contract involves public works, unless exempt under ORS 279C.800 to 279C.870, prior to beginning work on the contract, the Contractor shall file with the Construction Contractors Board, a Public Works Bond in the amount of $30,000 with a corporate surety authorized to do business in the State of Oregon.

**10.2** Before allowing a Subcontractor to begin work under a public contract involving public works, for which the Contractor has been awarded the contract, the Contractor shall verify that the Subcontractor has also filed a Public Works Bond with the Construction Contractors Board or elected not to file such bond as allowed by state law.

**10.3** The Public Works Bond shall provide that the Contractor or Subcontract will pay claims ordered by the Bureau of Labor and Industries to workers performing labor under the public contract involving public works. The bond shall be a continuing obligation and remain continuously in effect.

**10.4** If the Contractor or Subcontractor qualifies as a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055 and has elected not to file the Public Works Bond, the Contractor or Subcontractor will file written verification of such certification with the Construction Contractors Board. If the Contractor or Subcontractor elects not to file the Public Works Bond, before beginning any work on the public contract involving public works, the Contractor or Subcontractor shall provide the City and the Construction Contractors Board with written notification of such election.

**11. DEMOLITION CONTRACTS; LAND AND LANDSCAPE MAINTENANCE - ORS 279C.510:**

**11.1** If the public contract includes demolition, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost effective.

**11.2** If the public contract includes services for lawn and landscape maintenance, the Contractor shall compost or mulch yard waste material at an approved site.

**12. DISCRIMINATION IN SUBCONTRACTING PROHIBITED; REMEDIES - ORS 279A.110:**

**12.1** The Contractor may not discriminate against a Subcontractor in the awarding of a subcontract because the Subcontractor is a minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055.

**12.2** By entering into the contract, the Contractor certified it has not discriminated and will not discriminate, in violation of Subsection 12.1, against any minority, women, disabled veteran or emerging small business enterprise in obtaining any required subcontract.

**12.3** If the Contractor violates the nondiscrimination certification made under Subsection 12.2, the City may regard the violation as a breach of contract that permits the City to terminate the contract or exercise any remedies for breach permitted under the contract.

**13. HIGHEST STANDARDS; CONSEQUENCES FOR FAILURE - ORS 279B.060:**

**13.1** By entering into the Contract, Contractor agrees to perform the work to the highest standards prevalent in the industry or business most closely related to the work to be provided;

**13.2** Contractor understands that failure to meet the highest standards in the industry may result in consequences including, but not limited to:

**13.2.1** reducing or withholding of payment;

**13.2.2** requiring Contractor to perform, at Contractor's own expense, additional work required to meet such standards; or

**13.2.3** declaring a default, terminating the Contract and seeking damages and other relief available under the terms of the Contract or other applicable law.

**14. COMPLIANCE WITH LAWS:** The Contractor and Subcontractor shall comply with all federal, state and local laws, rules, ordinances and regulations at all times and in the performance of the contract.

**CITY OF ROSEBURG**
**PUBLIC WORKS BOND FILING CERTIFICATION**

Pursuant to ORS 279C.800 to 279C.870, I, undersigned contractor, do hereby certify that, prior to beginning work on the Project for which I have been awarded the bid by the City of Roseburg:

**1.** I have filed with the Construction Contractors Board ("Board"), a Public Works Bond in the amount of $30,000 with a corporate surety authorized to do business in the State of Oregon.
_____**Yes** _____**No (Check one)**

**2.** I have elected not to file a Public Works Bond with the Board because I am a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055. I have provided the Board written verification of such certification and written notification of my election not to file the Public Works Bond. I understand that my election not to file the Public Works Bond will expire one year from the date it was filed and that a claim for unpaid wages may be filed against the payment bond I submitted on the Project.
_____**Yes** _____**No (Check one)**

**3.** I have verified any subcontractor involved in the Project has, prior to beginning any work on this Project, either filed the Public Works Bond with the Board or has elected not to file the Public Works Bond because the subcontractor is a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055.
_____**Yes** _____**No (Check one)**

**(a)** I have verified that any subcontractor involved in this Project that has elected not to file the Public Works Bond has provided the Board written verification of its certification under ORS 200.055 and written notification of its election not to file the Public Works Bond. _____**Yes** _____**No (Check one)**

I understand the Public Works Bond described above is in addition to any other bond that I am required to provide, or that may be required by a subcontractor, for this Project.

**Project Name: Washington Ave Bore Crossing**

**Project Number: 20WA05**

**Contractor's Printed Name:**_____

**Contractor's Signature:**_____

**Dated:**_____

**CITY OF ROSEBURG**
**STANDARD PERFORMANCE BOND**

Bond No.: _____
Solicitation: _____
Project Name: Washington Ave Bore Crossing, Project No. 20WA05

_____(Surety #1) Bond Amount No. 1: $_____
_____(Surety #2)* Bond Amount No. 2: $_____
**If using multiple sureties* Total Penal Sum of Bond $_____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns, firmly by these presents to pay to the City of Roseburg the sum of (Total Penal Sum of Bond) _____
(Provided that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

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

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

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

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

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

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

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 2021.

PRINCIPAL: _____

By

_____
Signature

_____
Official Capacity

Attest:

_____
Corporation Secretary

SURETY: _____
*[Add signatures for each surety if using multiple bonds]*

BY ATTORNEY-IN-FACT:
*[Power-of-Attorney must accompany each surety bond]*

_____
Name

_____
Signature

_____
Address

_____
City State Zip

_____
Phone Email

**CITY OF ROSEBURG**
**PAYMENT BOND**

Bond No.: _____
Solicitation: _____
Project Name: Washington Ave Bore Crossing, Project No. 20WA05

_____(Surety #1) Bond Amount No. 1: $_____
_____(Surety #2)* Bond Amount No. 2: $_____
**If using multiple sureties* Total Penal Sum of Bond $_____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns, firmly by these presents to pay to the City of Roseburg the sum of (Total Penal Sum of Bond) _____
(Provided that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

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

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

**WHEREAS**, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and schedule of Contract prices which are set forth in the Contract and any attachments, and all authorized modifications of the Contract which increase the amount of the work, or the cost of the Contract, or constitute authorized extensions of time for performance of the Contract, notice of any such modifications hereby being waived by the Surety:

**NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH** that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided by the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the City of Roseburg and members thereof, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for

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

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

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

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 2021.

PRINCIPAL: _____

By _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____
*[Add signatures for each surety if using multiple bonds]*

BY ATTORNEY-IN-FACT:
*[Power-of-Attorney must accompany each surety bond]*

_____
Name

_____
Signature

_____
Address

_____
City State Zip

_____
Phone Email

## LOWEST BIDDER RESPONSIBILITY DETERMINATION FORM

***(TO BE COMPLETED BY THE CITY UPON NOTICE OF INTENT TO AWARD)***

**"Lowest responsible bidder"** means the lowest bidder who is not on the list established by the Construction Contractors Board pursuant to ORS 701.227 and who has:

1. Substantially complied with all prescribed public contracting procedures and requirements of the State of Oregon and the City of Roseburg;
2. Met the standards of responsibility described in ORS 279B.110 and 279C.375, and Roseburg Municipal Code Chapter 3.06; and
3. Not been disbarred or disqualified from bidding or debarred by the State of Oregon under ORS 279B.130 or 279C.440, or by the City under the provisions of Roseburg Municipal Code Chapter 3.06.

**Project Name: Washington Ave Bore Crossing**

**Bid/Project Number: 20WA05**

**Business Entity/ Bidder's Name:**_____

**CCB License Number:**_____

**Form submitted by City of Roseburg.**
**Form submitted by:**

**Name:**_____

**Title:**_____

**Date:**_____

The City has (check all of the following):

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

**[ ]** Determined whether the bidder has met the standards of responsibility. In so doing, the City has found that the bidder demonstrated that the bidder:

**[ ]** Has available the appropriate financial, material, equipment, facility and personnel resources and expertise, or the ability to obtain the resources and expertise, necessary to meet all contractual responsibilities.

**[ ]** Holds current licenses that businesses or service professionals operating in this state must hold in order to undertake or perform the work specified in the Contract.

**[ ]** Is covered by liability insurance and other insurance in amounts required in the solicitation documents.

**[ ]** Qualifies as a carrier-insured employer or a self-insured employer under ORS

656.407, or has elected coverage under ORS 656.128.

**[ ]** Has disclosed the bidder's first-tier subcontractors in accordance with ORS 279C.370.

**[ ]** Has a satisfactory record of performance.

**[ ]** Has a satisfactory record of integrity.

**[ ]** Is legally qualified to contract with the City.

**[ ]** Possesses a certificate that the Oregon Department of Administrative Services issued under ORS 279A.167 – Pay Equity Compliance (if applicable)**. (NEW)**

**[ ]** Has supplied all necessary information in connection with the inquiry concerning responsibility.

**[ ]** Determined the bidder to be (check one of the following):

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

**[ ]** Not responsible under ORS 279C.375(3)(a) and (b).

If the City has found the bidder not to be responsible, please see attached document explaining the City's determination.

**Note:** This form is to be submitted by the City of Roseburg to the Construction Contractors Board immediately following issuance of the City's Notice of Intent to Award the subject contract. A copy must immediately be filed with the City Recorder.

**BUREAU OF LABOR AND INDUSTRIES**
**PREVAILING WAGE RATES FOR PUBLIC WORKS CONTRACTS**

Prevailing Wage Rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of all public works, unless specifically exempted by state or federal law. Rather than including the entire State and/or Federal Prevailing Wage Rate publications in the bid specifications and contract, public entities may make reference to the specific prevailing wage rate publication where the prevailing wage rates are found *or* provide a link to the specific prevailing wage rate publication where the prevailing wage rates are found.

Oregon Bureau of Labor and Industries Prevailing Wage Rates applicable to the subject project/contract are available on BOLI's website at www.oregon.gov.boli. The prevailing wages to be applied throughout the duration of this project are those in effect for BOLI Prevailing Wage Rate Region 6, (Douglas County Oregon), upon the date the project is first advertised.

Federal Prevailing Wages Rates under the Davis Bacon Act (40 U.S.C. 3141 et seq.) may be found at www.wdol.gov. The prevailing wages to be applied throughout the duration of this project are those in effect for Federal Prevailing Wage Rates under the Davis Bacon Act (40 U.S.C. 3141 et seq.) at the time the initial specifications were first advertised for bid solicitations.

If the project is subject to both ORS 279C.800 to 279C.870 and to the Davis Bacon Act (40 U.S.C. 3414 et seq.), the contractor and every subcontractor shall pay the higher of the applicable state or federal prevailing rate of wage to all workers on the projects.

For specific information or questions regarding the Prevailing Wage Rate Law, you may log on to the above referenced websites or contact the nearest Oregon Bureau of Labor and Industries office listed below.

**BOLI Office Locations**

| | | |
|---|---|---|
| Eugene | 1400 Executive Parkway, Eugene, OR 97401 | 541/686-7623 |
| Medford | 700 E. Main, Suite 105, Medford, OR 97504 | 541/776-6270 |
| Portland | 800 NE Oregon St., #32, Portland, OR 97232 | 503/731-4074 |
| Salem | 3865 Wolverine St. NE, Bldg. E-1, Salem, OR 97305 | 503/378-3292 |

**THIS PROJECT IS SUBJECT TO THE OREGON BOLI PREVAILING WAGE RATES EFFECTIVE ON April 1, 2021.**

## GENERAL CONDITIONS

### 1. DEFINITIONS

**1.1** Whenever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

**"Acceptance"** means that the work has been completed in accordance with the Contract Documents and approved in writing by the Owner.

"**Act of God or Nature"** means a natural phenomenon of such catastrophic proportions or intensity as would reasonably prevent performance.

**"Addendum"** means any written document, signed by all parties, pertaining to additions, deletions, revisions or other issues with the Contract Documents issued after the Contract Documents have been issued.

**"Bid"** means the offer of a bidder to perform the work described by the Contract Documents when made out and submitted on the prescribed Bid Form and properly signed.

**"Bidder"** means any person, firm, partnership, corporation, limited liability company, or other entity submitting a bid for the work described hereunder.

**"Change Order"** means a document recommended by the Project Manager which is signed by the Contractor and the City and authorizes an addition, deletion or revision in the work or an adjustment in the Contract price or Contract times, issued on or after the effective date of the Contract.

**"City"** means the City of Roseburg located in the State of Oregon, and owner of the Project and work related thereto.

**"Contract Documents"** means and includes the Invitation to Bid, Information for Bidders, Bid Form, Construction Contract with Exhibit "A" Standard Contract Provisions, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder's Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), General Conditions, Technical Provisions, Special Provisions, Standard Drawings, Specifications & Plans, and Supplemental Specifications all as required for the full execution and satisfactory completion of the Project.

**"Contractor"** means the firm, partnership, corporation, limited liability company, or other entity executing the Contract with the City for the performance of the work herein described.

**“Defective”** means, when modifying the work, refers to work that is unsatisfactory, faulty or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test or approval referred to in the Contract Documents; or

c. has been damaged prior to the Project Manager’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by the City at Substantial Completion in accordance with the Contract Documents).

**“Design Consultant”** means the firm who prepared the Plans and Specifications and shall not mean the Project Manager.

**"Engineer"** means the City's authorized Engineer, as designated by the City Manager or Public Works Director for the Contract, either acting directly or through the inspector, within the scope of assigned duties.

**“Final Completion”** means that all work has been completed in conformance with the Contract Documents and the Contract has been fully performed.

**“Holidays”** means any Oregon legal holiday.

**“Liquidated Damages”** means that which is set forth in Subsection 6.9 herein.

**“Milestone”** means a principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all of the work.

**“Pay Equity Compliance Certificate”** means a certificate issued by the Department of Administrative Services pursuant to ORS 279A.167 following completion of pay equity training.

**"Payment Bond”** means the approved form of security furnished by the Contractor and Contractor's Surety as a guarantee of good faith on the part of the Contractor to make all payments that are the Contractor's obligations, in accordance with the terms of the Contract.

**“Performance Bond"** means the approved form of security furnished by the Contractor and Contractor's Surety as a guarantee of good faith on the part of the Contractor to execute the work that is the Contractor's obligation, in accordance with the terms of the Contract.

**"Plans"** means and includes the City approved maps, standard drawings, work order drawings and supplemental drawings and sketches which will show the locations, character, dimensions and details of the work to be done.

**"Project"** means all work described and specified herein and as indicated on the Plans.

**“Project Manager”** means the City’s authorized Project Manager for the Contract, as designated by the City Manager or Public Works Director, either acting directly or through a designated representative, within the scope of assigned tasks.

**“Proposal Request”** means a written statement issued by the Project Manager to the Contractor on or after the effective date of the Contract and signed by the City and the Contractor identifying additions, deletions or revisions in the work, or responding to differing or unforeseen subsurface or physical conditions under which the work is to be performed or to emergencies. A Proposal Request will not change the Contract price or the Contract times but is evidence that the parties expect that the change ordered or documented by a Proposal Request will be incorporated in a subsequently issued Change Order.

**“Public Works Bond”** means a $30,000 form of security furnished by the Contractor and/or Subcontractor and Contractor’s and/or Subcontractor’s Surety to the Construction Contractors Board to pay claims ordered by the Bureau of Labor and Industries to workers performing labor under a public works project.

**“Punch List”** means a list developed by the Project Manager after Substantial Completion that identifies defects or deficient workmanship or work not completed in conformance with the Contract Documents.

**“Request for Information”** means a formal request from the Contractor to the Project Manager requesting clarification and/or direction necessary to complete the work.

**“Signature”** means either a hand written or electronic signature.

**"Specifications"** means and includes the directions, provisions and requirements contained herein and referred to herein pertaining to the Project.

**“Submittals”** means all drawings, diagrams, material data, schedules and other information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the work.

**“Substantial Completion”** means that the degree of completion of the Project, or portion of the Project as evidenced by the Project Manager’s written notice of Substantial Completion, sufficient to provide the City, the full-time use of the Project, or portion of the Project, for the purpose for which it was intended. Determination of Substantial Completion is solely at the discretion of the Project Manager. Substantial Completion does not mean complete in accordance with the Contract nor shall Substantial Completion of all or any part of the Project entitle the Contractor to final acceptance under the Contract. The criteria the Project Manager may use in exercising his/her discretion in determining Substantial Completion includes, but is not limited to, the completion of all equipment contained in the Project, or portion of the Project, all other components necessary to enable the City to operate the facility in the manner that was intended.

**"Superintendent"** means the executive representative of Contractor, authorized to receive and fulfill instructions from the Project Manager or Project Manager's representatives.

**"Supplemental Specifications"** means specific instructions setting forth conditions or requirements peculiar to the Project under consideration when said Project is not completely covered by the Specifications contained herein.

**"Surety"** means the person, firm, partnership, corporation, limited liability company or other entity that has the requisite authority to execute the bonds required from the Contractor.

## 2. CONTRACT DOCUMENTS

### 2.1 Award, Execution of Documents, Delivery of Bonds.

**2.1.1** If awarded, the Contract will be awarded to the lowest responsible bidder whose qualifications indicate the award will be in the best interest of the City and whose bid complies with all the prescribed requirements. No award will be made until the City has concluded such investigations as the City deems necessary to establish the responsibility, qualifications and financial ability of the Bidders to do the work in accordance with the Contract Documents.

**2.1.2** In determining the lowest responsible bidder for the purpose of awarding the Contract, the City, pursuant to ORS 279A.120 shall:

**2.1.2.1** give preference to goods and services that have been manufactured or produced in Oregon if the price, fitness, availability and quality are otherwise equal; and

**2.1.2.2** add a percentage increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

**2.1.3** The City reserves the right to reject any and all bids not in compliance with all public bidding procedures and requirements or when such rejection is in the interest of the City; to reject the bid of a bidder who has previously failed to perform properly or complete contracts of a similar nature on time; and to reject the bid of a bidder who is not, in the opinion of the City, in a position to perform the Contract. If the Contract is awarded, the City will give the successful bidder written notice of award within forty-five (45) calendar days after bid opening.

**2.1.4** At least three (3) counterparts of the Construction Contract and such other Contract Documents as practicable will be signed by the City and Contractor. The Contractor shall receive one (1) executed counterpart of the Contract Documents.

**2.1.5** When required by the specifications, the Contractor shall deliver simultaneously with the execution of the Contract Documents a good and sufficient Payment Bond to ensure payment of the obligations incurred in the

performance of this Contract, a Performance Bond to assure performance of the Contract and the Public Works Bond Filing Certification form executed by the Contractor. No exceptions will be made to this provision.

**2.1.6** Failure of the successful bidder to execute the Contract Documents and deliver the required Payment Bond, Performance Bond and Public Works Bond Filing Certification form within ten (10) calendar days of the notification of the award of the Contract shall be just cause for the City to annul the award.

## 2.2 Correlation, Interpretation, and Intent of Contract Documents.

**2.2.1** The intent of the Plans and Specifications as contained herein is to describe the complete Project which the Contractor shall undertake to do in full compliance with the Construction Contract with Exhibit "A", Plans and Specifications. The Contract Documents comprise the entire agreement between the City and the Contractor. The Contract Documents may only be altered as provided in the General Conditions of the Contract.

**2.2.2** The Plans and Specifications are intended to be explanatory and complimentary of each other. Contractor shall execute any work indicated in the Plans and not in the Specifications, or vice versa, as if indicated in both. Should any work or materials be reasonably required or intended for carrying the Project to satisfactory completion, which is inadvertently omitted on the Plans and Specifications, Contractor shall furnish the same as fully as if particularly delineated or described. Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Project Manager for further explanations as may be necessary and shall conform thereto so far as may be consistent with the terms of the Contract. In the event any doubt or question arising respecting the true meaning of the Plans or Specifications, Contractor may seek a determination by the Project Manager according to Subsection 3.2 and Paragraph 3.3.3. Should the Contractor disagree with the Project Manager's decision, the Contractor may appeal to the City Manager in accordance with Paragraph 3.4.2. In resolving such conflicts, errors and/or discrepancies, the Contract Documents shall be given precedence in the following order: Construction Contract with Exhibit "A", the Plans and the Specifications. Within the Specifications, the order of precedence shall be as follows: General Conditions, Information for Bidders, Special Conditions and Technical Provisions.

**2.2.3** Figure dimensions on Plans shall govern over scale dimensions, and detailed drawings shall govern over general drawings. Any work that may reasonably be inferred from the Plans and/or Specifications as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to reference such recognized standards. The Contractor assumes full responsibility for having familiarized himself with the nature and extent of the Contract Documents, work locality and local conditions that may in any manner affect the work to be done.

**2.3 Verification and Warranty.** The Contractor shall make the determination of the nature of the work proposed under the Contract, local conditions which can be encountered within the Project area and all other matters which can in any way affect the work proposed under the Contract. It shall also be the responsibility of the Contractor to be thoroughly familiar with the Contract Documents. Failure to make the examination necessary for this determination or to examine any form, instrument or document of the Contract with Exhibit "A" shall not release the Contractor from the obligations of the Contract with Exhibit "A". The Contractor warrants that no oral or written agreement or conversation with any officer, agent or employee of the City, either before or after the execution of the Contract, has affected or modified any of the terms or obligations herein contained.

**2.4 Documents to be Kept on the Jobsite.** The Contractor shall keep at least one (1) copy of the Contract Documents at the jobsite, in good order, available to the Project Manager.

**2.5 Additional Contract Documents.** The City will furnish to the Contractor, on request and free of charge, up to three (3) copies of the Contract Documents. Additional copies of Contract Documents may be obtained upon request by paying the actual cost of reproduction.

**2.6 Surveys.** When required for the Project, surveying and staking of the component parts of the work shall be as detailed in the Specifications and on the Plans. The Contractor shall construct the work in accordance with the construction stakes and shall be charged with full responsibility for conformity and agreement of the work with said construction stakes.

## 3. PROJECT MANAGER-CITY CONTRACTOR RELATIONS

**3.1 General.** The City has the authority to act as the sole judge of the work with respect to both quantity and quality as set forth in the Contract. It is expressly stipulated that the Plans, Specifications and other Contract Documents set forth the requirements as to the nature of the completed work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent on the method of performance.

**3.2 Project Manager.** The Project Manager is the representative of the City and is employed to act as advisor and consultant to the City in project managing matters related to the Contract. The City has delegated its authority to the Project Manager to make initial decisions regarding all claims and questions, which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work under the Contract. The Project Manager determines the intent and meaning of the Contract and makes initial decisions with respect to the Contractor's fulfillment of the Contract and the Contractor's entitlement to compensation. Should the Contractor disagree with a decision of the Project Manager with respect to the Contract, the Contractor may request that the City Manager review the Project Manager's decision and make a determination in the manner provided under Paragraph 3.4.2.

The Project Manager may designate a field representative as an alternate in his/her capacity on the job site. All notifications required under the Contract shall be made directly to the Project Manager or the designated representative.

## 3.3 Duties and Responsibilities of the Project Manager

**3.3.1** The Project Manager will make periodic visits to the site of the Project to observe the progress and quality of the work and to determine, in general, if the work is proceeding in accordance with the intent of the Contract Documents. The Project Manager shall not be required to make comprehensive or continuous inspections to check the quality or quantity of the work, and shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Project. Visits and observations made by the Project Manager shall not relieve the Contractor of obligations to conduct comprehensive inspections of the work, to perform acceptable work and to provide adequate safety precautions.

**3.3.2** The Project Manager or the field representative thereof will be assigned to periodically observe the work and to act in matters of construction under the Contract. It is understood the Project Manager or field representative shall have the power to issue instructions and make decisions within the limitations of the authority granted by the City. Such inspection shall not relieve the Contractor of obligations to conduct comprehensive inspections of the work, perform acceptable work and provide adequate safety precautions.

**3.3.3** All claims of the Contractor shall be presented to the Project Manager or designated representative, for a decision which shall be made in writing within a reasonable time. All decisions of the Project Manager shall be final subject only to the Contractor's right to appeal the Project Manager's decision to the City Manager in the manner provided in Subsection 3.4.

## 3.4 Appeal to the City Manager by the Contractor.

**3.4.1 Determination by the Project Manager.** As provided in Subsections 3.1, 3.2, and 3.3, the Contractor shall refer questions regarding meaning and intent of the Contract Documents in writing to the Project Manager for his/her decision. The Project Manager shall, within a reasonable time, respond to the Contractor in writing with his/her decision. If the Contractor disagrees with the Project Manager's decision or considers the decision requires extra work, Contractor may appeal the decision to the City Manager. Any related work performed by the Contractor prior to the Project Manager's decision is done at Contractor's risk unless otherwise authorized by the Project Manager.

**3.4.2 City Manager Appeal Process.** In the event the Contractor disagrees with any decision of the Project Manager, the Contractor may, within ten (10) calendar days of the date of such decision, appeal the decision to the City Manager for review. The appeal must be in writing and must set forth the questions referred to the Project Manager, the Project Manager's decision and the Contractor's basis for disagreement. The Contractor shall deliver a copy of

the appeal to the Project Manager at the time it is filed with the City Manager. The City Manager shall make all reasonable efforts to review the appeal and deliver his/her decision in writing to the Contractor within thirty (30) calendar days from the date of receipt of the appeal. Failure of the Contractor to appeal the decision of the Project Manager within the said ten (10) calendar day period constitutes a knowing and voluntary waiver of the Contractor's right to thereafter assert any claim resulting from such decision. This procedure is not meant to preclude or discourage informal resolution of disagreements between the Project Manager and the Contractor.

In the event the City Manager elects to do so, the City Manager may establish a "Claims Review Board" either to assist in reviewing an appeal hereunder or to consider Contractor appeals directly. Once established, the Claims Review Board will hear all future appeals of claims for this Contract.

During the pendency of any appeal, any related work performed by the Contractor shall be done at the Contractor's risk unless otherwise authorized by the Project Manager.

The filing of an appeal does not automatically extend the milestones and/or deadlines set forth in the Contract Documents and the Contractor continues to be subject to liquidated damages for failure to complete the Project within the time allotted.

In the event the City Manager or the Contractor commences arbitration or other legal action against the other for damages or for equitable relief, the prevailing party in such arbitration or other legal action is entitled to recover its reasonable attorney's fees therein, and in any appeal, therefrom.

The parties hereby stipulate and consent that venue for all arbitration or other legal actions arising under the Contract is in Douglas County, Oregon and that jurisdiction for all legal actions that are brought in or transferred to court is in the Douglas County Circuit Court of the State of Oregon; except, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively in the United States District Court for the District of Oregon located in Eugene, Oregon.

**3.5 Suspension of Work.** The Project Manager shall, in addition to its other authority, have the authority to suspend the work, wholly or in part, for such period or periods as may be deemed necessary due to unsuitable weather or such other conditions as are considered unfavorable for prosecution of the work, or failure on the part of the Contractor to carry out the provisions of the Contract. The Contractor shall not suspend operation without the permission of the Project Manager or Project Manager's authorized representative.

**3.6 Notice of Potential Claim for Additional Compensation and/or Time.**

**3.6.1** The Contractor shall not be entitled to any additional compensation or extension of time for any act or failure to act by the Project Manager or the City,

the happening of any event or occurrence or any other cause, unless the Contractor shall have given the Project Manager a written notice of potential claim.

**3.6.2** The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation or time will or may be due, the nature of the costs involved and insofar as possible, the amount of the potential claim. If based on an act or failure to act by the Project Manager or the City, except in case of emergency, such notice shall be given to the Project Manager prior to the time that the Contractor starts performance of the work giving rise to the potential claim for additional compensation. In all other cases, notice shall be given within ten (10) calendar days after the happening of the event or occurrence giving rise to the potential claim.

**3.6.3** It is the intention of this section that differences between the parties arising under and by virtue of the Contract shall be brought to the attention of the Project Manager at the earliest possible time in order that such matters may be settled if possible or other appropriate action may be taken promptly.

**3.7 Examination of Completed Work.** If the Project Manager requests it, the Contractor at any time before acceptance of the Project by the City, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standards required by the Contract Documents. Should the work thus exposed or examined prove to be in accordance with the Contract Documents, the uncovering or removing, the replacing of the covering or making good of the parts removed, shall be paid for by the City; but should the work so exposed or examined prove to be not in accordance with the Contract Documents, the uncovering or removing and the replacing of the covering or the making good of the parts removed, shall be at Contractor's expense. Should any work be performed without giving notice of plan of work, thereby eliminating an opportunity of inspection by the Project Manager, the Project Manager may require the Contractor to uncover such work at Contractor's own expense for examination by the Project Manager. Cost of uncovering such work shall be borne by the Contractor, whether or not the work is found acceptable. The work shall also be subject to inspection by appropriate governmental inspectors at all times.

**3.8 Contractor's Superintendent.** A qualified superintendent, who is acceptable to the Project Manager, shall be maintained by the Contractor on the Project to give efficient supervision over the Project until its completion. The superintendent shall have full authority to act on behalf of the Contractor, and all directions given to the superintendent shall be considered given to the Contractor. In general, the Project Manager's instructions shall be confirmed in writing and always upon written request from the Contractor.

**3.9 Information Regarding Existing Facilities and Utilities.**

**3.9.1 Facilities.** Any information relative to the location of other structures as might be shown on the Contract Documents will be obtained from the best information available and field observations; however, the City cannot guarantee the accuracy or completeness of this information.

**3.9.2 Utilities.** The Design Consultant has endeavored to determine the existence of utilities at the job site from the records of positions of these utilities as derived from such records as are shown on the Drawings. No excavations were made to verify the location shown for underground utilities. The service connections to these utilities are not shown on the Drawings. It is the responsibility of the Contractor to determine the exact location of all utilities and service connections hereto. The Contractor shall make its own investigations, including contacting the owners of appropriate utilities and making exploratory excavations to determine the locations and type of existing utilities, including service connections, prior to commencing work that could result in damage to such utilities and/or surrounding structures. The Contractor shall immediately notify the Project Manager as to any utility discovered by the Contractor that is not shown on the Drawings or that is in a different position than shown on the Drawings.

In the event it is necessary to remove, relocate or temporarily maintain a utility because of interference with the work, the Contractor shall perform the work on the utility and the City shall pay Contractor as follows:

**3.9.2.1** When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner thereof, the Contractor bears all expenses incidental to the work on the service connection. The Contractor shall perform the work on the service connection in a manner satisfactory to the owner thereof; if being understood that the owner of the service connection has the option of doing such work with its own forces, or permitting the work to be done by the Contractor.

**3.9.2.2** When it is necessary to remove, relocate or temporarily maintain a utility or underground obstruction that is in the position shown on the Drawings, the cost of which is not required to be borne by the owner thereof, the Contractor bears all expenses incidental to the work on the utility. The Contractor shall perform the work on the utility in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with its own forces, or permitting the work to be done by the Contractor.

**3.9.2.3** When it is necessary to remove, relocate or temporarily maintain a utility or underground obstruction that is not shown on the Drawings or is in a position different from that shown on the Drawings and were it in the position shown on the Drawings would not need to be removed, relocated or temporarily maintained, the cost of which is not required to be borne by the owner thereof, the City will make

arrangements with the owner of the utility for such work to be done at no cost to the Contractor.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof, is or is not required to be borne by the owner of such utility, and it is the responsibility of the Contractor to investigate to determine whether or not said cost is required to be borne by the owner of the utility.

Governmental agencies and owners of utilities reserve the right to enter at any time upon any street, alley, right-of-way or easement for the purpose of making changes in their property made necessary by the work and for the purpose of maintaining and making repairs to their property.

## 3.10 Use of Premises

**3.10.1** All work included under the Contract is to be constructed on land belonging to the City, on public right-of-way administered and regulated by state and/or local government or on easements to the benefit of the City or the public. The Contractor shall abide by special conditions or requirements of the property owner or governing authority. The Contractor shall confine equipment, the storage of materials and the operation of Contractor's workers to the limits as shown on the Plans or as indicated by law, ordinances, permits or directions of the Project Manager and shall not unreasonably encumber the premises with materials.

**3.10.2** Any additional land and access thereto which the Contractor might desire for temporary construction facilities or for storage of materials shall be provided by the Contractor with no liability to the City. The Contractor shall pay all costs involved in acquiring such rights and all clean up shall be made as required by these Specifications.

**3.11 Private Property.** The Contractor shall not enter upon private property for any purpose without obtaining permission and shall be responsible for the preservation of all public property, trees, monuments, etc. along and adjacent to the street and/or right-of-way, and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall use suitable precautions to prevent damage to pipes, conduits and other underground structures, including but not limited to, verifying with all appropriate utilities where underground structures are located, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

**3.12 Assignment of Contract.** Contractor shall not sublet, sell or assign the Contract or sublet any of the work to be performed hereunder without the written consent of the City. Any such assignment or subletting of any such work without City's consent shall be null and void and without force or effect.

**3.13 City's Right to do Work.** If, in the sole opinion of the Project Manager, the Contractor neglects to prosecute the work properly or neglects or refuses at Contractor's own cost, to take up and replace work that has been rejected by the Project Manager, the Project Manager shall notify the City who shall notify the Surety of the condition. After at least ten (10) calendar days written notice to the Contractor and the Contractor's Surety, or without notice if an emergency or danger to the Project or public exists, and without prejudice to any other right which the City may have under the Contract, the City may take over that portion of the Project which has been improperly executed, make good the deficiencies and deduct the actual costs thereof from the payments then or thereafter due the Contractor. If no amount is owed to the Contractor, then the City may still pursue all of its other legal and/or equitable remedies.

**3.14 City's Right to Terminate Contract.**

**3.14.1** Upon occurrence of any one or more of the following, the City may terminate the Contract at any time, immediately or upon such notice as the City in its sole discretion deems appropriate, by providing written notice to the Contractor which describes the reason for termination:

**3.14.1.1** Contractor persistently fails to perform the work in accordance with the Contract Documents, including but not limited to, failure to supply sufficient skilled workers, suitable materials or equipment and failure to adhere to the progress schedule as the schedule may be revised from time to time;

**3.14.1.2** Contractor fails to comply with applicable laws or the provisions of any of the Contract Documents, including, but not limited to the Construction Contract with Exhibit “A” Standard City Contract Provisions;

**3.14.1.3** Contractor disregards the authority of the Project Manager;

**3.14.1.4** Contractor violates any provision of the Contract and, after receiving notice of the violation, fails to remedy the breach immediately; or

**3.14.1.5** Contractor files for bankruptcy under any chapter of the Bankruptcy Code (Title 11, United States Code); or a petition in bankruptcy is filed against Contractor under the Bankruptcy Code or any other provision of law seeking substantial relief; or Contractor makes a general assignment for the benefit of creditors; or a trustee, receiver or similar agent is appointed to take charge of Contractor's property for the benefit of creditors; or Contractor otherwise admits in writing to being unable to pay its debts as they become due.

**3.14.2** Upon the City’s issuance of written notice of termination, the Contractor shall immediately cease all work under this Contract, unless, as shall be specified

in the notice, the City, in its sole discretion, would be harmed by any uncompleted work, in which case, Contractor shall complete those items specified by the City in its notice.

**3.14.3** The City may terminate the Contract upon seven (7) calendar days' notice if the City determines for any reason that the completion of the Contract is no longer in the best interests of the City.

**3.14.4** If the City terminates the Contract pursuant to Paragraph 3.14.1, the City may choose any remedy available to it under the Contract, applicable statutes, City Code or common law, including but not limited to, completing the Project itself or through another contractor. The Contractor shall pay the City for all additional costs incurred by the City to obtain substitute performance. The Contractor shall be entitled to payment for that portion of the work that the Contractor completed according to the Contract, less the City's costs to obtain substitute performance for the balance of the work.

**3.14.5** If the City terminates the Contract pursuant to Section 3.14.3, the City shall pay Contractor for that portion of the work the Contractor has completed according to the Contract, plus Contractor's cost for materials ordered and delivered to the site before Contractor receives the City's notice of termination; provided that such materials shall then belong to the City.

**3.15 Contractor's Right to Stop Work or Terminate Contract.** The Contractor may suspend work or terminate the Contract upon ten (10) calendar days written notice to the City, for any of the following reasons:

**3.15.1** If an order of any court or other public authority caused the work to be stopped or suspended for a period of ninety (90) calendar days through no act or fault of the Contractor or his employees;

**3.15.2** If the City should fail to act upon any request for payment within thirty (30) calendar days after its approval by the Project Manager; or

**3.15.3** If the City should fail to pay the Contractor any sum within thirty (30) calendar days after its award by arbitrators.

**3.16 Rights of Various Interests.** Wherever work being done by the City's forces is contiguous to work covered by the Contract, the respective rights of the various interests involved shall be established by the Project Manager to secure the completion of the various portions of the work in general harmony.

**3.17 Subcontracts.**

**3.17.1** The Contractor shall not be permitted to subcontract any of the work to be performed under the Contract without the written consent of the City, submission of the First-Tier Subcontractor Disclosure Form as required prior to the Bid opening deadline and verification that the Subcontractor has filed a Public Works Bond, when required, with the Construction Contractors Board prior to beginning

any work on the Project. The Contractor shall not employ any subcontractor that the Project Manager may object to due to subcontractor lacking the capability of performing work of the type and scope anticipated. No changes will be allowed from the approved subcontractor list without approval of the Project Manager.

**3.17.2** The Contractor agrees to be as fully responsible to the City for the acts and omissions of the Contractor's subcontractors or of any persons either directly or indirectly, employed by Contractor's subcontractors as Contractor is for the acts and omissions of persons directly employed by Contractor.

**3.17.3** Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the City.

**3.18 Unforeseen Difficulties.** The Contractor shall protect the work and materials from damage due to the nature of the work, the elements, carelessness of other contractors or from any cause whatever until completion and acceptance of the Project. All loss or damages arising out of the nature of the work to be done under the Contract Documents, from any unseen obstruction or defects which may be encountered in the prosecution of the work, or from the action of the elements, shall be sustained by the Contractor.

**3.19 Work During an Emergency.** The Contractor shall be responsible for and must have resources available for all emergency work which might occur on the Project under construction for which the Contractor is responsible. The Contractor shall perform any work and furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases the Contractor shall notify the Project Manager of the emergency as soon as practicable, but the Contractor shall not wait for instructions before proceeding to properly protect both life and property.

**3.20 Oral Agreements.** No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents. No provision of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing. No evidence shall be introduced in any proceeding of any other waiver or modification.

**3.21 Liens and Claims Against Contractor.** The Contractor shall not permit any lien or claim to be filed or prosecuted against the City on account of any labor or material furnished under this Contract whether the same be furnished by the Contractor or any Subcontractor. If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the Contract as such claim becomes due, the City may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due to the Contractor under this Contract. The payment of a claim in this manner does not relieve the Contractor or its surety from obligation with respect to any unpaid claims.

Any claim, by a person claiming to have supplied labor or materials for the performance of the work, for payment asserted against the Contractor’s payment bond must be asserted in conformity with ORS 279C.600 et. Seq.

## 4. MATERIALS AND WORKMANSHIP

### 4.1 Materials to be Reviewed Before Use.

**4.1.1** Only materials conforming with the specified requirements and conditionally accepted by the Project Manager shall be used in the Project.

**4.1.2** Before any material to be used in the Project is delivered, the Contractor shall advise the Project Manager of the source from which the material is to be obtained, furnish such samples as may be required for testing purposes, and receive the Project Manager's conditional acceptance for the use of that particular material. The conditional acceptance of any source of supply by the Project Manager does not imply that all material from that source will be accepted. Should material from any conditionally accepted source fail to maintain a quality meeting the requirements of the Specifications, use of material from that source shall be discontinued and the Contractor shall furnish acceptable material from other sources. Regardless of the source, any material delivered for the Project which fails to meet the requirements will be rejected. Only material meeting all requirements will be allowed to be incorporated in the Project. Any material or item incorporated in the Project which does not meet requirements of the Contract Documents, even if it was used with the consent and/or the presence of an inspector, shall be removed and acceptable material shall be used in its place, with all costs related to such removal and installation being borne by the Contractor.

**4.1.3** Any material which, after conditional acceptance, has for any reason become unsuitable for use shall be rejected and not used.

### 4.2 Tests of Materials.

**4.2.1** All tests of materials shall be made in accordance with acceptable methods as described and designated in the Specifications. When tests of materials are required, such tests shall be made by a testing laboratory accepted by the Project Manager and at the expense of the Contractor. The Contractor shall afford such facilities as may be required for collecting and forwarding samples and shall hold the materials represented by the samples until tests have been made and the materials found equal to the requirements of the Specifications or to approved samples. The Contractor in all cases shall furnish the required samples without charge.

**4.2.2** In the absence of any definite Specification or reference to a Specification in the Technical Specifications or in the Special Provisions for the particular Project involved, it shall be understood that such materials shall meet the Specifications and requirements of the American Society for Testing Materials. Unless otherwise specified, all tests of materials shall be made in accordance with the methods prescribed by the American Society for Testing Materials.

**4.2.3** In cases where compliance of materials or equipment with Contract requirements is not readily determinable through inspection and tests, the Project Manager shall request the Contractor provide properly authenticated documents, certificates or other satisfactory proof of compliance. These documents, certifications and proofs must cover performance characteristics, materials or construction and the physical or chemical characteristics of materials.

**4.2.4** If the Specifications require, or the Contractor's request is approved by the Project Manager, inspection or testing may take place away from the job site. The additional cost to the City for such remote inspection or testing includes travel and subsistence expenses and will be paid by the Contractor through a reduction in payment to the Contractor equal to the travel and subsistence expenses. In the event the remote inspection or testing is not specified and is required by the City, the required travel and subsistence expense will be paid for by the City.

**4.3 Storage of Materials.** Materials shall be so stored as to insure the preservation of their quality and fitness for the Project. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces, and not on the ground, and/or they shall be placed under cover. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes without the written permission of the City and the private property owner.

**4.4 Character of Workers.** The Contractor shall at all times be responsible for the conduct and discipline of Contractor's employees and/or any subcontractor or persons employed by subcontractors. All workers must have sufficient knowledge, skill and experience to properly perform the work assigned to them. Any foreman or worker employed by the Contractor or Subcontractor who, in the opinion of the Project Manager, does not perform the work in a skillful manner, appears to be incompetent or acts in a disorderly or intemperate manner shall, at the written request of the Project Manager, be removed from work on any portion of the Project except as allowed by the Project Manager.

**4.5 Construction Means, Methods, Techniques, and Procedures.** The Contractor shall have the full power and authority to select the means, methods, techniques and procedures for performing the work covered under the Contract, provided said means, methods, techniques and procedures are in strict compliance with the requirements of all local, state and federal authorities and with these Specifications, and are not in conflict with the recommended installation practices of the manufacturers who are the suppliers of the materials to be utilized on the contemplated Project. The construction means, methods, techniques and procedures utilized shall produce a satisfactory quality of workmanship and shall be adequate to maintain the schedule of progress as required under the provisions of these Specifications.

**4.6 Contractor's Tools and Equipment.** The Contractor's tools and equipment used on the work covered under the Contract shall be furnished in sufficient quantity and of a capacity and type that will safely perform the work specified, and shall be maintained and used in a manner that will not create a hazard to persons or property, or cause a delay in the progress of the work.

**4.7 Rejected Materials and Work.** Any material supplied by the Contractor which is condemned or rejected by the Project Manager or the Project Manager's authorized representative because of non-conformity with the Contract Documents shall be removed at once from the vicinity of the Project by the Contractor at his own expense, and the same shall not be used on the Project. Any defective work whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause shall be removed within ten (10) calendar days after written notice is given by the Project Manager, and the work shall be re-executed by the Contractor at his own expense.

**4.8 Unnoticed Defects.** Any defective work or materials furnished by the Contractor and discovered by the Project Manager before the Project has been given final acceptance or final payment has been made, or during the guarantee period, shall be removed and replaced by work and materials which shall conform to the provisions of the Contract Documents. Failure on the part of the Project Manager or his representative to condemn or reject bad or inferior work or materials shall not be construed to imply acceptance of such work or materials.

**4.9 Right to Retain Imperfect Work.** If any part or portion of the work done or material furnished by the Contractor under the Contract proves to be defective and not in accordance with the Plans and Specifications, and if the imperfection in the same is not of sufficient magnitude or importance as to make the work dangerous or unsuitable, or if the removal of such work will create conditions which are dangerous or undesirable, the City shall have the right and authority to retain such work but shall make such deductions in the payment therefore as may be just and reasonable.

**4.10 Correction of Defective Work.** When, and as often as the Project Manager determines through its inspection procedures, material, equipment or workmanship incorporated in the Project do not meet the requirements of the Contract, the Project Manager may give notice of the noncompliance to the Contractor in writing. Within five (5) calendar days of receipt of such notice, the Contractor shall undertake all work necessary to correct the deficiency and to comply with the Contract. The Contractor agrees to pay all costs of correcting the defective work, including wages and overhead charges for inspection. If the Contractor disagrees with the Project Manager’s determination and believes the corrective work should be covered by a Change Order, the Contractor shall immediately notify the City, in writing, setting forth the basis for its position. The City will review the matter and notify the Contractor, in writing, of its determination within thirty (30) calendar days after receipt of the Contractor’s notification. If the City determines the corrective work is required to comply with the Contract, the Contractor shall proceed with such work.

As a condition precedent to the Contractor’s claim for either additional compensation or time extension or both resulting from the performance of such corrective work, the Contractor shall, within fifteen (10) calendar days after receipt of the City’s determination, notify the City in writing of its intent to claim additional compensation, time or both. The Contractor shall document all cost information associated with the corrective work and shall submit such information to the Project Manager on a monthly basis. Receipt of the cost data by the Project Manager does not constitute an

Acceptance of the corrective work or an authorization for a Change Order to cover the corrective work.

**4.11 Cutting and Patching.** The Contractor shall do, or be responsible for, all cutting, fitting or patching that may be required by, shown on or reasonably implied by the Plans and Specifications. Any defective work performed or material furnished by the Contractor, which is discovered by the Project Manager before final acceptance of the Project or before final payment has been made, shall be removed and replaced or patched at the Contractor's expense in a manner approved by the Project Manager or his representative.

**4.12 Cleanup.**

**4.12.1** As the Project progresses and immediately after completion of the Project, the Contractor shall clean up and remove all refuse and unused materials of any kind resulting from the Project. If the Contractor fails to commence the cleanup within 24 hours after being directed to do so by the Project Manager, the Project Manager may have the cleanup performed by others. The cost shall be borne by the Contractor and may be deducted from payments due or to become due the Contractor.

**4.12.2** After the Project is completed and before final acceptance of the Project, all areas affected by the Project shall be neatly finished and all equipment, temporary structures, rubbish and waste shall be removed from the Project area.

**4.13 Guarantee.**

**4.13.1** The Contractor shall fully warrant all work for at least one (1) full calendar year from the City's Final Acceptance of the Project, regardless of the length of manufacturers' or installers' warranties.

**4.13.2** In addition to any other warranties that are required, the Contractor shall make all necessary repairs and replacements to remedy any and all defects, breaks or failures of the work occurring within one (1) calendar year following the date of the City's Final Acceptance due to faulty or inadequate materials or workmanship. Such repairs and replacements must conform to the Contract Specifications under which the Contractor originally performed the work.

**4.13.3** In the event of a dispute regarding any portion of the work, the Contractor shall nonetheless provide any warranty service, repairs or replacements as described in Paragraphs 4.13.1 and 4.13.2 above, for that portion of the work that is not in dispute. In the event a dispute delays the City's Final Acceptance of the work, the warranty for portions of the work not in dispute runs from the date of the City's Final Acceptance of the remaining portions of the work.

**4.13.4** The Contractor shall also repair any damage or remedy any disturbance to other publicly owned property or improvements thereon if caused by the Contractor's work and if the damage or remedy occurs during the warranty period.

**4.13.5** If the Contractor performs warranty work, then the warranty work for repetitive defects in materials, workmanship or equipment also shall have a one (1) calendar year warranty period from the date of its completion and the City's Final Acceptance of that work. The Contractor shall continue to provide warranty work pursuant to the terms of the Contract until the defects are completed and the City provides notice of its Final Acceptance of the work.

**4.13.6** The City shall provide the Contractor with written notice of the need to perform warranty work unless it is determined that an emergency exists, that delay would cause serious additional loss or damage, or if any delay in performing the work might cause injury to any member of the public. If the Contractor, after written Notice, fails within ten (10) calendar days to comply with the City's request, the City has the right to perform the warranty work either by hiring another Contractor or by using its own forces. In either event, the Contractor and its Surety remain liable to the City for the cost of the work performed and any additional damage suffered by the City.

**4.13.7** The Contractor shall provide a bond during the one (1) calendar year warranty period to guarantee the Contractor's performance of warranty work. The Contractor shall provide to the City a bond in the amount of 20% of the final Contract Amount in one of the following ways:

**4.13.7.1** Continuance of the Contract performance and payment bond.

**4.13.7.2** Any new performance and payment bond, acceptable to the City, which covers the Contractor's warranty obligations imposed by the Contract Documents.

**4.13.7.3** Cash deposit to the City Finance Department. A receipt from the City Finance Director constitutes proof of the deposit.

**4.13.7.4** Other arrangements proposed by the Contractor that the City finds acceptable in the City's sole discretion.

## 5. INSURANCE, LEGAL AND FINANCIAL RESPONSIBILITY, AND PUBLIC SAFETY

### 5.1 Insurance.

**5.1.1 Policy Requirements.** The insurance policies specified herein shall be approved as to form by the City. Contractor shall deliver a certificate of all required policies to City upon execution of the Contract Documents and prior to commencement of any work under the Contract. If requested by the City, Contractor shall furnish the City with executed copies of such policies of insurance. Coverage provided by the Contractor must be underwritten by an insurance company deemed acceptable to the City. Insurance coverage shall be provided by companies admitted to do business in Oregon and rated A- or better

by AM Best. A thirty (30) day notice of cancellation, termination or non-renewal in coverage clause shall be included in all insurance policies. Failure to maintain any required insurance coverage in the minimum required amount shall constitute a material breach of the Contract and shall be grounds for immediate termination of the Contract. If the insurer is unwilling or unable to provide such commitment, the Contractor shall provide the City with the relevant sections of its policies describing how the insurer may reduce, modify or cancel the insurance. Furthermore, the Contractor has an affirmative duty to provide the City with any notice the Contractor receives regarding the reduction, modification or cancellation of its insurance within 24 hours of Contractor's receipt of such notice. All policies required by these provisions shall:

**5.1.1.1** also name the City as an additional insured, protecting City from any and all claims, losses, actions or omissions of Contractor or as a result of the joint concurring or contributory act, omission or negligence of Contractor and City arising with or related to activities specified under the Contract;

**5.1.1.2** be written as primary policies, not contributing with, or in excess of, any coverage City may have; and

**5.1.1.3** have loss payable clauses in favor of and reasonably satisfactory to City.

**5.1.2 Commercial General Liability Insurance.** During the performance of the Contract, Contractor shall obtain and maintain continuously in effect a commercial general liability insurance policy, including personal and advertising injury liability and products, completed operations and construction site coverage, with a combined single limit per occurrence of not less than $2,000,000.The aggregate limit shall not be less than $4,000,000.The policy shall be endorsed to state that the aggregate limit of liability shall apply separately to the Contract. Coverage may be written in combination with Commercial Automobile Liability Insurance with separate limits for Commercial General Liability and Commercial Automobile Liability. If available, such policy shall contain a contractual liability endorsement to cover Contractor's indemnification obligations under the Contract. Claims Made policies will not be accepted.

**5.1.3 Commercial Automobile Liability Insurance.** At all times during the term of the Contract, and at the sole expense of Contractor, Contractor shall maintain continuously in effect, "Symbol 1" commercial automobile liability coverage covering all owned, non-owned and hired vehicles. This coverage may be written in combination with the Commercial General Liability Insurance with separate limits for Commercial Automobile Liability and Commercial General Liability. Combined single limit per occurrence shall not be less than $2,000,000. If this coverage is written in combination with the Commercial General Liability, the aggregate limit for Commercial General Liability shall not be less than $4,000,000 and the policy shall be endorsed to state that the aggregate limit of Commercial General Liability shall apply separately to the Contract.

**5.1.4 Workers Compensation.** At all times during the term of the Contract, and at the sole expense of the Contractor and Subcontractors, the Contractor and all Subcontractors shall comply with ORS 656.017, which requires them to provide Workers Compensation coverage for all their subject workers.

**5.1.5 Pollution Liability.** Contractor or appropriate Subcontractor shall obtain, at their expense, and keep in effect during the term of the Contract, Pollution Liability Insurance covering their liability for bodily injury, property damage and environmental damage resulting from sudden accidental or gradual pollution and related cleanup costs incurred by the Contractor or appropriate Subcontractor, all arising out of the work or services (including the transportation risk, when applicable) to be performed under the Contract. Combined single limit per occurrence shall not be less than $2,000,000, with an annual aggregate limit of not less than $4,000,000. If available, such policy shall contain a contractual liability endorsement to cover Contractor's indemnification obligations under the Contract. Claims Made policies will not be accepted.

**5.2 Indemnification.** The Contractor shall hold the City harmless from, and indemnify it for, all loss, costs, claims, demands, damages, suits, actions and judgments for property damage and/or personal injury, including death, arising out of the Project or performance under the Contract by the Contractor's agents or employees, or any of them. In any event any such action or claim is brought against City, Contractor shall, if City so elects, upon tender by City, defend the same at Contractor's sole cost and expense, promptly satisfy any judgment adverse to City or to City and Contractor jointly and reimburse City for any loss, costs, damage or expense (including legal fees) suffered or incurred by City.

**5.3 Taxes and Charges.** The Contractor shall pay state and local sales and use taxes on all items as required by the laws and statutes of the state and its political subdivisions. The Contractor shall withhold and pay any and all withholding taxes, whether state or federal; pay all social security charges and state unemployment compensation charges; and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees or sums whatsoever which are now or may hereafter be required to be paid or withheld under the laws.

**5.4 Bid Bond, Payment Bond, Performance Bond and Public Works Bond.**

**5.4.1 Contracts for Under $25,000.00.** Except when required by the Purchasing Agent, and except for public improvement contracts, bids on all public contracts under twenty-five thousand dollars ($25,000.00) are exempt from the requirements for a Bid Bond, a Performance Bond to assure performance of the Contract and a Payment Bond to assure payment of the obligations incurred in the performance of the Contract. The Information for Bidders shall state when Bonds are required for contracts under $25,000.00.

**5.4.2 Contracts for $25,000.00 or More.** Except for public improvement contracts, or except when waived by the Council, bids on all public contracts of twenty-five thousand dollars ($25,000.00) or more, shall be accompanied by a

Bid Bond, and the Contractor shall post a Performance Bond to assure performance of the Contract and a Payment Bond to assure payment of the obligations incurred in the performance of the Contract. The Information for Bidders shall state when the requirement for Bonds have been waived for contracts of $25,000.00 or more.

**5.4.3 Public Improvement Contracts & Contracts for Highways, Bridges and Other Transportation Projects:**

**5.4.3.1** Bids on Public Improvement contracts for one hundred thousand dollars ($100,000.00) or less, and contracts for highways, bridges and other transportation projects for fifty thousand dollars ($50,000.00) or less, are exempt from the requirement of a Bid Bond, a Performance Bond and a Payment Bond.

**5.4.3.2** Bids on Public Improvement contracts for more than one hundred thousand dollars ($100,000), and contracts for highways, bridges and other transportation projects for more than fifty thousand dollars ($50,000), must be accompanied by a Bid Bond, Performance Bond and Payment Bond.

**5.4.4 Emergency Contracts.** For all contracts awarded under Roseburg Municipal Code Subsection 3.06.025(F), the City Council or the Purchasing Agent may waive the requirements for Bid Bond, the Payment Bond and the Performance Bond. Upon receiving the Purchasing Agent's report regarding the emergency conditions necessitating waiver, as required by Roseburg Municipal Code Subsection 3.06.025(F), the Council may modify or reject the Purchasing Agent's decision to waive Bond requirements.

**5.4.5 Public Works Bond.** Before beginning work on a public works contract, a contractor or subcontractor, unless exempt under ORS 279C.800 to 279C.870, shall submit a $30,000 Public Works Bond to the Construction Contractors Board and certify to the City that such Bond has been submitted. In case of an emergency, or when the City’s interest or property would probably suffer material injury by delay or other cause, the requirement to file a Public Works Bond may be excused if the Purchasing Agent has declared an emergency under Roseburg Municipal Code Section 3.06.025.

**5.4.6 Submittal and Return of Bid Bonds.** When required by the above Subparagraphs, the Bid Bond shall accompany the bid in the form of cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond in a form approved by City, and in an amount equal to ten percent (10%) of the total amount of the bid. There shall be no exceptions to this provision. All required Bid Bonds, excepting that of the Contractor submitting the successful bid, will be returned within thirty (30) calendar days after the Contract has been awarded. The Bid Bond from the successful Contractor will be retained until bidder has entered into a satisfactory Contract with the City, and when required, furnished a Performance Bond to assure performance of the Contract, a Payment Bond to assure payment

of the obligations incurred in the performance of the Contract and the Public Works Bond Confirmation form executed by the Contractor. Should the successful bidder fail or refuse to execute the Contract and/or furnish the Payment Bond, Performance Bond or Public Works Bond Confirmation form as required, the Bid Bond deposited by said bidder shall be retained as liquidated damages by the City.

**5.4.7 Bond Form.** The form of all bonds required by the City shall be as the City may prescribe, and shall be with a Surety company satisfactory to the City and authorized to do business in the State of Oregon. Bonds shall be in force for one year after acceptance of the completed Project to cover all guarantees against defective materials and workmanship and all claims by subcontractors or third parties for services or materials provided to Contractor or Contractor's Subcontractors.

**5.5 Royalties and Patents.** The Contractor shall pay all royalty and license fees, unless otherwise specified. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the City and the Project Manager harmless from loss on account thereof.

**5.6 Permits and Licenses.**

**5.6.1** The Contractor shall apply for and obtain, but the City shall cover the cost of, all rights-of-way permits, easements, franchises, highway crossing permits and railroad crossing permits as required. The Contractor shall comply with all specifications or requirements stipulated in the permits granted to the City.

**5.6.2** The Contractor shall obtain at Contractor's expense, all other permits (such as building permits, burning permits, blasting permits and safety permits), licenses and inspection fees necessary for construction purposes as required by appropriate local, county, state or federal laws and/or ordinances. The Contractor shall also be registered to do business with the City of Roseburg prior to beginning work on the Contract.

**5.7 Laws to be Observed.** The Contractor shall keep fully informed of all local and county ordinances, state and federal laws in any manner affecting the Project herein specified. Contractor shall at all times comply with said ordinances, laws and regulations, and the City's Standard Contract Provisions in Exhibit "A" of the Construction Contract; and protect and indemnify the City and City's officers and agents against any claim or liability arising from or based on the violation of any such laws, ordinances, provisions or regulations.

**5.8 Safety.**

**5.8.1** The Contractor will be solely and completely responsible for conditions of the jobsites, including safety of all persons and property during work on the Project. This requirement will apply continuously and not be limited to normal working hours. Safety provisions shall conform to all applicable federal, state, county and local laws, ordinances and codes. The Contractor shall comply with

ORS 279C.505(2) drug testing program requirements at all times throughout the completion of the Project.

**5.8.2** The Contractor shall also comply with the "U.S. Department of Labor Occupational Safety and Health Act", the "Construction Safety Act" administered by the U.S. Department of Labor, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, except where these are in conflict with state laws, in which case the more stringent requirement must be followed.

**5.8.3** Contractor shall comply with all federal, state and local safety requirements, including but not limited to regulations pertaining to health hazard notification, control of hazardous energy, use of hazardous substances, handling and disposal of hazardous waste, removal and disposal of asbestos, entry into and work in confined spaces and handling of materials containing lead. City will notify Contractor of any hazardous conditions of which City is aware and will provide Contractor with information about City's safety and hazard notification programs. Such notification from the City does not relieve Contractor of any responsibility under the Contract or under federal or state statute, regulation or common law to inform itself of existing and potential hazards, to communicate those hazards to its employees, and to use all reasonable steps to minimize the risk of harm to its employees, other workers and the public.

**5.8.4** The Contractor shall maintain at the jobsite all articles necessary for giving first aid to the injured and shall establish the procedure for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the jobsite.

**5.8.5** The duty of the Project Manager to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on or near the construction sites.

**5.8.6** If death, serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Project Manager and the City. In addition, the Contractor must promptly report in writing to the Project Manager all accidents whatsoever arising out of, or in connection with, work on the Project or adjacent to the sites, giving full details and statements of witnesses.

**5.8.7** If any claim is made by anyone against the Contractor or any Subcontractor because of any accident, the Contractor shall promptly report the facts in writing to the Project Manager, giving full details of the claim.

**5.9 Equal Opportunity Clause.** The provisions of Executive Order 11246 of September 24, 1965, and the Rules and Regulations issued therein are hereby incorporated by reference, and the Contractor agrees, by acceptance of the Contract, to comply with such Executive Order, rules, regulations and amendments thereto, to the extent the same are applicable to the contracting and/or subcontracting of services or work hereunder.

**5.10 Warning Signs and Barricades.** The Contractor shall provide adequate signs, barricades and lights and take all necessary precautions for the protection of the work under the Project and the safety of the public. All barricades and obstructions shall be protected at night by signal lights which shall be kept burning from sunset to sunrise. Barricades shall be of substantial construction and shall be painted white or whitewashed to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades or detours exist.

**5.11 Flaggers.** In addition to furnishing and maintaining adequate signs, barricades and lights, the Contractor is required to furnish any and all flaggers that are required to control traffic. The City is hereby specifically exempted from furnishing any flaggers for the Project. If flaggers are required on any jobsite, they shall be supplied by the Contractor at no additional cost to the City.

**5.12 Public Safety and Convenience.** The Contractor shall at all times conduct work on the Project so as to insure the least possible obstruction to traffic and inconvenience to the general public and residents in the vicinity of the Project, and to insure the protection of persons and property in a manner satisfactory to the Project Manager. No road or street shall be closed to the public except with the permission of the Project Manager and proper governmental authority. Temporary provisions shall be made by the Contractor to insure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches and irrigation ditches, which shall not be obstructed except as approved by the Project Manager.

**5.13 Protection of Work and City's Property.** The Contractor shall at all times safely guard the City's property and equipment from injury or loss in connection with Contractor's work under the Contract. The Contractor shall at all times safely guard and protect the Project and adjacent property (as provided by law and the Contract Documents) from damage. Contractor shall be responsible for any damage to the City's property and equipment which is a result of the Contractor's negligence.

**5.14 Sanitary Provisions.** The Contractor shall provide and maintain such sanitary accommodations for the use of its employees and those of its subcontractors as may be necessary to comply with the requirements and regulations of the local and state departments of health and as directed by the Project Manager.

**5.15 Payment of Prevailing Wages on Public Works in Oregon.**

**5.15.1** The Contractor and all Subcontractors on the Project shall pay not less than the "prevailing rate of wage" as that term is defined in ORS 279C.800 to 279C.870, and if applicable, the Federal Prevailing Wage required under the Davis-Bacon Act (40 U.S.C. 3141 - 3148), whichever is higher. The determination and application of such prevailing rate of wage is provided for in ORS 279C.800 through 279C.870, and if applicable, the Davis-Bacon Act (40 U.S.C. 3141 - 3148).

**5.15.2** If the Bureau of Labor has made no determination of the prevailing rate of wage, it shall be the obligation of the Contractor to determine the same by making application to the Bureau of Labor or otherwise.

**5.15.3** The Contractor or the Contractor's surety and every Subcontractor or the Subcontractor's surety shall file certified statements with the City in writing using the form prescribed by the Commissioner of the Bureau of Labor and Industries certifying the hourly rate of wage paid each worker whom the Contractor or the Subcontractor has employed in the work under this Contract and further certifying that no worker employed upon such public work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in this Contract. The certified statement shall be verified by the oath of the Contractor or the Contractor's surety or Subcontractor or the Subcontractor's surety that the Contractor or Subcontractor has read the certified statement and knows the contents thereof and that the same is true to the Contractor's or Subcontractor's knowledge. The certified statements shall set out accurately and completely the payroll records for the prior week including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid.

**5.15.4** Each certified statement shall be delivered or mailed by the Contractor or Subcontractor to the City. A true copy of the certified statement shall also be filed at the same time with the Commissioner of the Bureau of Labor and Industries. Certified statements for each week during which the Contractor or Subcontractor employs a worker upon the public work shall be submitted once a month, by the fifth business day of the following month. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 to 279C.870 or the Davis-Bacon Act (40 U.S.C. 3141 - 3148), whichever applies.

**5.15.5** As provided by ORS 279C.810, the contract amount threshold for application of the state prevailing wage rate law is $50,000.00.

**5.16 Subcontractor and Supplier Agreements.** The Contractor shall include in its subcontracts for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing the Contract:

**5.16.1** A payment clause that obligates the Contractor to pay the first-tier subcontractor for satisfactory performance under its subcontract within ten (10) calendar days of payment by the City out of such amounts as are paid to the Contractor by the City under the Contract; and

**5.16.2** An interest penalty clause that obligates the Contractor, if payment is not made within thirty (30) calendar days after receipt of payment from the City, to pay to the first-tier subcontractor, an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract pursuant to this requirement. The Contractor or first-tier subcontractor shall not be obligated to pay an interest penalty if the only reason that the Contractor or first-tier subcontractor did not make payment when

payment was due, is that the Contractor or first-tier subcontractor did not receive payment from the City or Contractor when payment was due. The interest penalty shall be:

**5.16.2.1** For the period beginning on the day after the required payment date and ending on the date on which payment of the amount is made; and

**5.16.2.2** Computed at the rate specified in ORS 279C.515(2).

**5.16.3** The Contractor shall include in each of its subcontracts, for the purpose of performance of the Contract condition, a provision requiring the first-tier subcontractor to include a payment clause and an interest penalty clause conforming to the standards set forth in this section and requiring each of its subcontractors to include such clauses in their subcontracts with lower-tier subcontractors or suppliers.

**5.16.4** None of the provisions of this section are intended to prevent the Contractor or any subcontractor from including in its contracts, the provision described in ORS 279C.580 (5) and (6).

**5.17 Application for and Processing of Subcontractor and Supplier Payments.** The Contractor shall provide each first-tier Subcontractor, including a material supplier, with a standard form that the first-tier Subcontractor may use as an application for payment or as another method by which the Subcontractor may claim a payment due from the Contractor. The Contractor, except as otherwise provided in this Subsection, shall use the same form and regular administrative procedures for processing payments during the entire term of the subcontract. The Contractor may change the form or the regular administrative procedures the Contractor uses for processing payment if the Contractor:

**5.17.1** Notifies the Subcontractor in writing at least forty-five (45) calendar days before the date on which the Contractor makes the change; and

**5.17.2** Includes with the written notice a copy of the new or changed form or a description of the new or changed procedure.

## 6. PROGRESS AND COMPLETION OF PROJECT

**6.1 Contract Time and Commencement of Construction.** The Contractor shall be capable of commencing construction on the Project covered under the Contract within ten (10) calendar days after signing of the Construction Contract. The Contract shall be in effect from the time it is signed until the Project is complete and accepted by the City. During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work that will not be damaged thereby. Contractor shall not construct any portion of the work during the time unfavorable conditions exist that are likely to adversely affect the quality or efficiency of the work. It is expressly understood and agreed by and between the Contractor and the City that the Contract time specified for completion of the work described herein is a reasonable

time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

**6.2 Preconstruction Conference.** A preconstruction conference will be scheduled by the City prior to commencement of construction. The Contractor will be notified of the time and place of this conference and shall be required to attend. Ten (10) calendar days prior to the preconstruction conference, the Contractor shall provide to the Project Manager four (4) copies of a project work schedule for review and approval. The Contractor has an affirmative duty to update the construction schedule each time changes occur.

**6.3 Prosecution of the Project.**

**6.3.1** It is expressly understood and agreed that the time of beginning, rate of progress and time of completion of the Project are of the essence of the Contract. The Contractor shall perform the construction of said Project with due diligence and at such a rate and in such a manner as, in the opinion of the Project Manager, is necessary for completion within the time set forth in Paragraph 4 of the Contract.

**6.3.2** After commencement of construction on the Project by the Contractor, if the Contractor is delayed by reason of the failure of the City to provide sufficient materials for construction thereof or to provide continuous open right-of-way, then the completion date of said Project shall be extended to the extent that the Contractor is delayed in carrying on said Project by reason of such failure on the part of the City.

**6.3.3** The Contractor shall arrange its work and dispose of materials so as to insure the least possible interference and inconvenience to the landowners on or beside whose property the construction is taking place, or to the public where the construction lies in or near a public thoroughfare. Contractor shall employ only such number of construction crews as are reasonably necessary to construct said Project within the allotted time. The City may require the employment of an additional crew or crews, if in its judgment it is necessary in order to complete said Project with the time required.

**6.3.4** If the Contractor desires to carry on work at night or outside the regular hours, timely notice shall be given to the Project Manager to allow satisfactory arrangements to be made for inspecting the Project in progress.

**6.4 Provisions for Delays:**

**6.4.1 Notice of Delays.** Whenever the Contractor foresees any delay in the prosecution of the work, and in any event, immediately upon the occurrence of any delay which the Contractor regards as unavoidable, Contractor shall notify the Project Manager in writing on the probability of the occurrence of such delays, the probable duration and cause. The Contractor shall take immediate steps to prevent the occurrence or continuance of the delay. If this cannot be done, the Project Manager shall determine how long the delay will probably continue and

to what extent the prosecution and completion of the work are being delayed thereby. The Project Manager shall also determine whether the delay is to be considered avoidable or unavoidable and shall notify the Contractor of his/her determination. The Contractor shall not make a claim for delays that are not called to the attention of the Project Manager at the time of their occurrence.

**6.4.2 Avoidable Delays Defined.** Avoidable delays in the prosecution or completion of the work include, but are not limited to:

**6.4.2.1** All delays that could have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or its Subcontractor;

**6.4.2.2** Delays that do not necessarily prevent or delay the prosecution of other parts of the work or the completion of the whole work within the time specified;

**6.4.2.3** Reasonable delays resulting from time required by the City and Project Manager for approval of plans submitted by the Contractor and for the making of surveys, measurements, testing and inspections; and

**6.4.2.4** Delays arising from interruptions occurring in the prosecution of the work on account of the reasonable interference from other contractors employed by the City which do not necessarily prevent the completion of the whole work within the time specified.

**6.4.3 Unavoidable Delays Defined.** Unavoidable delays in the prosecution or completion of the work include, but are not limited to, all delays (other than avoidable delays as defined above) that result from causes beyond the control of the Contractor and that could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or its Subcontractors. Delays caused by other contractors employed by the City will be considered unavoidable delays only insofar as they interfere with the Contractor's completion of the work. Delays due to normal weather condition are not regarded as unavoidable delays insofar as they interfere with the Contractor's completion of the work. If the Project Manager determines the Contractor has experienced an unavoidable delay, and further that such delay has affected the controlling operations of the work, the City shall grant to the Contractor an extension of time for Contract performance, not to exceed the number of calendar days of unavoidable delay experienced by the Contractor. The Contractor has no remedy for unavoidable delay except as provided by this paragraph. Delays due to normal weather conditions are not regarded as unavoidable as the Contractor agrees to plan its work with prudent allowances for interference by normal weather conditions. Delays caused by acts of God, fire, unusual storms, flood, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes and freight embargoes are considered unavoidable delays insofar as they interfere with the Contractor's completion of the work. Delays caused by shortages of

materials are considered unavoidable providing the Contractor can prove to the City that the Contractor has made reasonable and timely attempts to secure the material(s).

A rainstorm, windstorm, high water or other natural phenomenon for the specific locality of the work, which might reasonably have been anticipated from historical records of the general locality of the work, do not constitute unusually severe weather. For the purposes of this Contract, rainfall data is assumed to be the same as that measured at the Roseburg Regional Airport by the Environmental Data Service of the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

### 6.4.4 Time Extension for Delays.

**6.4.4.1 Extensions for Avoidable Delays.** In case the work is not completed in the time specified, including extensions of time as may have been granted for unavoidable delays, the Contractor will be assessed damages for those costs incurred by the City that are attributable to the fact the work was not completed on schedule. The City may grant an extension of time for avoidable delay if the City deems it in its best interest. The Contractor shall compensate the City, in exchange for granting an extension of time for avoidable delay, for the actual costs to the City of Project management, inspection, general supervision and overhead expenses which are directly chargeable to the work and that accrue during the period of such extension. The actual costs do not include charges for final inspection and preparation of the final estimate by the City.

**6.4.4.2 Extensions for Unavoidable Delays.** For delays the Contractor considers unavoidable, the Contractor shall submit to the Project Manager, complete information demonstrating the effect of the delay on the controlling operation in its construction schedule. The submission must be made within ten (10) calendar days of the beginning of the occurrence which is claimed to be responsible for the unavoidable delay. The Project Manager shall review the Contractor's submittal and determine the number of calendar days of unavoidable delay, if any, and the effect of such delay on the controlling operations of the work. If the Project Manager determines the Contractor has experienced an unavoidable delay, and further that such delay has affected the controlling operations of the work, the City shall grant to the Contractor an extension of time for Contract performance, not to exceed the number of calendar days of unavoidable delay experienced by the Contractor. The Contractor has no remedy for the unavoidable delay except as provided in this Section. During such extension of time,

neither charges for the inspection nor administration nor damages for delay will be assessed against the Contractor. It is understood and agreed by the Contractor and the City that time extensions due to unavoidable delays involve controlling operations that would prevent completion of the whole work within the specified time.

If the Contractor disagrees with the Project Manager's determination, the Contractor may appeal such determination to the City Manager in accordance with Paragraph 3.4.2.

**6.5 Changes in the Project.** The City may, as the need arises, order changes in the Project through additions, deletions or modifications without invalidating the Contract. Compensation and time of completion affected by the change shall be adjusted at the time of ordering such change.

**6.6 Extra Work.** New and unforeseen items of work found to be necessary but which cannot be covered by any item or combination of items for which there is an established Contract price, shall be classified as extra work. Upon written order from the City and approval from the Project Manager, the Contractor shall do such extra work as may be required for the proper completion or construction of the whole Project contemplated. In the absence of such written order, no claim for extra work shall be considered. Extra work shall be performed in accordance with these Specifications where applicable and work not covered by the Specifications or special provisions shall be done in accordance with the best practice as approved by the Project Manager. Extra work required in an emergency to protect life and property shall be performed by the Contractor as required. Contractor shall notify the Project Manager of the emergency as soon as possible, but shall begin work prior to providing notice if immediate work is necessary to protect life or property.

**6.7 Unforeseen Difficulties.** A delay beyond the Contractor's control occasioned by an act of God, or by strikes, lockouts, fire, etc., may entitle the Contractor to an extension of time to complete the Project as determined by the Project Manager, provided however, that the Contractor shall immediately give written notice to the Project Manager of the cause of such delay. In no event shall the Contractor be entitled under the Contract to collect or recover any damages, loss or expense incurred by any delay other than as caused by the City as stipulated hereinabove in Subsection 6.3 "Prosecution of the Project".

**6.8 Use of Completed Portions.** The City shall have the right to take possession of and use any completed or partially completed portions of the Project. Such use shall not be considered as final acceptance of any portion of the Project, nor shall such use be considered as cause for an extension of Contract completion time unless authorized by a change order issued by the City.

**6.9 Liquidated Damages.** If the Contractor fails to complete the work, or any part thereof, in the time agreed upon in the Contract or within such extra time as may have been allowed for delays by extensions granted as provided in the Contract, the Contractor

shall reimburse the City for the additional expense and damage for each calendar day that the Contract remains uncompleted after the Contract completion date. It is agreed that the amount of such additional expense and damage incurred by reason of failure to complete the Contract is the per diem rate as stipulated in the Bid. The amounts are hereby agreed upon as liquidated damages for the loss to the City.

It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty but as damages for delay which have accrued against the Contractor. The exact amount of damage that would be sustained by the City due to delay is difficult, if not impossible, to accurately ascertain, but the parties believe the specified amount of liquidated damages to be a reasonable forecast of the damage for delay that the City would likely sustain. Such liquidated damages are in addition to any other ascertainable damage, other than for delays that the City sustains for Contractor's breach of the Contract. The City may deduct such damages from any amount due, or that may become due the Contractor or the amount of such damages becomes due and may be collected from the Contractor of is Surety.

**6.10 Substantial Completion.** Substantial Completion shall have the meaning set forth in Subsection 1.1 "Definitions" of these General Conditions.

Upon consideration by the Contractor that a determination of Substantial Completion of the Project, or a designated portion thereof, is completed, the Contractor shall so notify the Project Manager in writing. This notice shall include the Contractor's list of any minor incomplete contract work items to finish the Project. Upon receipt of the written notification, the Project Manager will promptly, by personal inspection, determine the actual status of the work in accordance with the terms of the Contract. If the Project Manager finds that the terms of Substantial Completion of the Contract have not yet been met, the Project Manager will so inform the Contractor. If, instead, the Project Manager determines from the inspection that the work, or the designated portion thereof, has met the terms of Substantial Completion, the Project Manager will issue to the Contractor a "Written Notice of Substantial Completion" along with a Punch List of any deficient work items needing repair or correction. The Contractor agrees to complete all such corrective work within thirty (30) calendar days after submission of the Punch List to the Contractor by the Project Manager. If the Contractor fails to complete the corrective work within the thirty (30) calendar days, the Contractor is liable to the City in the amount stated in the liquidated damages section of the Contract for each day thereafter until all corrective work is completed. The City shall be entitled to deduct liquidated damages from final payment.

**6.11 Final Completion.** The Contractor shall notify the Project Manager in writing requesting a designation of Final Completion at the completion of the punch list items related to the Substantial Completion designation, and at the completion of any other items necessary to the completion of the Project. The Project Manager will inspect these remaining items, and upon satisfactory completion, will issue a written "Notice of Final Completion" which shall be subject to the City's Final Acceptance. In the event some items are not ready for the City's Final Acceptance the City may, without waiving any of the City's right to the portion(s) of the Project not yet receiving Final Acceptance, nonetheless provide Final Acceptance for those portion(s) of the items of the Project the City deems

appropriate. As stated in Subsection 4.13, the terms of the guarantee commence on the date of the City's Written Notice of Final Acceptance for that portion of the work.

## 7. MEASUREMENT AND PAYMENT

### 7.1 General.

**7.1.1** All work acceptably completed under the Contract shall be measured by the Project Manager according to United States Standard Measures, and the quantities of work performed or materials furnished shall be computed on the basis of such measurements.

**7.1.2** The Contractor shall accept the compensation as herein provided in full payment for furnishing all materials not provided by the City and all labor, tools and equipment; for performing all work under the Contract; for all loss or damage arising from the nature of the Project other than unforeseeable environmental conditions as described in ORS 279C.525, the action of the elements or any unforeseen difficulties which may be encountered during the prosecution of the Project, until its final acceptance by the City.

**7.2 Payments.** The City shall make monthly progress payments within thirty (30) calendar days from the date of the pay request for work which has been completed and accepted by the City per ORS 279C.570.

**7.3 Final Payment.** The City shall retain five percent (5%) of all payments until the entire Project has been given Final Acceptance by the City. The entire Project must be accepted by the City prior to releasing retainage. Upon the City's acceptance of the entire Project, the retainage will be released and the Contractor shall be responsible for the workmanship and materials for one year thereafter as provided in Subsection 4.13.

If the contract price exceeds $500,000, the City will place amounts deducted as retainage into an interest-bearing escrow account. Interest on the retainage amount accrues from the date the payment request is approved until the date the retainage is paid to the Contractor.

**7.4 City's Right to Withhold Payment.** The City may withhold payment in whole or in part on an approved invoice to the extent necessary to protect City from loss due to any of the following causes discovered subsequent to approval of the invoice by the Project Manager or the Project Manager's representative:

**7.4.1** Defective work;

**7.4.2** Evidence indicating the probable filing of claims by other parties against the Contractor;

**7.4.3** Failure of the Contractor to make payments to Subcontractors, material suppliers or workers; or

**7.4.4** Damage to another contractor.

**7.5 Payment for Uncorrected Work.** Should the Project Manager direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Documents, the City may make an equitable deduction from the amount due to the Contractor on the Project in order to compensate the City for the uncorrected work.

**7.6 Payment for Extra Work.** In any case where the Contractor deems additional compensation is due Contractor for work or materials not clearly covered in the Contract Documents or not ordered by the Project Manager according to provisions of the Contract Documents, the Contractor shall notify the Project Manager, in writing, of his intention to make a claim in order that such matters may be settled, if possible, or other appropriate action promptly taken. If such notification is not given, or the Project Manager is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor hereby waives the claim for such extra compensation. Such notice by the Contractor, and the fact that the Project Manager has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. Claims for additional compensation shall be made in itemized detail and submitted, in writing, to the City and Project Manager within ten (10) calendar days following completion of that portion of the Project for which the Contractor makes his claim. In case the claim is found to be just, it shall be allowed and paid under a supplemental agreement to be entered into between the parties to the Contract.

**7.7 Release of Liens.**

**7.7.1** Before the City pays the Contractor for the work included under the Contract, the Contractor shall sign and deliver to the City a release of liens or claims sworn to under oath and duly notarized. The release shall state that the Contractor has satisfied all claims and indebtedness of every nature in any way connected with the Project, including but not limiting the generality of the foregoing, all payrolls, amounts due to subcontractors, accounts for labor performed and materials furnished, incidental services, liens and judgments.

**7.7.2** If any lien or claim remains unsatisfied after payment to the Contractor is made, the Contractor shall refund to the City all monies that the City may be compelled to pay in discharging such a lien or claim, including all costs and reasonable attorneys' fees.

**7.8 Acceptance of Payment Constitutes Release.** The acceptance by the Contractor of a payment for the invoice shall release the City from all claims and liability to the Contractor for all things done or furnished in connection with the work specified on said invoice, and every act of the City and others relating to or arising out of the Project. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from obligations under the Contract, the Performance Bond or the Payment Bond as herein provided.

**7.9 Correction of Defective Work.** The Project Manager's approval of the invoice for work completed and the City's payment to the Contractor on such invoice, shall not relieve the Contractor of the responsibility for faulty materials or workmanship on said work

during the one-year guarantee period as stipulated in Subsection 4.13. The one-year guarantee period for each portion of the Project begins when each portion of the Project receives written notice of Final Acceptance from the City. The City shall promptly give notice of faulty materials or workmanship which are discovered within the one-year guarantee period and the Contractor shall promptly replace any such defects. If the Contractor fails to make the repairs and replacements promptly, the City may do the work, and the Contractor and Contractor's Surety shall be liable for the cost thereof.

## 8. ENVIRONMENTAL MATTERS

**8.1 Contractor Compliance.** Contractor shall comply with, and require its Subcontractors to comply with, all applicable federal, state and local statues, ordinances, orders, rules and regulations relating to the protection of human health and environment, including but not limited to, the use, storage, release, spill, disposal or other handling of petroleum products and other hazardous substances.

**8.2. Unanticipated Regulatory Compliance and Site Conditions.**

**8.2.1** If Contractor is delayed or additional work is required due to the enactment of new or an amendment to existing statutes, ordinances or regulations relating to the prevention of environmental pollution and the preservation of natural resources occurring after submission of the successful bid, City may, at its sole discretion:

**8.2.1.1** terminate the Contract;

**8.2.1.2** complete the Project itself;

**8.2.1.3** use non-City forces already under contract with the City;

**8.2.1.4** require that the underlying property owner be responsible for the additional work;

**8.2.1.5** call for bids for a new contractor to provide the necessary services; or

**8.2.1.6** issue Contractor a change order setting forth the additional work that must be undertaken.

**8.2.2** If Contractor encounters a condition not referred to in the Contract Documents, not caused by Contractor and not discoverable by a reasonable pre-bid visual site inspection, and such condition requires compliance with the regulations referred to in Paragraph 8.2.1 above, Contractor shall immediately provide City notice of the condition. Except as required by any environmental or natural resource regulation, or, in case of an emergency, Contractor shall not commence work or incur any additional job site costs with regard to the condition encountered without written direction from the City. Upon request, Contractor shall estimate emergency or regulatory compliance costs as well as the

anticipated delay and costs resulting from the encountered condition, and promptly deliver such estimate to City for resolution.

**8.2.3** In the event of an occurrence of an unanticipated site condition as described in Paragraph 8.2.2 above, City, within a reasonable period of time, may do any of the following at its sole discretion:

**8.2.3.1** terminate the Contract;

**8.2.3.2** complete the Project itself;

**8.2.3.3** use non-City forces already under contract with the City;

**8.2.3.4** require that the underlying property owner be responsible for the additional work;

**8.2.3.5** call for bids for a new contractor to provide the necessary services; or

**8.2.3.6** issue Contractor a change order setting for the additional work that must be undertaken.

**8.2.4** In the event City terminates the Contract under Subparagraph 8.2.1.1 or 8.2.3.1, Contractor shall be entitled to all costs and expenses incurred to the date of the termination, including overhead and reasonable profits, on the percentage of the Project completed. Contractor shall not be entitled to profits or consequential damages on the uncompleted portion of the Contract. If the City chooses to issue a change order or terminate the Contract for either of the reasons set forth in Paragraph 8.2.1 or 8.2.3, Contractor agrees to provide the City access to Contractor's documentation used to prepare Contractor's bid in order to assist City in making the City's determination of the additional compensation to be paid.

## 9. CHANGE ORDERS.

**9.1 Authorized Changes in the Work.** Changes to the drawings, specifications, quantities or details of the Project are inherent in the nature of construction and may be necessary or desirable during the course of Project construction. Without impairing or invalidating the Contract, the City may at any time, without notice to any surety, by written order designed or indicated to be a Change Order or a Proposal Request, make any change in the work within the general scope of the Contract, including, but not limited to changes:

**9.1.1** In the Plans and Specifications (including drawings and designs);

**9.1.2** In the time, method, or manner of performance of the work;

**9.1.3** In the City-furnished facilities, equipment, materials, services or site; or

**9.1.4** Directing acceleration in the performance of the work.

**9.2 Unauthorized Changes in the Work.** The Contractor shall not be entitled to an increase in the Contract price or an extension of the Contract times with respect to any work performed that is not required by the Contract Documents as amended, modified or supplemented except in the case of an emergency. In the event of an emergency, the Contractor has seven (7) calendar days to notify the Project Manager of the nature and extent of the emergency. If notification is not provided within seven (7) calendar days, no time adjustment or cost compensation will be allowed.

**9.3 Execution of Change Orders.** The City and the Contractor shall execute appropriate Change Orders and Proposal Requests and upon receipt of an approved Change Order or Proposal Request, the Contractor shall perform the work as modified. If the Change Order increases the Contract amount, the Contractor shall notify Contractor's Surety of the increase and shall provide the City with a copy of any resulting modification to the Bond documents. Change Order and Proposal Requests shall clearly state all costs and schedule adjustments.

**9.4 No Oral Change Orders**. No oral order, statement or conduct of the City constitutes a Change Order or entitles the Contractor to an equitable adjustment.

**9.5 Change of Contract Price.**

**9.5.1** The Contract price may only be changed by a Change Order.

**9.5.2** The value of any work covered by a Change Order or of any claim for an adjustment in the Contract price will be determined as follows:

**9.5.2.1** Where the work involved is covered by the unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved; or

**9.5.2.2** Where the work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum; or

**9.5.2.3** Where the work involved is not covered by the unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Subparagraph 9.5.2.2, time and materials basis plus the Contractor's fee for overhead and profit as defined in Paragraph 9.5.3.

**9.5.3 Percentage Allowances.** For work negotiated and completed on a time and materials basis the Contractor's maximum allowable percentage markup of such costs shall be as follows:

| | |
|---|---|
| Materials | 15% |
| Equipment | 15% |
| Labor | 20% |

Special Services 15%

**9.5.3.1** When a subcontractor performs work under a time and materials Change Order, the Contractor will be allowed a supplemental markup of 5% on the subcontractor's charges.

**9.6 Lump Sum Change Orders.** Whenever practicable, changes in Contract price resulting from extra work will be determined by a mutually agreed-upon lump sum price. The Contractor's proposal for such changes must include a detailed breakdown of all labor and materials to be performed by its forces and by the forces of its Subcontractors and material suppliers.

Costs for labor, material, rentals, approved services, and for overhead and profit for the Contractor, Subcontractor and material suppliers must be calculated as specified under the Subsection 9.7.

When the City desires a price quotation from the Contractor for a proposed change to the Contract, the Project Manager will issue a Proposal Request describing the proposed changes. The Contractor shall respond with a price quote within ten (10) calendar days of the issuance of the Proposal Request.

Contractor's quotations for Change Orders and Proposal Requests must be in writing and firm for a period of thirty (30) calendar days. Any compensation paid in conjunction with the terms of a Change Order compromises the total compensation due the Contractor for the modification defined in the Change Order. By signing the Change Order or Proposal Request, the Contractor acknowledges that the stipulated compensation includes payment for the modification plus all payment for the interruption of schedules, extended overhead, delay or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional compensation or claim for Contract time extension in respect to the subject Change Order or Proposal Request.

The City's request for quotations on modifications to the work is not considered authorization to proceed with the work prior to the approval of a formal Proposal Request or Change Order, and such request does not justify any delay in existing work.

**9.7 Time and Material Change Orders.** Whenever the Contractor is directed by written notice from the Project Manager as the City's representative, to perform extra work on a time and material basis, the Contractor shall furnish labor, equipment and materials necessary to complete the work in a satisfactory manner and within a reasonable period of time. For the work performed, payment will be made for the documented actual necessary expense of the following:

**9.7.1** Field and office labor, including estimating and procurement personnel and foremen, who are directly assigned to the time and materials work (actual payroll cost, including wages, fringe benefits as established by law). The cost of labor includes any employer payment to or on behalf of the worker for health and welfare, pension, vacation and similar purposes. Where subsistence and travel allowances are required for performance of extra work, the charges consist of the

actual amount paid to each worker. No other fixed labor burdens will be considered unless approved in writing by the City.

**9.7.2** Material delivered and used on the designated work, including sales tax, if paid by the Contractor or its Subcontractor.

**9.7.3** Rental or equivalent rental cost of equipment, including necessary transportation, for items having a value in excess of $100. When equipment is not rented, the equivalent rental cost of equipment is based on the standard rental rates for Contractor-owned equipment, but in no event exceeds the rental rates set forth in the most current edition of the "Equipment Watch Rental Rate Blue Book", published by Penton Media. For equipment not listed in the Blue Book, the rental rate is as listed by the local section of the Associated General Contractors. If the equipment is not listed by the Associated General Contractors, the rental rate will be mutually agreed upon in writing between the Contractor and City prior to the use of the unlisted equipment. The reasonable cost of moving equipment onto and off the job site may be included, but equipment rental will not be paid when the equipment is inoperative due to breakdowns. Individual pieces of equipment or small tools having a replacement value of $100 or less are considered as included in the overhead allowances and no additional payment therefore will be made.

When equipment is used on the extra work for less than five (5) business days, hourly rates will be used. Less than thirty (30) minutes of operation are considered ½ hour of operation. When equipment is used on the extra work for more than five (5) business days, weekly rates apply. In this case, less than four (4) hours of operation is considered to be ½ calendar day of operation.

Rental or equivalent rental cost will be allowed for only those days or hours during which the equipment is in actual use. Rental and transportation allowances must not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment are understood to cover all fuel, supplies, repairs, and renewals.

The City reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor has no claim for profit or added fees on the cost of such materials and equipment.

**9.7.4** The added fixed fees defined in Paragraph 9.5.3 constitute full compensation for the cost of general supervision, overhead, profit and any other general expense.

**9.7.5** If a dispute occurs over payment for work provided on a time and material basis, the dispute is not cause for stopping work.

**9.7.6** The Contractor shall maintain accurate and detailed records for all work performed on a time and materials basis. These records must reflect all the actual necessary expenses pertaining to the extra work and must at all times be available for audit by the City.

**9.7.7** The Contractor shall make clear distinction in its records between the direct costs of work paid for on a time and materials basis and the costs of other work. The Contractor shall furnish the Project Manager report sheets in duplicate of each day's work that itemize the labor, materials and equipment used, and shall make the report sheets available for the City's review. The daily report sheet must provide names or identifications and classifications of workers, the hours worked, the sizes, types and identification numbers of equipment, and hours operated. Daily report sheets must be signed by the Contractor or its authorized agent and verified by the Project Manager.

**9.7.8** To receive partial payments and final payment for time and materials work, the Contractor shall submit to the Project Manager, in a manner approved by the Project Manager, detailed and complete documented verification of the Contractor's and any of its Subcontractor's actual cost incurred. Material and rental charges must be substantiated by copies of vendors' invoices. Such costs must be submitted within thirty (30) calendar days after said work has been satisfactorily competed.

# SPECIAL PROVISIONS

PROJECT NO. 20WA05
WASHINGTON AVE BORE CROSSING

CITY OF ROSEBURG
PUBLIC WORKS DEPARTMENT
DOUGLAS COUNTY, OREGON

## SPECIAL PROVISIONS

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**SUPPLEMENTARY INFORMATION**

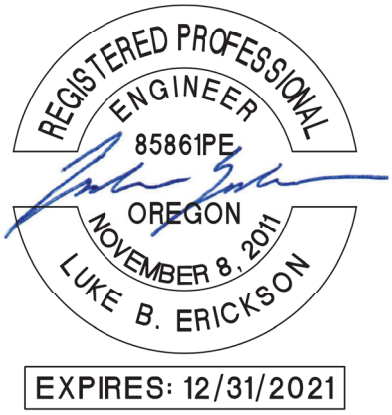
A. Geotechnical Exploration & Evaluation, Washington Ave Bore Crossing by McMillen Jacobs, dated March 26, 2021
B. Asbestos Cement Pipe Forms

SPECIAL PROVISIONS

FOR

PROJECT NO. 20WA05
WASHINGTON AVE BORE CROSSING

## PROFESSIONAL OF RECORD CERTIFICATION:

| Seal w/signature | I certify the Special Provision Sections listed below are applicable to the design for the subject project for a new trenchless waterline crossing. Modified Special Provisions were prepared by me or under my supervision. |
|---|---|
|  <br>EXPIRES: 12/31/2021 | Sections 01 10 00<br>01 12 16<br>01 22 20<br>01 33 00<br>01 45 00<br>02 30 00<br>33 05 23.13 |
| Date Signed: 4/30/2021 | |

SPECIAL PROVISIONS

FOR

PROJECT NO. 20WA05
WASHINGTON AVE BORE CROSSING

## PROFESSIONAL OF RECORD CERTIFICATION:

| Seal w/signature | I certify the Special Provision Sections listed below are applicable to the design for the subject project for a new trenchless waterline crossing. Modified Special Provisions were prepared by me or under my supervision. |
|---|---|
|  <br>EXPIRES: 12/31/2022 | Sections 31 10 00<br>31 23 17<br>31 23 19<br>31 23 24 |
| Date Signed: 04/30/2021 | |

SPECIAL PROVISIONS

FOR

PROJECT NO. 20WA05
WASHINGTON AVE BORE CROSSING

## PROFESSIONAL OF RECORD CERTIFICATION:

| Seal w/signature | I certify the Special Provision Sections listed below are applicable to the design for the subject project for a new trenchless waterline crossing. Modified Special Provisions were prepared by me or under my supervision. |
|---|---|
|  <br>RENEWS 12/31/22 | Sections 32 11 23<br>32 12 16<br>33 05 13<br>33 05 17<br>33 11 10<br>33 11 50<br>33 12 16<br>33 13 00<br>40 05 23.15<br>40 05 23.72 |
| Date Signed: 4/27/21 | |

# SECTION 01 10 00

# SUMMARY OF WORK

## PART 1 GENERAL

### 1.1 SUMMARY

A. The work to be done under this Contract consists of installing a new trenchless waterline crossing under the South Umpqua River near the Washington Ave bridge in downtown Roseburg, Oregon, Project No. 20WA05.

1. Construct, maintain and remove temporary traffic control devices and project information related signage.

2. Construct, maintain and remove erosion, sediment, and pollution control measures.

3. Furnish and install 14-inch diameter DR 11 HDPE waterline using horizontal direction drilling methods.

4. Furnish and install restrained 12-inch diameter Ductile Iron pipe at locations as shown.

5. Furnish and install fittings, valves, gauges, sampling stations, concrete anchor walls, vault, and other appurtenances as shown.

6. Make connections to the existing waterline as shown.

7. Perform testing, flushing and disinfection of the new waterline.

8. Remove and abandon the old existing waterline as shown.

9. Perform incidental work as required to complete the Project as shown.

10. Restore all areas impacted by the Project to pre-construction conditions or as shown.

B. The above general outline of the principal features of work does not in any way limit the Contractor's responsibility to perform all work and furnish all labor, equipment, and materials required by the Contract Documents.

### 1.2 APPLICABLE STANDARD SPECIFICATIONS AND PLANS

A. Requirements of the City of Roseburg Public Works Department.

B. 2018 Oregon Standard Specifications for Construction, Oregon Department of Transportation, herein referred to as “Standard Specifications”.

C. Most current edition of the Oregon Standard Drawings and Details, Oregon Department of Transportation, herein referred to as “Standard Plans”.

1.3 PRECEDENCE

A. In the event of a conflict or contradiction in terms between the Bid Documents and the Contract, the Contract, including any subsequent Addenda or Change Orders, shall govern.

B. In the event of a conflict or inconsistency between the Contract Documents, the following order or precedence shall apply:

1. Special Provisions

2. Issued for Construction Drawings

3. General Conditions

4. Standard Specifications and Standard Plans

1.4 TRAFFIC CONTROL

A. The Contractor shall install traffic control as shown in the Contract Drawings and in accordance with the Oregon Temporary Traffic Control Handbook (OTTCH).

B. If the Contractor proposes any changes to the Traffic Control Plans provided in the Contract Drawings, then the Contractor shall prepare and submit its own detailed traffic control plans for City and ODOT approval. The Contractor’s traffic control plans shall comply with City requirements, the “Manual on Uniform Traffic Control Devices for Streets and Highways” (MUTCD), the ODOT Traffic Control Plans Design Manual, and the OTTCH.

C. Construction may not start until traffic control is properly installed.

D. The Contractor shall maintain traffic control and protection in all its work areas 24 hours per day.

1.5 EROSION, SEDIMENT AND POLLUTION CONTROL

A. The City anticipates the construction of this Project will disturb less than one acre of land. As such, a DEQ 1200 C permit will not be required.

B. The Contractor shall install, inspect, and maintain the erosion and sediment control measures as shown in the Contract Drawings.

C. If the Contractor proposes any changes to the Erosion and Sediment Control Plans (ESCP) provided in the Contract Drawings, then the Contractor shall prepare and submit its own detailed ESCP for City approval. The Contractor's ESCP shall comply with the Contract requirements, Standard Specification Section 00280, and all applicable regulations.

D. The Contractor shall prepare and submit the following site-specific plans for the Project in accordance with the Contract requirements, Standard Specification Section 00290, and all applicable regulations.

1. Pollution Control Plan (PCP)

2. Spill Prevention Control and Countermeasures Plan (SPCCP)

E. Construction may not start until erosion, sediment and pollution controls are properly installed.

F. The Contractor shall designate and provide an Erosion and Sediment Control Manager (ESCM) who possesses a valid ODOT ESCM certificate or who has successfully completed an erosion control training acceptable to the City.

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

H. Secondary Containment: The Contractor shall install and maintain secondary containment for drilling fluid at the HDD entry pit and HDD exit pit.

1.6 STAGING AREAS

A. Some of the space available to the Contractor for staging and pipe laydown is shown on the Contract Drawings. The Contractor shall submit its plan for temporary staging and pipe laydown to the City for approval before starting work.

B. The Contractor shall not block existing access to the Private Property on the west side of the Project.

C. If the Contractor makes arrangements with Private or Public landowners for temporary use of property outside the Public right-of-way, then the Contractor shall submit the following documentation to the City:

1. Written authorization from the property owner for the proposed activities.

2. Warranty from the Contractor that its activities comply with all environmental, land use, and other applicable Federal, State and local requirements.

3. Written release from the property owner confirming that the property has been restored to the satisfaction of the owner and that all obligations have been met.

D. Before equipment is mobilized to the construction work areas, the Contractor shall clearly delineate Ordinary High Water (OHW) with flagging, orange plastic mesh fencing, or another approved method.

E. For storage of hazardous materials or fuel, or to service heavy equipment, vehicles, and other power equipment with tanks larger than five gallons, the Contractor's temporary staging sites shall be at least 150 feet from any natural water body or wetland, or on an established paved area.

1.7 TEMPORARY TREE PROTECTION

A. The Contractor shall protect all trees in the Project work areas from damage from construction activities.

1.8 TEMPORARY UTILITIES FOR CONSTRUCTION

A. Water: The City will provide water to the Contractor for use on this Project at the locations shown on the Drawings. The City will install a bulk water meter and backflow prevention device on the existing water hydrant on the west side of the river. On the east side, the City will install a hose bibb on the existing water service in Riverside Park (water meter and backflow device are already installed). The Contractor will be responsible for installing, maintaining, and removing all other equipment required to deliver the water to the work areas.

B. Electrical Power: The Contractor shall provide its own temporary electrical power.

C. Discharge: The Contractor shall not discharge construction process water (i.e. from the HDD operation, pressure testing, cleaning, disinfection, etc.) to the river. The Contractor shall be responsible for all efforts and costs associated with proper discharge according to its approved Work Plans submitted under Section 33 05 23.13 and Section 33 13 00.

1.9 SITE SECURITY

A. The Contractor shall install and maintain temporary security fencing around construction work area perimeters.

B. The Contractor shall install additional security measures on/around the HDD entry pit and HDD exit pit during non-work hours – steel plates, or an approved equivalent.

1.10 CONSTRUCTION SURVEY

A. The Contractor shall perform all survey, layout and staking required to complete the work as shown and specified. This includes as-built surveys for the Record Drawings.

B. The Contractor shall provide competent, qualified personnel for all survey activities.

C. The Contractor shall protect and preserve established reference points and make no change or relocations without prior approval from the City. The Contractor shall report to the City whenever any reference point is lost or destroyed; and replace such reference points at its own cost.

1.11 SURFACE RESTORATION

A. The Contractor shall restore all work areas to pre-construction conditions or as shown.

B. The Contractor shall restore any sidewalk, curb, gutter, pavement, pathway, utility, and landscaping removed or damaged during construction.

C. The Contractor shall loosen compacted areas of soil when necessary for revegetation and infiltration.

1.12 RECORD DRAWINGS

A. The Contractor shall maintain at the site one set of specifications and full size drawings, which shall be corrected as the work progresses to show all changes made. Drawings shall be available for inspection by the City and the Engineer.

B. Upon completion of the Contract work and prior to Final Payment, the Contractor shall submit the corrected Record Drawings to the City.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

# SECTION 01 12 16

# WORK SEQUENCE AND SCHEDULE CONSTRAINTS

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes general sequencing, project phasing, and coordination requirements for the new trenchless waterline crossing under the South Umpqua River near the Washington Ave Bridge in downtown Roseburg, Oregon, Project No. 20WA05.

### 1.2 GENERAL CONSTRAINTS ON SEQUENCE AND SCHEDULING OF WORK

A. Coordinate construction schedule and operations with the City and the Engineer.

B. Construct the HDD crossing and complete tie-ins prior to abandoning the old existing waterline crossing.

C. Coordinate proposed work with the City before implementing shutdowns of any water system facilities associated with the Project. Under no circumstances shall work cease at the end of a normal work day if such actions may inadvertently cause a cessation of any facility operating process; in which case, the Contractor shall remain on site until necessary repairs are complete and full water system function is restored.

D. Do not close lines, open valves, or take any other action that would affect the operation of existing systems, except as specifically required by the Contract Documents and after approval of the City.

E. The Contractor shall not operate any of the existing equipment or facilities without written permission from the City naming the specific piece of equipment and dates the Contractor may use the equipment or facilities. The Contractor is liable for any loss or damage caused to property or equipment or facilities or any personal injury resulting from or related to this usage.

### 1.3 SUBMITTALS

A. Submit a Baseline Project Schedule to the City and the Engineer before the Preconstruction Conference as specified in General Conditions Article 6.2.

B. The Baseline Project Schedule shall incorporate the work sequence and schedule constraints described herein and the other details specified in Section 01 33 00, Part 2, Para 2.1.A.

C. Submit an updated Project Schedule each month to show construction progress, dates for authorized shutdowns, and planned Final Completion date.

1.4 SHUTDOWN OF WATER TRANSMISSION MAIN

A. Submit requests to the City for shutdown of the water transmission main at least ten (10) business days prior to the date scheduled for the interruption.

B. Following receipt of the request, the City will notify the Contractor if the requested date will be allowed. Evaluation of the Contractor's request will be based on the availability of the utility owner's personnel to assist and monitor the utilities during the shutdown period and the impact to customer service.

C. Minimize the interruption period by thorough advance planning.

D. Do not begin interruption until written authorization is received from the City.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. For all Work on this Project, adhere to Standard Specification Section 00220.40 for lane closures and holiday work.

B. No work is allowed in the Washington Ave Right-of-Way during the following times:

1. 2021 Roseburg Graffiti Week: July 7 through July 11, 2021.

2. Douglas County Fair: August 3 through August 7, 2021.

3.2 HDD SCHEDULE CONSTRAINTS

A. Allowable work hours: 7:00 am to 7:00 pm, all days.

B. No excavation or fill activities are allowed below the Ordinary High Water (OHW) elevation shown on the Drawings.

3.3 OPEN CUT WATERLINE INSTALLATION SCHEDULE CONSTRAINTS

A. Allowable work hours:

1. For work located within City ROW or easements: 7:00 am to 7:00 pm (days), all days.

2. For work located within ODOT ROW or easements that impacts traffic: 7:00 pm to 6:00 am (nights), all days. Adhere to Standard Specification Section 00220.40 for lane closures and holiday work.

3. For work located within ODOT ROW or easements that does not impact traffic: 7:00 am to 7:00 pm (days), all days.

B. Open cut waterline installation along Washington Avenue (Hwy 138) requires trench patch paving, temporary or permanent, to be installed prior to the end of shift. Temporary plating will not be allowed. Only one lane of traffic along Washington Ave may be closed at a time as indicated in the Traffic Control Plans.

C. Grind and inlay, final pavement surface restoration to be completed between March 15th and September 30th.

3.4 PIPE ABANDONMENT SCHEDULE CONSTRAINTS

A. River crossing piping (HDD and open cut waterline installations) shall be completed, tested, tied-in and placed in service prior to shutting down the existing 12-inch diameter bridge crossing piping for abandonment work.

B. Allowable work hours:

1. For work that impacts traffic: 7:00 pm to 6:00 am (nights), all days. Adhere to Standard Specification Section 00220.40 for lane closures and holiday work.

2. For work that does not impact traffic: 7:00 am to 7:00 pm (days), all days.

END OF SECTION

# SECTION 01 22 20

# UNIT PRICE MEASUREMENT AND PAYMENT

## PART 1 GENERAL

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

1. Mobilization (excludes HDD Mobilization), Bonds, Insurance and Demobilization: Payment for mobilization, bonds, insurance, and demobilization will be made on a lump sum basis. The amounts paid for mobilization in the Contract progress payment will be based on the percent of the original Contract Amount that is earned from other Contract items, as follows:

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

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

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

2. Erosion Control: Payment for installation of erosion control devices as shown and specified (sediment barrier, inlet protection, check dams, slope matting, construction entrance, and other items), including all labor, materials, and equipment, will be made on a lump sum basis. This lump sum item shall also include the Contractor's inspection and maintenance of erosion control devices, repair and/or replacement, and removal of temporary erosion control devices after construction. Any work related to erosion control measures and BMPs required to maintain compliance with local regulations shall be considered incidental to this bid item.

3. Pollution Control: Payment for submittal preparation and the installation of approved pollution control and spill prevention measures, all as shown and specified, including all labor, materials, and equipment, will be made on a lump sum basis.

4. Traffic Control: Payment for providing traffic control, maintenance and protection as shown and specified, including all coordination, labor, materials, and equipment, will be made on a lump sum basis. Any work related to traffic control measures required to maintain compliance with local regulations shall be considered incidental to this bid item.

5. Potholing for Utilities: Payment for potholing existing buried utilities including all labor, equipment, and materials necessary to locate existing utilities at all proposed water main

crossings will be made on a lump sum basis, complete. All known utilities crossing the proposed pipeline alignment shall be potholed and depth verified by the Contractor prior to beginning excavation for water main installations. Potholing for those utilities not specifically called out on the Drawings shall be incidental to the other bid items. This item includes utility locate notifications, excavation and disposal of waste material, placing granular backfill, compaction, temporary roadway patching, and surface restoration as required.

6. Furnish & Install Restrained 12-inch Class 52 Ductile Iron Pipe with Class B Backfill: Payment for furnishing and installing restrained joint Class 52 ductile iron (DI) pipe with Class B trench backfill, including all work and materials required to saw cut and remove pavement as required, trench excavation to the depths shown on the Drawings, spoils removal and disposal, and installation of all required joint restraint system components, standard non-reinforced concrete thrust blocks where specified (including concrete and excavation), Class B trench backfill, tracer wire, marking tape, and marker balls, and polyethylene encasement, will be made on a per linear foot basis.

   Measurement will be based on the total length of piping constructed without deduction for fittings and valves. The pay quantity for pipe, saw cutting, trench excavation, and backfill will be based on the horizontal length of pipe laid without deductions for valves or fittings which may be included in the end-to-end measurement of a continuous section of pipe. Where the pipe is laid on a continuous slope greater than 10 percent for a distance greater than 100 feet, payment will be made upon the average slope distance between 100-foot stations. When water mains intersect, the measurement of each main shall be to the intersection of the center lines of the connecting fittings.

7. Furnish & Install Restrained 12-inch Class 52 Ductile Iron Pipe with CLSM and Class B Backfill: Payment for furnishing and installing restrained joint Class 52 ductile iron (DI) pipe with a 12-inch thick lift of CLSM above the pipe zone and Class B trench backfill above the CLSM and gravel surfacing, including all work and materials to saw cut and remove pavement as required, trench excavation to the depths shown on the Drawings, spoils removal and disposal, and installation of all required joint restraint system components, standard non-reinforced concrete thrust blocks where specified (including concrete and excavation), Class B trench backfill, tracer wire, marking tape, and marker balls, and polyethylene encasement, will be made on a per linear foot basis.

   Measurement will be based on the total length of piping constructed without deduction for fittings and valves. The pay quantity for pipe, saw cutting, trench excavation, and backfill will be based on the horizontal length of pipe laid without deductions for valves or fittings which may be included in the end-to-end measurement of a continuous section of pipe. Where the pipe is laid on a continuous slope greater than 10 percent for a distance greater than 100 feet, payment will be made upon the average slope distance between 100-foot stations. When water mains intersect, the measurement of each main shall be to the intersection of the center lines of the connecting fittings.

8. Furnish & Install 14-inch DR 11 HDPE Pipe by Horizontal Directional Drilling Methods: Payment for furnishing and installing 14-inch diameter DR 11 HDPE pipe using horizontal directional drilling (HDD) methods will be made on a per linear foot basis. Measurement will be based on the total length of HDPE pipe installed as shown on the Drawings. This item includes Mobilization for the HDD Contractor, design and construction of the HDD entry pit and HDD exit pit, and all labor, tools, equipment, and materials required for the pilot bore, reaming, and pullback to complete the HDPE pipe installation as shown and specified.

9. Furnish & Install Restrained Ductile Iron Fittings: Payment for furnishing and installing AWWA C110 or C153 ductile iron (DI) fittings, including all labor, equipment, and materials, will be made on a lump sum basis, complete. Estimated quantities for this item include:

    A. 12-inch 11.25° DI Bend, MJ = 2 each

    B. 12-inch 22.5° DI Bend, MJ = 7 each

    C. 12-inch 45° DI Bend, MJ = 3 each

    D. 12-inch 90° DI Bend, MJ = 1 each

    E. 12-inch DI LS, MJ = 2 each

    F. 12-inch x 6-inch DI Tee, MJ x FLG = 1 each

    Fitting installation will be considered a separate pay item from work performed under other bid items. Ductile iron fittings with the joint types shown on the Drawings, including joint restraints, Foster Adaptors where specified and as required, polyethylene encasement, bolts and nuts and other fitting hardware, gaskets, temporary plugs, and any other material required to install the fittings. Installation of AWWA C115 ductile iron flange by plain end spools and ductile iron fittings installed on a temporary basis to facilitate testing and disinfection of new water mains shall be considered incidental to this and other bid items.

10. Furnish & Install Buried 12-inch Gate Valve, MJ: Payment for furnishing and installing buried 12-inch gate valves with end connections as specified on the Drawings, including valve boxes, covers, risers, operator extensions where required, polyethylene encasement, will be made on a per each valve basis, complete. All accessories including gaskets, restraint glands, Foster Adaptors, hardware, and all other materials required to install a functional gate valve shall be considered incidental to this bid item.

11. Furnish & Install 2-inch Air Release Valve: Payment for furnishing and installing a 2-inch air release valve assembly for ductile iron pipe, including excavation, shoring, backfill, PVC tape wrap, concrete manhole enclosure, and any other items as shown and specified, will be made on a per each basis, complete.

12. Furnish & Install Sampling Station: Payment for furnishing and installing a water sampling station, including excavation, shoring, backfill, tapping service saddle, bronze piping, and any other items as shown and specified, will be made on a per each basis, complete.

13. Furnish & Install Concrete Anchor Wall: Payment for furnishing and installing a concrete anchor wall, including all labor, equipment, and materials, will be made on a per each basis, complete. This item includes all concrete, rebar, mechanical joint restraint, steel bearing plate, and any other materials required to construct the anchor wall as shown and specified.

14. Furnish & Install Precast Concrete Vault: Payment for furnishing and installing a precast concrete water vault, including excavation, shoring, and backfill, will be made on a lump sum basis, complete. This item includes link seals for all piping penetrations, pressure gauge assembly, 2-inch air release valve assembly, tapping saddles, dielectric union, stainless steel piping, brass piping, vent and standpipe assembly, water sampling station, and any other materials required to install the water vault as shown and specified. The ductile iron pipe shall be paid under a separate bid item.

15. Connection to Existing Water Main, West Side: Payment for labor, equipment, and materials not included under other bid items to connect to the existing water system facilities on the west side of the river, will be made on a lump sum basis, complete. This item includes exploratory excavation, draining the existing piping, disposal of water where required, swab, and spray disinfection per AWWA C651. Ductile iron fittings and piping required for this connection shall be considered incidental to this and other bid items.

16. Connection to Existing Water Main, East Side: Payment for labor, equipment, and materials not included under other bid items to connect to the existing water system facilities on the east side of the river, will be made on a lump sum basis, complete. This item includes exploratory excavation, draining the existing piping, disposal of water where required, swab, and spray disinfection per AWWA C651. Ductile iron fittings and piping required for this connection shall be considered incidental to this and other bid items.

17. Connection to Existing Fire Hydrant: Payment for connecting to the existing fire hydrant assembly for ductile iron pipe, including excavation, shoring, and backfill, will be made on a lump sum basis, complete. This item includes 6-inch piping, fittings, restraints, polyethylene encasement, and any other materials required to connect as shown and specified. The mainline tee fitting shall be paid under a separate bid item.

18. Replace Existing Water Service Piping to Meter Box: Payment for furnishing and installing replacement water service piping to a meter box in the park, including excavation, shoring, and backfill, will be made on a lump sum basis, complete. This item includes tapping service saddle, HDPE service piping and fittings, connection piping, tracer wire, and any other materials required for water service replacement as shown and specified.

19. Furnish & Install New Water Service: Payment for furnishing and installing new water service, including excavation, shoring, and backfill, will be made on a lump sum basis, complete. This

item includes tapping service saddle, corp stop, HDPE service piping and fittings, angle meter stop, straight check valve, bronze valve meter, meter box, and any other materials required for installation as shown and specified. The City will provide the meter.

20. HDPE to DI Transition: Payment for furnishing and installing the transition from HDPE to DI, including work to excavate, expose, and deflect the HDPE piping installed by HDD methods, will be made on a per each basis, complete. This item includes backfill (Class B and CLSM), HDPE flange adaptor, backup ring, eccentric DI reducer, flange by plain-end spool and long sleeve, locator stations, and any other materials required for the transition as shown and specified.

21. Testing, Flushing & Disinfection: Payment for testing, flushing and disinfection of water mains will be made on a lump sum basis. New water mains shall be hydrostatically tested, flushed, and properly disinfected separately from existing water facilities prior to completing the final tie-in connections. This item includes hydrostatic testing of the HDPE pipe prior to HDD pullback and after installation. This item also includes furnishing, installing, and removing temporary blowoff piping, valves, fittings, and thrust restraint. The City will provide off-site laboratory analysis for Bac-T samples. Disinfection of connection piping by swab and/or spray prior to tie-in shall be considered incidental to this and other bid items.

22. Existing Pipe Removal & Abandonment: Payment for removal and disposal of the existing 12-inch welded steel pipe waterline on the Washington Ave bridge, including the existing exposed piping, brackets, and supports to the limits shown on the Drawings, will be made on a lump sum basis, complete. This item includes furnishing and installing end cap couplings to abandon in-place piping through the bridge box girders and plugging the piping ends with grout caps as they transition to buried on both ends. This item also includes removal and disposal of Asbestos Cement (AC) water pipe according to DEQ requirements, as required to complete the waterline tie-in connections, filling the remaining buried AC water pipe with CLSM prior to plugging the ends with grout and abandoning in-place, and any other related work as shown and specified. This item includes all work required to coordinate with the City, ODOT and other stakeholders to develop a work plan for submittal and approval.

23. Concrete Sidewalk Replacement: Payment for concrete sidewalk replacement will be made on a per square yard area basis. The unit price shall include all labor, materials, tools, equipment, and incidental work necessary to complete the work as shown and specified. Measurement of quantities for this item will be limited to the locations shown on the Drawings. Any concrete sidewalk replacement required due to damage by the Contactor will not be measured.

24. Concrete Curb & Gutter Replacement: Payment for curb or curb and gutter replacement will be made on a per lineal foot basis. The unit price shall include all labor, materials, tools, equipment, and incidental work necessary to complete the work as shown and specified. Measurement of quantities for this item will be limited to the locations shown on the

Drawings. Any concrete curb and gutter replacement required due to damage by the Contactor will not be measured.

25. Temporary Trench Patch Paving, HMAC, 2-inch Thick: Payment for providing temporary trench patch paving on Washington Avenue will be made on a per ton basis. Measurement of quantities for this item will be limited to temporary HMAC and cold mix asphalt patching deemed necessary and allowed by the City.

26. Permanent Trench Patch Restoration, HMAC, Level 3, ½-inch, Dense: Payment for performing permanent roadway restoration with new HMAC paving to full depth along the trenched pipeline alignment, will be made on a per ton basis of HMAC installed. The unit price shall include all labor, materials, and equipment required to saw cut, remove and dispose of additional asphalt past the trench limits for the T-cut; removal and disposal of previously installed temporary trench patch paving and trench backfill to depth of existing AC thickness; furnishing and installing additional imported crushed rock as required for preparing and leveling the road base for permanent paving; furnishing and installing HMAC in maximum lifts as specified, total thickness matching the existing pavement thickness to restore the existing road and parking lot pavement to the limits determined in the field with the City and ODOT. This item also includes applying tack coat where required, all hauling, screening, placing, and compacting new HMAC, and sand sealing all joints. Adjustment of all valve boxes, manhole frames and lids, roadway centerline monuments, and survey benchmarks shall be considered incidental to this bid item.

27. 2-inch Deep Grind & Inlay, HMAC, Level 3, ½-inch: Measurement and payment for 2-inch deep grind (cold plane pavement removal) of existing asphalt concrete pavement and 2-inch thick inlay of asphalt concrete pavement shall be on a square yard basis for the area shown on the Drawings. Replacement of roadway striping and pavement markings shall be considered incidental to this bid item.

28. Surface Restoration: Payment for general surface restoration not specifically described in other bid items, will be made on a lump sum basis, complete. This item includes stripping and stockpiling topsoil, regrading to existing contours, resurfacing gravel surfaces impacted by construction, hydroseeding, replacement of striping and pavement markings not paid for under other bid items, and any other work required to restore the work areas to preconstruction conditions to the satisfaction of the City.

END OF SECTION

# SECTION 01 33 00

# SUBMITTAL PROCEDURES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section contains administrative requirements for submittals for review, information, and Project closeout on the new trenchless waterline crossing under the South Umpqua River near the Washington Ave Bridge in downtown Roseburg, Oregon, Project No. 20WA05.

### 1.2 DEFINITIONS

A. Action Submittal – Written and graphic information and physical samples that require the Engineer's responsive action.

B. Informational Submittal – Written and graphic information and physical samples that do not require the Engineer's responsive action. Submittals may be rejected for failing to comply with Contract requirements.

### 1.3 SUBMITTAL SCHEDULE

A. Within 10 days after the Effective Date of the Contract, the Contractor shall submit to the City and the Engineer a preliminary Submittal Schedule. Include the following:

1. Specific target dates for submission and return of each submittal

2. List of major products proposed for use on the Project with specification section reference, manufacturer, supplier, trade name, and subcontractor, as applicable

B. The Submittal Schedule and list of major products shall be updated and resubmitted when requested by the Engineer.

C. The Submittal Schedule will be acceptable to the Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

### 1.4 SUBMITTAL PROCEDURES

A. The Contractor shall submit all work plans, shop drawings and samples to the Engineer for review in accordance with the accepted Submittal Schedule.

B. Transmit each submittal with a transmittal form certifying compliance with the requirements of the Contract Documents.

C. Sequentially number each transmittal form. For resubmittals, use the original transmittal number with a revision (Rev) number.

D. Identify the Project, Contractor, subcontractor, supplier, and relevant drawing and/or specification numbers.

E. Apply the Contractor's stamp, signed or initialed, certifying its review, approval, and verification of products and field dimensions meet the Contract requirements.

F. Coordinate submission of related items.

1. All shop drawings for related items shall be submitted at the same time.

2. The Engineer may hold or reject shop drawings if a partial submission cannot be reviewed until the complete submission is received.

G. Identify variations from the Contract Documents and any product or system limitations that may be detrimental to successful performance of the completed Work.

H. Provide all submittals electronically in portable document format (PDF) and the source document format (Word, Excel, AutoCADD, etc). No hard copies are required. Reviewed submittals will be returned to the Contractor electronically as PDF files.

I. For each submittal for review, allow at least 14 calendar days from the date of receipt for the Engineer to review.

J. For each resubmittal, the Contractor shall identify changes made since the previous submission. For documents prepared in Word, use Track Changes and resubmit the source file. For all other document formats, provide a narrative of changes made.

K. The Engineer will not review incomplete submittals. Complete submittals are required for each item. Delays resulting from incomplete submittals are the Contractor's responsibility.

1.5 CONTRACTOR REVIEW

A. Review for compliance with the Contract Documents and approve submittals before transmitting to the Engineer.

B. The Contractor shall be responsible for the following:

1. Determination and verification of materials

2. Determination and verification of field measurements and field construction criteria

3. Checking and coordinating information in the submittal with the requirements of the Work and the Contract Documents

4. Determination of accuracy and completeness of dimensions and quantities

5. Construction means, methods, sequence and procedures

6. Safety precautions

7. Coordination and performance of Work by all trades

C. Stamp, sign or initial, and date each submittal to certify compliance with the Contract requirements. Any submittals received by the Engineer without the Contractor's certification will be returned without review.

D. When submittals are required to be revised or corrected and resubmitted, the Contractor shall make such revisions and resubmit those items in the same manner specified above.

E. Regardless of review by the Engineer, the Contractor shall be responsible for the accuracy of its submittals and conformity to the Contract requirements.

F. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from the Engineer.

G. Materials and equipment shall be ordered sufficiently in advance to allow time for submittal review and approval.

1.6 ENGINEER REVIEW

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

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

C. The Engineer will review submittals and return to the Contractor with notations indicating: "No Exceptions Taken", "Make Corrections Noted", "Rejected", "Revise and Resubmit", or "Submit Specified Item".

D. The Engineer will provide timely review of all items on the accepted Submittal Schedule. The Engineer's review will only be to determine if the items covered by the submittals will, after installation and incorporation into the Work, conform to the information given in the Contract Documents and be compatible with the design

concept of the completed Project as a functioning whole as indicated in the Contract Documents.

E. The Engineer's review will not extend to the Contractor's means, methods, sequence, procedures or safety precautions.

F. The Engineer's review of a Shop Drawing will not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents unless the Contractor has complied with the requirements of Part 1, Para 1.4 G and the Engineer has provided written acceptance of such variation by specific written notation on the Shop Drawing. The Engineer will document any accepted variation from the requirements of the Contract Documents in a Field Order or Request for Information, as appropriate.

G. The Engineer's review of a Shop Drawing, or a variation from the requirements of the Contract Documents, will not under any circumstances change the Contract Time or Contract Price, unless such changes are included in a Change Order.

## PART 2 PRODUCTS

### 2.1 CONSTRUCTION SCHEDULE

A. Baseline Project Schedule – Action Submittal: Within 10 days after the Effective Date of the Contract, the Contractor shall submit to the City and the Engineer a practicable schedule showing the proposed work sequence and the start dates and finish dates for all major features of work. At a minimum, include the following details:

1. Construction work activities
2. Submittal and review of critical materials and shop drawings
3. Procurement and delivery of critical materials
4. Duration of each work activity
5. Planned dates for system shutdowns
6. Planned holidays and other periods of no work onsite

B. Monthly Progress Schedules – Action Submittal: The Contractor shall update the Project Schedule at the end of each month and submit to the City and the Engineer. Show the updated status of each work activity with actual start dates and finish dates.

C. Three Week Lookahead Schedules – Informational Submittal: The Contractor shall submit each week prior to the weekly construction progress meeting. Show the previous week's completed work on the schedule for a total of 4 weeks shown.

2.2 PRODUCT DATA

A. Action Submittal: The Contractor shall submit to the City and the Engineer for review for assessing conformance with the information given and the design concept expressed in the Contract Documents. Submitted data shall be sufficient in detail to determine compliance with the Contract Documents.

B. Supplement manufacturer's standard data to provide information specific to this Project. If specific products, models, options and other data are not clearly identified, then the submittal will be returned to the Contractor without review.

2.3 SHOP DRAWINGS

A. Action Submittal: The Contractor shall submit to the City and the Engineer for review for assessing conformance with the information given and the design concept expressed in the Contract Documents.

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

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer from the State of Oregon responsible for designing the components shown on the Shop Drawings.

D. All dimensioned Shop Drawings shall be scalable PDF files that can be printed as full-sized sheets (22"x34").

2.4 TEST REPORTS

A. Informational Submittal: Submit reports for the City's and the Engineer's knowledge.

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

2.5 CERTIFICATES

A. Informational Submittal: Submit certification by the manufacturer or installation contractor as specified for Product Data.

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

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

2.6 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for the City's and the Engineer's knowledge.

B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing as specified for Product Data.

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

2.7 OTHER REQUIRED SUBMITTALS

A. In addition to the work plans and shop drawings specified in the Special Provisions, other required submittals include the following:

1. Contractor Emergency Contact List

2. Site Specific Safety & Health Plan

3. Traffic Control Plans (TCP) – if the Contractor proposes any changes to that shown in the Contract Drawings.

4. Erosion and Sediment Control Plan (ESCP) – if the Contractor proposes any changes to that shown in the Contract Drawings.

5. Pollution Control Plan (PCP)

6. Spill Prevention Control and Countermeasures Plan (SPCCP)

7. Record Drawings

B. The above list is provided for the Contractor's convenience only and may not be complete. The Contractor shall provide all submittals specified.

PART 3 EXECUTION - Not Used

END OF SECTION

# SECTION 01 45 00

# QUALITY CONTROL

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section covers Project-wide quality control requirements supplementary to those specified in the General Conditions and Special Provisions.

### 1.2 PROVISIONS

A. Contractor's Responsibility for Testing: The Contractor shall be responsible for the cost of all testing specified in the Contract Documents.

B. City's Right to Perform Additional Testing: The City reserves the right to complete additional testing. In such cases, the Contractor shall provide safe access for the City/Engineer inspectors to inspect the quality of the Work and conformance with the requirements of the Contract Documents.

### 1.3 SUBMITTALS

A. Include the planned Quality Control (QC) procedures for each major feature of work in the various Work Plan submittals required in the Special Provisions.

1. Excavation work - Refer to Section 31 23 17 - Trenching, Backfilling & Compaction for Utilities

2. HDD work - Refer to Section 33 05 23.13 - Horizontal Directional Drilling

3. Open cut waterline work - Refer to Section 33 11 10 - Water Utility Distribution & Transmission Piping and Section 33 12 16 - Water Utility Distribution & Transmission Valves

4. Hydrostatic Pressure Testing and Disinfection work - Refer to Section 33 13 00 - Testing & Disinfecting of Water Utility Piping

5. Pipe abandonment work - Refer to Section 33 11 50 - Existing Pipe Abandonment

6. Surface restoration work - Refer to Section 32 12 16 - Asphalt Concrete Pavement and City Standards

B. Independent Testing Laboratories: Submit the names and qualifications of the independent testing firms who will perform the following quality control field testing:

1. Compaction Testing

2. Concrete/Flowable Fill Testing

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 SOURCE QUALITY CONTROL

A. Comply with the requirements specified in each of the Special Provisions.

3.2 FIELD QUALITY CONTROL

A. Comply with the requirements specified in each of the Special Provisions.

B. Testing Frequency: Perform testing at the frequencies specified in the Special Provisions. Where testing frequencies are not specified in the Special Provisions, comply with the testing requirements in the Standard Specifications for the same type of work.

END OF SECTION

# SECTION 02 30 00

# SUBSURFACE INVESTIGATION

## PART 1 GENERAL

### 1.1 SUMMARY

A. Subsurface investigations and reporting were performed for the purpose of obtaining data for the planning and design of this Project. Copies of such reporting are attached to the Contract Documents as Supplementary Information.

### 1.2 LIMITATIONS

A. The subsurface investigations and reporting are being made available solely for the convenience of the Bidder and shall not relieve the Bidder or the Contractor of any risk, duty to make its own examinations and investigations as stated in the Information to Bidders, Article 13, or any other responsibility under the Contract Documents.

B. It is mutually agreed to by all parties that:

1. Written reports are reference documents and are not part of the Contract Documents.

2. Subsurface investigations were for the purpose of obtaining data for planning and design of the Project.

3. Data concerning borings and test pits is intended to represent with reasonable accuracy conditions and material found in the specific borings and test pits at the time the borings and test pits were made.

C. It is expressly understood and agreed the City and the Engineer assume no responsibility whatsoever regarding the sufficiency or accuracy of the investigations thus made, the records thereof, or the interpretations set forth therein or made by the City in its use thereof; and there is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations, or records thereof, are representative of the conditions existing throughout the Project area, or any part, or that unforeseen developments may not occur.

D. The City's subsurface investigations and reporting are made available to the Bidder or Contractor based on the understandings and agreement stated herein.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

# SECTION 31 10 00

# SITE CLEARING

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes provisions for clearing, grubbing, demolition and disposal of all objectionable material and related work necessary to prepare the site for construction operations. The cost of work specified in this Section shall be considered incidental to the costs of the Bid items where site preparation is required.

### 1.2 COORDINATION

A. The Contractor shall coordinate its operations with affected property owners and utilities likely to be impacted by construction. The Contractor will not be entitled to additional compensation for any delays resulting from a lack of such coordination by the Contractor.

### 1.3 PROPERTY PROTECTION

A. The Contractor shall be responsible for safety and protection of all structures, utilities, and properties, whether inside or outside the Project limits, from damage or interruption by the Contractor's activities.

B. The Contractor shall repair or replace damaged structures, utilities, and properties where damage occurred due to the Contractor's construction activities to the satisfaction of the property owner at the Contractor's expense.

C. The locations of underground utilities (i.e. power, telephone, fiber optic, cable, gas, etc.) shown on the Drawings are approximate. The actual locations may vary from those shown. The Contractor is responsible for verifying all existing utility locations. The Contractor will not be entitled to additional compensation for any delays resulting from utility conflicts for which the Contractor is responsible, or where the Contractor failed to properly verify the utility location.

## PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 GENERAL

A. Unless noted otherwise on the Drawings, the limits of clearing shall be determined by the Contractor and approved by the City prior to starting the Work.

B. Clearing shall be confined to the immediate vicinity of the construction, insofar as practicable, and shall not extend beyond the right-of-way, property, or easement lines shown on the Drawings without written approval of the affected landowners.

C. Any demolition, removal, or clearing beyond the limits of construction shall be the Contractor's responsibility unless otherwise approved in writing by the City.

3.2 CLEARING AND GRUBBING

A. Portions of the Project site where Work is to be done shall be cleared of all objectionable material such as brush, stumps and roots, grass and other vegetation, decayed vegetable matter, topsoil, rubbish, pavement, and other materials that may interfere with the proper execution of the Work.

B. All clearing, grubbing, and stripping shall be performed prior to excavation operations.

C. All weeds, roots, trash, debris, and similar objectionable materials shall be removed from excavation areas and properly disposed offsite.

3.3 SIDEWALK, DRIVEWAY, AND PAVEMENT REMOVAL

A. Remove sidewalk, driveway and pavement as noted on the Drawings and where directed by the City.

B. Saw-cut sidewalk, driveway, and pavement in neat, straight lines with vertical edges along the limits of removal. Before saw-cutting, the proposed saw-cut lines shall be reviewed and approved by the City in the field.

C. Removal of the existing road surfacing for trenching and saw-cutting the edges prior to repaving shall be considered incidental to the other Bid Items.

D. All asphalt rubble shall be recycled at an approved facility.

3.4 CURB REMOVAL

A. Demolish and remove curbs as shown on the Drawings and where directed by the City.

B. Make a vertical saw-cut at the curb joint nearest the portion(s) of curb to be removed.

C. Saw-cut and remove a strip of existing pavement adjacent to the curb as noted in the Drawings.

3.5 STRIPPING TOPSOIL

A. The upper six inches of topsoil shall be removed from areas to be excavated or filled. Topsoil not disposed of by the Contractor shall be selectively stockpiled for use in restoring the area as required. The Contractor shall bear the cost of disposal of all topsoil not used for surface restoration.

3.6 DISPOSAL OF CLEARED, DEMOLISHED AND STRIPPED MATERIAL

A. The Contractor shall dispose of cleared material in an approved waste disposal site in accordance with all Federal, State, and local regulations.

END OF SECTION

# SECTION 31 23 17

# TRENCHING, BACKFILLING & COMPACTING FOR UTILITIES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes the requirements for excavation and backfill of all utilities and pits, including installation of pipe bedding, pipe zone backfill, trench backfill, and related Work as shown and specified.

B. This Section includes:

1. Excavating trenches for pipe, utility vaults, HDD entry/exit pits, and other utilities

2. Compacted fill from top of utility bedding to final grades

3. Trench and utility vault backfilling and compaction

### 1.2 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop

B. ASTM International (ASTM):

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (12,400 ft-lbf/ft3)

2. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

3. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

4. ASTM D4832 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders

C. Oregon Department of Transportation (ODOT), Oregon Standard Specifications for Construction, 2021 version

1.3 DEFINITIONS

A. Controlled Low Strength Material (CLSM): Also referred to as flowable fill and lean cement concrete fill. A self-compacting, cementitious material.

B. Flexible Pipe: For the purposes of these Specifications, tubing between ½-inch and 4-inch diameter constructed of polyvinyl chloride (PVC) and high-density polyethylene (HDPE) are considered flexible pipes. HDPE piping 4 inches in diameter and larger is also considered flexible pipe.

C. Geosynthetics: Geotextiles, geogrids, geomembranes, and drainage composite materials.

D. Imported Material: Materials obtained from sources offsite, suitable for specified use.

E. Lift: Loose, uncompacted layer of material.

F. Obstructions: Items which may be encountered during utility, vault and pit trenching which do not require replacement.

G. Optimum Moisture Content:

1. Determined in accordance with ASTM or AASHTO Standards, specified to determine maximum dry density for relative compaction.

2. Determine field moisture content on the basis of fraction passing 3/4-inch sieve.

H. Pipe Bedding: Trench backfill zone for full trench width which extends from the bottom outside surface of the pipe to a minimum of 6 inches below the bottom outside surface of the pipe, to uniformly support the barrel of the pipe.

I. Pipe Zone: Trench backfill zone for full trench width which extends from the bottom outside surface of the pipe to a minimum of 12 inches above the top outside surface of the pipe.

J. Pothole Excavations: Removal and replacement of all materials via coring, vacuum extraction, or similar method for the purposes of locating an underground utility and investigating underground conditions.

K. Prepared Trench Bottom: The bottom of the trench on which the pipe bedding is to lie and which provides support for the pipe.

L. Relative Compaction: Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM or AASHTO Standards.

M. Rigid Pipe: For the purposes of these Specifications, pipe constructed of PVC, ductile iron, steel, concrete, and clay are considered rigid pipes.

N. Sewer, Pipes, and Mains: Conduits of circular or other geometric shapes, used to convey liquids or gases, or other material.

O. Trench Backfill: Trench backfill zone for full trench width extending from the top of the pipe zone to pavement base rock, ground surface or other surface material.

P. Trench Stabilization: Removal of unsuitable material in the bottom of a trench and replacement with specified material for support of a pipe, main, conduit, structure, or appurtenance; resulting in a Prepared Trench Bottom.

Q. Utility: Any buried pipe, duct, conduit, or cable.

R. Well-Graded: A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

1.4 SUBMITTALS

A. Submit information in accordance with Section 01 33 00 - Submittal Procedures.

B. Excavation Protection Plan. At a minimum, include the following details:

1. Trench safety

2. Protection of existing facilities, utilities, and pavement

3. Ground support

4. Removal of water from excavations

5. Temporary cover during non-working hours

C. Product Data:

1. Geotextile fabric, indicating fabric and construction

D. Imported Materials:

1. Materials Source: Submit name and location of suppliers of imported fill materials.

2. Manufacturer Certificate: Certify products meet or exceed specified requirements.

3. Submit results of aggregate sieve analysis and standard proctor test for granular material.

1.5 QUALITY ASSURANCE

A. Comply with the Occupational Safety and Health Administration (OSHA) regulations: 29 CFR Part 1926, Subpart P.

B. If a conflict exists between OSHA and State regulations, then the more stringent requirements apply.

C. Allowable Tolerances: Final grades shall be plus or minus 0.1-foot.

1.6 COORDINATION

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

B. Coordinate trenching and utility installation work with other nearby work.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Trench Zone Backfill Materials:

1. Class A Trench Backfill: Suitable native material free of debris, organic matter, frozen soil, human-made contaminants, particles exceeding 4 inches in any dimension, and other deleterious materials.

2. Class B Trench Backfill: Imported, well-graded, 3/4" – 0 dense graded aggregate conforming to the requirements of Standard Specifications Section 02630.10.

3. Controlled Low Strength Material (CLSM): Refer to Section 31 23 24 - Flowable Fill.

B. Pipe Zone Backfill: 3/4" – 0 dense graded aggregate conforming to the requirements of Standard Specifications Section 02630.10.

C. Pipe Bedding: 3/4" – 0 dense graded aggregate conforming to the requirements of Standard Specifications Section 02630.10.

D. Trench Stabilization Material: Crushed, 2 ½" – 0 dense graded aggregate conforming to the requirements of Standard Specifications Section 02630.10.

2.2 GEOTEXTILE MATERIALS

A. Separation Geotextiles: Shall consist of a non-woven separation fabric meeting the properties shown in Table 02320-4 in Standard Specifications Section 02320.

B. Reinforcement Geotextiles: Shall meet the requirements for Type 2, woven riprap geotextiles, as shown in Table 02320-2 in Standard Specifications Section 02320.

2.3 MARKING TAPE

A. As specified in Section 33 11 10 - Water Utility Distribution & Transmission Piping.

2.4 ELECTRONIC LOCATING MATERIALS

A. As specified in Section 33 11 10 - Water Utility Distribution & Transmission Piping.

PART 3 EXECUTION

3.1 PREPARATION

A. Call Local Utility Line Information service at 1-800-332-2344 at least three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

2. Coordinate with and notify utility companies should it be necessary to remove or relocate facilities.

3. Maintain and protect above and below grade utilities indicated to remain.

B. Identify required lines, levels, contours, and datum locations.

C. Clear all obstructions.

D. Potholing / Exploratory Test Pits: Dig such exploratory test pits and perform potholing as necessary in advance of trenching to determine the exact location and elevation of subsurface structures, pipelines, duct banks, conduits, and other obstructions.

E. Paved or Surfaced Streets: Refer to Section 31 10 00 - Site Clearing.

F. Traffic Control:

1. Maintain street traffic as shown and specified.

2. Erect and maintain barricades, warning signs, traffic cones, and other safety devices as detailed in the Traffic Control Plans provided in the Contract Drawings.

3. Provide flaggers as required during active work in roadway areas.

3.2 EASEMENTS AND RIGHTS OF WAY

A. Confine construction operations to within the easement limits or street right-of-way limits, or make special arrangements with private property owners for any additional area as specified in Section 01 10 00 - Summary of Work, Part 1, Para 1.6.

B. Where portions of the Work are located within ODOT property, right-of-way permits shall be paid for, applied for, and obtained by the Contractor. Right-of-way shall provide for the use of the property for construction purposes to the extent indicated on the right-of-way permit application.

3.3 TRENCH PROTECTION

A. Provide the labor, equipment and materials necessary to protect trenches at all times.

B. Trench protection shall provide safe working conditions in the trench and protect the Work, existing property, utilities, pavement, etc.

C. The method of protection shall be according to the Contractor's design.

D. The Contractor may elect to use a combination of shoring, overbreak, tunneling, boring, sliding trench shields, or other methods of accomplishing the work provided the method meets the approval of all applicable local, State and Federal safety codes.

E. Removal of Water: Refer to Section 31 23 19 - Dewatering.

F. Damages resulting from improper shoring installation or removal, or failure to shore or dewater, shall be the sole responsibility of the Contractor.

3.4 LINES AND GRADES

A. Trench excavation for piping, utility vaults and other utilities shall be performed to the alignment and grade shown in the Drawings.

B. Where grades are not shown in the Drawings, utilities shall be laid to grade between control elevations shown.

C. Use laser-beam instrument with qualified operator to establish lines and grades.

D. Water mains shall be installed with a minimum cover of 48 inches.

E. The Engineer reserves the right to make changes in lines, grades, and depths of utilities when changes are required to accommodate Project conditions.

F. Changes may be necessary to the grade and horizontal alignment of the pipeline as shown and specified due to unanticipated interferences or other reasons.

1. No additional compensation will be made for changes in horizontal alignment.

2. No additional compensation will be made for changes in grade which require additional depth of trench excavation and backfill up to 2 feet from those shown in the Drawings.

3.5 OBSTRUCTIONS

A. Obstructions to the construction of the trench, such as tree roots, stumps, abandoned pilings, abandoned buildings and concrete structures, logs, rubbish, and debris of all types shall be removed by the Contractor. No additional compensation will be made for removal of obstructions.

B. The Engineer may, if requested by the Contractor, make changes in the trench alignment to avoid major obstructions if such alignment changes can be made within the perpetual easement and right-of-way, without adversely affecting the intended function of the facility, and without increasing costs to the City.

3.6 INTERFERING ROADWAYS AND STRUCTURES

A. Remove, replace and/or repair any damage done during trenching activities to fences, buildings, cultivated fields, drainage crossings, and any other properties.

B. Paved Roadways:

1. Where paved roadways are cut as part of trenching activities, Class B trench backfill will be required to the bottom of pavement base.

2. New pavement shall be equal to or better than the existing paved surface, or per ODOT requirements.

3. New surface shall not deviate by more than 1/4-inch from the existing finish elevation.

C. Existing Structures:

1. If existing structures are encountered as part of trenching activities which will prevent construction and are not adequately shown in the Drawings, then the Contractor shall notify the City before continuing with the Work.

2. The City may make field revisions to the utility alignment as necessary to avoid conflict with the existing conditions.

3. If the Contactor fails to notify the City when a conflict of this nature is encountered, and proceeds with construction despite this interference, then the Contractor shall do so at its own risk with no additional payment.

3.7 TRENCHING

A. Excavate subsoil as required for construction of utilities to elevations shown in the Drawings.

B. Open Trench Limit:

1. Do not advance an open trench beyond the distance which will be backfilled and compacted the same day.

2. Cover or backfill excavations at the end of each work day.

3. If the trench is not backfilled at the end of each work day, then:

   a. Provide means to prevent caving of excavation sides during non-working hours.

   b. Cover the excavation for public safety and to prevent entry during non-working hours.

4. New trenching shall not be started when earlier trenches need backfilling or the surfaces of streets or other areas need to be restored to a safe and proper condition.

C. Utility Crossings: Avoid horizontal and vertical conflicts with existing utilities.

1. Perform excavation within 24 inches of an existing utility service in accordance with that utility's requirements.

2. Vertical clearance between the new pipe and existing utilities shall be 18 inches minimum, unless otherwise noted on the Drawings.

3. Where existing utility lines are damaged or broken during trenching activities, the utility shall be repaired or replaced.

4. The Contractor shall be solely responsible for all costs related to repair or replacement of leaking or broken utility lines due to the Contractor's operations.

D. Water Lines Crossing Sewer Lines: Whenever water lines cross sewer lines, the Contractor shall comply with local Health Department requirements.

1. Wherever possible, the bottom of the water line shall be 18 inches or more above the top of the sewer pipe. One full length of the water line pipe shall be centered at the crossing.

2. For clearances less than 18 inches, the Contractor shall replace the existing sewer pipe with ductile iron or PVC of equal size, centered at the utility crossing, or shall

encase the existing sewer pipe with concrete for a minimum of 10 feet on both sides of the crossing, as directed by the Engineer, at no additional cost to the City.

E. Excavate trenches to the width and depth shown on the Drawings. No additional payment will be made for trenching beyond the dimensions shown on the Drawings.

1. Excavation for trenches in which pipelines are to be installed shall provide adequate space for workers to place and joint the pipe properly and safely.

2. The width of the pipe trench below the top of the pipe shall not exceed 12 inches on either side of the pipe.

3. Excavation for utility vaults and other structures shall be 18 inches between the structure surface and the sides of the excavation.

4. For pipe or utility vaults to have bedding material, excavate to a depth of 6 inches below the bottom of the pipe or utility vault. Care shall be taken not to excavate below depths required.

5. If over digging occurs, the trench bottom shall be filled to grade with compacted bedding material.

F. Remove water or materials that interfere with the Work.

1. The trench shall be kept free from water to facilitate fine grading, proper laying and joining of pipe, and prevention of damage to completed joints.

2. Adequate pumping equipment shall be provided to handle and dispose of the water without damage to adjacent property.

3. Water in the trench shall not be allowed to flow through the pipe while construction is in progress unless the Contractor obtains written permission from the Engineer.

4. An adequate screen shall be provided to prevent the entrance of objectionable material into the pipe.

5. Remove and dispose of existing abandoned pipe, structures, and other facilities as necessary to construct the improvements.

   a. Where excavation activities require removal of portions of an abandoned pipe, masonry plugs shall be installed in the open ends of the pipe, unless directed otherwise in the Drawings or by the Engineer.

   b. Coordinate with the Engineer prior to plugging.

c. For plugs less than 36 inches in diameter, 8-inch deep masonry units shall be used. For plugs greater than 36 inches in diameter, 12-inch deep masonry units shall be used.

6. The costs related to removal of water and materials shall be considered incidental to trench excavation and backfill.

G. Do not interfere with 45 degree bearing splay of foundations.

H. Overexcavation for Unsuitable Trench Foundation Conditions:

1. Cross-sectional dimensions and depths of excavations shown in the Drawings shall be subject to change by the Engineer to achieve foundations free from soft, weathered, shattered and loose material or other objectionable materials.

2. Unsuitable materials shall be removed and replaced only as directed in writing by the Engineer.

3. Unsuitable materials encountered shall be removed and replaced with Trench Stabilization Material as described in Part 2, Para 2.1 D.

4. Install non-woven, reinforcement geotextile under trench stabilization material, over the soft or yielding excavated surface, ahead of placement of the trench stabilization material, continuously along the excavation bottom and centered on the pipe centerline. Width of nonwoven geotextile shall be equal to the pipe diameter plus 2 feet. Place laps or splices in the geotextile in the direction of the pipe laying.

I. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.

J. Excavated material shall be placed at locations and in such a manner that it does not create a hazard to pedestrian or vehicular traffic, or interfere with the function of existing drainage facilities.

K. Remove excess subsoil not intended for reuse from the site.

3.8 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, new and existing structures, and adjacent and neighboring properties and to prevent caving, erosion, settlement, and loss of surrounding soil.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain the stability of the excavation.

C. Repair damage caused by failure of the sheeting, shoring, or bracing and for any settlement of backfilled excavations or adjacent soil.

D. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

E. Design sheeting and shoring to be removed upon completion of the excavation work, unless shown otherwise in the Drawings.

3.9 COMPACTION

A. Perform compaction testing to demonstrate that the Contractor's compaction method achieves the specified densities of compacted backfill.

B. Moisture Control:

1. Moisture condition backfill material to within 2 percent of optimum moisture content required for compaction throughout each lift of the fill.

2. Add moisture to granular backfill by sprinkling during compaction operation.

3. Compaction by ponding or jetting is not permitted.

C. Compact all materials and areas that are not accessible for in-place density testing, as determined by the Engineer, in place by whatever equipment and method is practicable or specified, and as approved by the Engineer.

3.10 BEDDING

A. All potable water pipe associated with the Work shall be laid in pipe bedding material as shown in the Drawings.

B. Compacted bedding material shall be placed the full width of the excavated trench to the depth shown in the Drawings.

C. Spread the bedding smoothly over the entire width of the trench to the proper grade so the pipe is uniformly supported along the barrel.

D. Hand grade and compact each lift to provide a firm, unyielding surface along the entire pipe length. For rigid pipe, compact to at least 88% relative compaction.

E. Excavate bell holes at each joint to permit proper assembly and inspection of the joint.

F. Check grade and correct irregularities in bedding material.

G. Center pipes horizontally in the trench width.

3.11 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Maintain optimum moisture content of fill materials to attain specified compaction density.

D. Place fill material, except for CLSM, in continuous layers and compact in 6 to 8-inch lifts.

1. Prevent the pipe from moving either horizontally or vertically during placement and compaction of pipe zone material.

2. Where trenches are under existing paved areas and roads, or where shown or specified, the trench backfill shall be Class B and pipe zone backfill shall be Class B. Compaction of Class B backfill shall be at least 95 percent of maximum dry density at optimum moisture content.

3. Where trenches are outside existing paved areas and roads, or where shown or specified, the trench backfill shall be CLSM in the lower 12 inches of the trench zone and Class B above. Pipe zone backfill shall be Class B. Compaction of Class B backfill shall be at least 95 percent of maximum dry density at optimum moisture content.

E. Employ placement method that does not disturb or damage nearby or adjacent foundation perimeter drainage or utilities in the trench.

F. Do not use power-driven impact compactors to compact pipe zone material.

G. Backfill Immediately: All trenches and excavations shall be backfilled immediately after pipe or conduit is in approved condition to receive it and shall be carried to completion as rapidly as possible, unless otherwise directed by the Engineer.

H. Under no circumstances shall water be permitted to rise in open trenches after pipe has been placed.

I. Do not allow backfill material to free fall into the trench or allow heavy, sharp pieces of material to be placed as backfill until after at least 2 feet of backfill has been provided over the top of the pipe.

J. Use hand compactors for compaction until at least 2 feet of backfill is placed over the top of the pipe. Thoroughly tamp each lift, including the area under the haunches, with

handheld tamping bars supplemented by “walking in” and slicing material under the haunches with a shovel to ensure that voids are filled before placing the next lift.

K. Placement of CLSM: Refer to Section 31 23 24 - Flowable Fill.

L. New trenching shall not be started when earlier trenches need backfilling or the surfaces of streets or other areas need to be restored to a safe and proper condition.

M. Do not leave trench open at the end of the work day.

3.12 MARKING TAPE INSTALLATION

A. As specified in Section 33 11 10 - Water Utility Distribution & Transmission Piping.

3.13 ELECTRONIC LOCATING FACILITY INSTALLATION

A. As specified in Section 33 11 10 - Water Utility Distribution & Transmission Piping.

3.14 FIELD QUALITY CONTROL

A. Perform in-place compaction tests in accordance with the following:

1. Density Tests: ASTM D2922

2. Moisture Tests: ASTM D3017

B. Perform in-place compaction testing of pipeline backfill materials at elevation increments of two feet; one test per 100 lineal feet of pipeline trench as measured along the pipe centerline.

1. The Engineer may reduce the frequency of testing when satisfied with the Contractor’s method of compaction.

2. The Engineer may direct testing at a higher frequency, at no additional cost to the City, upon failure to obtain specified densities or if the Contractor changes its method of compaction.

3. The Engineer shall determine all test locations.

C. When tests indicate the Work does not meet specified requirements, remove the Work, replace, and retest at the sole expense of the Contractor.

## 3.15 SURFACE RESTORATION AND CLEANUP

A. Open Trenches: At the end of each work day, all open trenches shall be backfilled and all trenches within streets shall be temporarily paved or covered to the satisfaction of the City.

1. Temporary paving shall be replaced with permanent street paving at the completion of construction within the street right-of-way, or sooner, if deemed necessary by the City.

2. No gravel-filled trenches shall be left open within the street right-of-way at the end of the work day.

B. Topsoil:

1. Where trenches cross lawns or garden areas, remove the topsoil to the specified depth and place the material in a stockpile.

2. Topsoil shall not be mixed with other excavated material.

3. After the trench has been backfilled, the topsoil shall be replaced.

C. Clean up and remove all excess materials, construction materials, debris from construction, etc. Replace or repair any fences, mailboxes, signs, landscaping, or other facilities removed or damaged during construction. Replace all lawns, topsoil, shrubbery, flowers, etc. removed or damaged during construction. The Contractor shall restore all work areas to pre-construction conditions or as shown.

END OF SECTION

# SECTION 31 23 19

# DEWATERING

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes temporary dewatering and surface water control systems for open excavations and utility trenches.

B. This Section includes:

1. Dewatering systems

2. Surface water control systems

3. System operation and maintenance

4. Water disposal

### 1.2 SUBMITTALS

A. Submit information in accordance with Section 01 33 00 - Submittal Procedures.

B. Dewatering Plan. At a minimum, include the following details:

1. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment, methods, standby equipment and power supply, pollution control facilities, and discharge locations to be utilized as required by this Section.

2. The Contractor shall not start construction activities requiring dewatering until its Dewatering Plan is approved.

3. Review by the Engineer shall not be construed as a detailed analysis of the adequacy of the Contractor's planned dewatering system, nor shall any provisions of the above requirements be construed as relieving the Contractor of its overall responsibility for the Work.

### 1.3 DEFINITIONS

A. Dewatering includes the following:

1. Lowering of groundwater table and intercepting horizontal water seepage to prevent groundwater from entering excavations, trenches, tunnels, and shafts.

2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations, trenches, tunnels, and shafts.

3. Disposing of removed water.

1.4 QUALITY CONTROL

A. All dewatering operations shall be the Contractor's responsibility.

B. All dewatering operations shall be adequate to assure the integrity of the finished Project.

C. Provide all labor, materials, and equipment necessary to dewater trench and structure excavations in accordance with the Contract Documents.

D. Secure all necessary permits to complete the requirements of this Section.

E. Control the rate and effect of dewatering to avoid settlement and subsidence.

F. Where critical structures or facilities exist adjacent to areas of proposed dewatering, the Contractor shall establish survey reference points and monitor at frequent intervals to detect any settlement that may develop.

G. The Contractor shall be responsible for all costs to repair damage caused by dewatering.

PART 2 PRODUCTS

2.1 EQUIPMENT

A. Dewatering, where required, may include the use of well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means.

PART 3 EXECUTION

3.1 DEWATERING

A. Provide all equipment necessary for dewatering.

1. Have available at all times, sufficient pumping equipment in good working order.

2. Have available at all times, competent workers to operate the pumping equipment.

3. Have available at all times, adequate standby equipment to ensure efficient dewatering and continuous dewatering during power failure.

B. Dewatering for structures and pipelines shall commence when groundwater is first encountered, and shall continue until water can be allowed to rise in accordance with this Section or other requirements.

C. Site grading shall promote gravity drainage. Surface runoff shall be diverted away from excavations. Water entering an excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped or drained by gravity to maintain a bottom free from standing water.

D. Dewatering shall be conducted in such a manner as to preserve the undisturbed bearing capacity of subgrade soils at the proposed bottom of excavation.

E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, then the affected areas shall be excavated and replaced with Trench Stabilization Material: Coarse Aggregate Type A1, 2-1/2 inch – 0 gradation, as specified in Section 31 23 33 - Trenching, Backfilling & Compacting for Utilities.

F. Maintain the water level below the bottom of excavation in all work areas during excavation and backfilling, up until acceptance.

G. Flotation shall be prevented by maintaining a positive and continuous removal of water. The Contractor shall be fully responsible for all damage resulting from failure to keep excavations adequately dewatered.

H. If well points or wells are used by the Contractor, then they shall be adequately spaced and sandpacked (or other means) to prevent pumping of fine sands or silts from the subsurface. Ensure that subsurface soil is not being removed by the dewatering operation.

I. Dispose of water from the work areas in a suitable manner without damage to the environment or adjacent property. No water shall be drained into work under construction without prior approval by the City. Water shall be filtered using an approved method to remove sand and fine particles before disposal into any drainage system.

J. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures and pipelines.

K. Dewatering of trenches and other excavations shall be considered incidental to construction and all related costs shall be considered incidental to other Bid Items.

END OF SECTION

# SECTION 31 23 24

# FLOWABLE FILL

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes flowable lean concrete mix used for structure backfill, utility bedding and backfill, and other subgrade site work. Applications also include filling abandoned structures and utilities that remain in place.

B. This Section includes:

1. Utility bedding
2. Utility backfill
3. Filling abandoned utilities

### 1.2 DEFINITIONS

A. Flowable Fill: Also referred to as Controlled Low Strength Material (CLSM) and lean cement concrete fill.

B. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.

### 1.3 REFERENCE STANDARDS

A. ASTM International (ASTM):

1. ASTM C33 - Standard Specification for Concrete Aggregates
2. ASTM C94 - Standard Specification for Ready-Mixed Concrete
3. ASTM C150 - Standard Specification for Portland Cement
4. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete
5. ASTM C403 - Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
6. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete
7. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

8. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

9. ASTM C1040 - Standard Test Methods for Density of Unhardened and Hardened Concrete in Place by Nuclear Methods

10. ASTM D4832 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders

1.4 SUBMITTALS

A. Submit information in accordance with Section 01 33 00 - Submittal Procedures.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Field Quality Control Submittals:

1. Mix Design: Furnish proposed flowable fill mix design. Identify mix ingredients, proportions, properties, and admixtures.

2. Test Results: Furnish test results to show flowable fill mix design properties meet or exceed specified requirements.

D. Delivery Tickets: Furnish duplicate delivery tickets indicating actual materials delivered to the Project site.

1.5 QUALITY ASSURANCE

A. In-place testing of flowable fill: In accordance with ASTM C403.

B. Compressive testing of flowable fill: In accordance with ASTM D4832.

C. The following minimum conditions shall be met at the time of flowable fill placement.

1. Do not install flowable fill during inclement weather.

2. Ambient temperature must be at least 40 degrees Fahrenheit (F) and rising.

3. Flowable fill shall be at least 40 degrees F.

4. Subgrade on which flowable fill is to be placed shall be free of disturbed or soft material, debris and water.

PART 2 PRODUCTS

2.1 FLOWABLE FILL

A. Composed of cement, pozzolans, fine aggregate, water, and admixtures.

B. Low cement content.

C. Non-segregating, self-consolidating, free-flowing, and excavatable material which will result in a hardened, dense, non-settling fill.

D. Compressive strength at 28 days of 100 to 200 pounds per square inch (psi).

2.2 MATERIALS

A. Portland Cement: ASTM C150.

B. Fine Aggregates: ASTM C33.

C. Water: Clean and not detrimental to concrete.

2.3 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Chemical Admixtures: ASTM C494.

C. Fly Ash: ASTM C618 Class C or F.

2.4 MIXES

A. Mix and deliver flowable fill according to ASTM C94, Option C.

B. Flowable Fill Mix Design:

| ITEM | PROPERTIES |
|---|---|
| Cement Content | 75 to 100 lbs/cu yd |
| Fly Ash Content | None |
| Water Content | As specified |
| Air Entrainment | 5 to 35 percent |
| 28-Day Compressive Strength | Maximum 200 psi |
| Unit Mass (Wet) | 80 to 110 pcf |
| Temperature, Minimum at Point of Delivery | 50 degrees F |

C. Provide water content to produce self-leveling, flowable fill material at the time of placement.

D. Air entrainment and unit mass values are for laboratory design mix and source quality control only.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Verify utility installation is complete and tested before placing flowable fill.

B. Verify excavation is dry and dewatering system is operating, as may be required, before placing flowable fill.

### 3.2 PREPARATION

A. Support and restrain utilities to prevent movement and flotation during placement of flowable fill.

B. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before it hardens.

C. Protect utilities and foundation drains to prevent intrusion of flowable fill.

### 3.3 INSTALLATION – FILL, BEDDING, AND BACKFILL

A. Place flowable fill by chute, pumping, or other method as approved by the Engineer.

B. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.

C. Place flowable fill evenly on both sides of utilities to maintain alignment.

D. Place flowable fill to elevations indicated on the Drawings without vibration or other means of compaction.

### 3.4 INSTALLATION – FILLING ABANDONED UTILITIES

A. Refer to Section 33 11 50 - Existing Pipe Abandonment.

### 3.5 FIELD QUALITY CONTROL

A. Perform inspection and testing according to ASTM C94.

1. Take samples for tests for every 100 cubic yards of flowable fill, or fraction thereof, placed each day.

2. Sample, prepare, and test three compressive strength test cylinders according to ASTM D4832. Test one specimen at 7 days and two at 28 days.

3. Measure temperature at point of delivery when samples are prepared.

B. No backfill or other material shall be allowed on flowable fill until after initial set is attained, as measured by ASTM C 403. Perform in place penetration (density) tests at locations directed by the Engineer using a handheld penetrometer to measure penetration resistance of the hardened flowable fill.

C. No traffic or construction equipment shall be allowed on flowable fill for at least 24 hours after placement.

D. Defective Flowable Fill: The Engineer reserves the right to reject any flowable fill failing to meet the Contract requirements.

3.6 CLEANING

A. Remove spilled and excess flowable fill from the Project site.

B. Restore work areas damaged or contaminated by flowable fill installation to existing condition before installation.

END OF SECTION

# SECTION 32 11 23

# AGGREGATE BASE COURSES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes construction of an aggregate subbase and base course for placement under asphalt or concrete paving, unit paving, or placed and left exposed.

B. Section Includes:

1. Aggregate subbase.
2. Aggregate base course.

### 1.2 REFERENCE STANDARDS

A. Standard Specifications:

1. Where the term "Standard Specifications" is used, such reference shall mean the 2018 edition of the Oregon Department of Transportation (ODOT) Standard Specifications for Highway Construction.

2. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this section of the Specifications.

3. In case of a conflict in the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

B. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

2. T11, Standard Method of Test for Materials Finer Than 75μm (No. 200) Sieve in Mineral Aggregates by Washing.

3. T27, Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.

4. AASHTO T99 - Standard Specification for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.

C. ASTM International (ASTM):

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

2. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

4. ASTM D2940 - Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.

5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

A. Completed Course: Compacted, unyielding, free from irregularities and standing water, with smooth, tight, even surface, true to grade, line, and cross-section.

B. Completed Lift: Compacted with uniform cross-section thickness.

C. Keystone: Fine aggregate used to aid in binding of loose surface stone.

1.4 SUBMITTALS

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

B. Product Data:

1. Submit data for geotextile fabric and herbicide.

C. Materials Source: Submit name of aggregate materials suppliers.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

PART 2 PRODUCTS

2.1 GRAVEL SURFACING

A. Shall meet the requirements of shoulder aggregate per Section 02640 of the Standard Specifications.

2.2 PAVEMENT BASE/ROAD BASE

A. Of the sizes specified and meeting the requirements of base aggregates per Section 32 12 16-2.1 - Asphalt Concrete Pavement, and 02630 of the Standard Specifications.

2.3 CRUSHED ROCK FOUNDATION

A. Of the size shown on the Drawings and shall meet the requirements of base aggregates per Section 02630 of the Standard Specifications.

2.4 SOURCE QUALITY CONTROL

A. Perform tests necessary to locate acceptable source of materials meeting specified requirements.

B. Final approval of aggregate material will be based on test results of installed materials.

C. Should separation of coarse from fine materials occur during processing or stockpiling, immediately change methods of handling materials to correct uniformity in grading.

2.5 EQUIPMENT

A. Compaction Equipment: Adequate in design and number to provide compaction and to obtain specified density for each layer.

2.6 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting subgrade.

B. Verify compacted substrate is dry and ready to support paving and imposed loads.

1. Proof roll substrate with equipment approved by the ENGINEER in minimum two perpendicular passes to identify soft spots.

2. Remove and replace soft substrate with compacted fill as determined via proof roll. Substrate shall be considered soft if any deflection is observed during proof roll.

C. Subgrade Geotextile: Place between substrate and aggregate base course in accordance with manufacturer's recommendations.

D. Do not place base course or surfacing materials in snow or on soft, muddy, or frozen subgrade.

E. Obtain Engineer's acceptance of subgrade before placing base course or surfacing material.

F. Verify compacted substrate is dry and ready to support paving and imposed loads.

1. Proof roll substrate with equipment approved by the Engineer in minimum two perpendicular passes to identify soft spots.

3.2 HAULING AND SPREADING

A. Hauling Materials:

1. Do not haul over surfacing in process of construction.

2. Loads: Of uniform capacity.

3. Maintain consistent gradation of material delivered; loads of widely varying gradations will be cause for rejection.

B. Spreading Materials:

1. Distribute material to provide required density, depth, grade, and dimensions with allowance for subsequent lifts.

2. Produce even distribution of material on prepared surface without segregation.

3. Should segregation of coarse from fine materials occur during placing, immediately change methods of handling materials to correct uniformity in grading.

4. Maintain consistent gradation of material. Widely varying gradation will be cause for rejection.

3.3 CONSTRUCTION OF COURSES

A. Untreated Aggregate Base Course:

1. If the required compacted depth of the base course exceeds 6 inches, construct it in two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches.

2. Completed Course Total Thickness: As shown on the Plans, 8-inch minimum.

3. Spread lift on preceding course to required cross-section. Place each layer in spreads as wide as practical and to the full width of the course before a succeeding layer is placed.

4. Lightly blade and roll surface until thoroughly compacted.

5. Add keystone to achieve compaction and as required when aggregate does not compact readily due to lack of fines or natural cementing properties, as follows:

   a. Use 3/4-inch leveling course or surfacing material as keystone.

   b. Spread evenly on top of base course, using spreader boxes or chip spreaders.

   c. Roll surface until keystone is worked into interstices of base course without excessive displacement.

   d. Continue operation until course has become thoroughly keyed, compacted, and will not creep or move under roller.

6. Blade or broom surface to maintain true line, grade, and cross-section.

B. Gravel Surfacing and Leveling Course:

1. Place shoulder aggregates in a single layer, or two or more layers of nearly equal thickness. The maximum compacted thickness of any one layer shall not exceed 9 inches.

2. Spread on preceding course in accordance with cross-section shown.

3. Blade lightly and roll surface until material is thoroughly compacted.

4. Complete Total Thickness: As shown on the Plans, 8-inch minimum.

## 3.4 ROLLING AND COMPACTION

A. Commence compaction of each layer of base immediately after spreading operations and continue until density of 95 percent of maximum density has been achieved as determined by AASHTO T99.

B. Roll each layer of material until there is no appreciable reaction or yielding under the compactor before succeeding layer is applied.

C. Shape and maintain the surface of each layer during compaction operations. Commence rolling at outer edges and continue toward center; do not roll center of road first.

D. Apply water as needed to obtain specified densities.

E. Place and compact each lift to the required density before succeeding lift is placed.

F. Surface Defects: Remedy by loosening and rerolling. Reroll entire area, including surrounding surface, until thoroughly compacted.

G. Finished surface shall be true to grade and crown before proceeding with surfacing.

3.5 SURFACE TOLERANCES

A. Blade or otherwise work surfacing as necessary to maintain grade and cross-section at all times, and to keep surface smooth and thoroughly compacted.

B. Finished Surface of Untreated Aggregate: Within plus or minus 0.04 foot of grade shown at any individual point.

C. Overall Average: Within plus or minus 0.04 foot from crown and grade specified.

3.6 FIELD QUALITY CONTROL

A. Quality control testing shall be performed by an independent testing laboratory provided by the Contractor.

B. Refer to table below for minimum sampling and testing requirements for aggregate base course and surfacing. The CITY reserves the right to complete additional testing.

| Property | Test Method | Frequency | Sampling Point |
|---|---|---|---|
| Gradation | AASHTO T11 and AASHTO T27 | One sample every 500 tons but at least every 4 hours of production | Roadbed after processing |
| Moisture Density (Maximum Density) | AASHTO T99 | One test for every aggregate grading produced | Production output or stockpile |
| In-Place Density and Moisture Content | AASHTO T310 | One for each 500 ton but at least every 10,000 square feet of area | In-place completed, compacted area |

3.7 CLEANING

A. Remove excess material from the Work area. Clean stockpile and staging areas of all excess aggregate. Restore per Specifications as applicable.

END OF SECTION

# SECTION 32 12 16

# ASPHALT CONCRETE PAVEMENT

## PART 1 GENERAL

### 1.1 SCOPE

This section includes the construction of asphalt concrete pavement.

### 1.2 REFERENCE STANDARDS

A. References herein to "AASHTO" shall mean Association of American State Highway Transportation Officials.

B. Standard Specifications: Where the term "Standard Specifications" is used, such reference shall mean the current edition of the Oregon Department of Transportation (ODOT) Standard Specifications for Highway Construction. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this section of the Specifications. In case of a conflict in the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

### 1.3 DEFINITIONS

A. Maximum Density Test (MDT): Theoretical maximum density of the bituminous mixture determined by multiplying the theoretical maximum specific gravity, determined by ASTM D2041 (Rice), by 62.4 pounds per cubic foot.

### 1.4 SUBMITTALS

A. Aggregate Qualification Tests: In accordance with Standard Specifications Section 00640 for aggregate used in aggregate base.

B. Aggregate Qualification Tests: In accordance with Standard Specifications Section 00745 for aggregate used in asphalt concrete.

C. Job mix formula shall be an approved job mix formula. Submit formula, supplier, and product identification to the Engineer 30 days prior to start.

1. Definite percentage for:

a. Each sieve fraction.
b. New asphalt cement.
c. Recycled asphalt pavement.

2. Temperature of completed mix when discharged from mixer.

3. Character and quantity of anti-strip and recycling agents.

1.5 QUALITY ASSURANCE

A. All testing to determine compliance with the specifications shall be performed by an independent testing laboratory contracted by the Contractor and approved by the Engineer. All testing costs shall be borne by the Contractor.

B. A minimum of five (5) nuclear densometer readings shall be taken in random locations within every test area. Each test area shall not exceed 200 tons of asphalt; however, smaller areas may be designated by the Engineer.

C. The surface smoothness of the new asphalt concrete pavement shall be such that when a 10-foot straightedge is laid longitudinally across the paved area in any direction, the new pavement shall not deviate from the straightedge more than 1/8 inch. Surface drainage shall be maintained. Additionally, paving must conform to the design grade and crown and contain no abrupt edges, low or high areas or any other imperfections as determined by the Engineer. Pavement construction not meeting these requirements will be repaired by grinding the existing pavement to a 1 1/2-inch depth and replacing with Level 2, ½ -inch dense graded Asphaltic Concrete the full width at no cost to City.

1.6 PRE-PAVING CONFERENCE

A. Any supervisory personnel of the Contractor and any subcontractors who are to be involved in the paving work shall meet with the Engineer, at a time mutually agreed upon, to discuss methods of accomplishing all phases of the paving work.

B. The Contractor shall be prepared to review the size and type of equipment to be used and the anticipated rate of placement to determine equipment needs.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIAL

A. Aggregate Base for Dense Graded Asphalt Concrete: The aggregate material shall be a clean, well-graded crushed base aggregate conforming to the Standard Specifications. Base course shall be 1-1/2 inch minus aggregate and leveling course shall be 3/4-inch minus aggregate.

2.2 ASPHALT CONCRETE PAVEMENT

A. Dense Graded Hot Mix Asphalt Concrete

1. Use Level 3, ½ inch-dense graded, PG 70-22 HMAC. Conform to the requirements as specified in Section 00745 of the Standard Specifications.

2. Asphaltic concrete pavement delivered to the site shall be accompanied by a ticket with the approved "job mix formula" number shown. Loads without tickets identifying the job mix formula will not be accepted.

3. Percent of recycled asphalt pavement used in new asphalt pavement shall not exceed 30 percent. Recycled asphalt pavement may not be used in top wearing course unless otherwise approved by the Engineer.

B. Tack Coat

In accordance with Standard Specifications. Use AR 4000, AC-20 asphalt or CSS-1 emulsified asphalt C.

C. Seal and Cover Coat

Asphalt material shall be CRS-2 cationic emulsified asphalt. Cover stone shall conform to size ¼ -inch -#10 aggregate in the Standard Specifications.

D. Subgrade Geotextile

1. Dense Graded AC Mix-For subgrade separation using dense graded asphalt concrete, use subgrade geotextile with Certification Level B as specified in Section 02320 of the Standard Specifications.

E. Subgrade Stabilization

In the event that unstable materials are encountered during excavation, the additional excavation and installation of geotextile fabric and twelve (12) inches of rock substructure will be required, as directed. Conform to the requirements as specified in Section 00331 of the Standard Specifications. For subgrade separation, use subgrade geotextile with Certification Level B as specified in Section 02320 of the Standard Specifications.

## PART 3 EXECUTION

### 3.1 AGGREGATE PAVEMENT BASE

A. Place pavement base to the depth shown on the plans or as specified in all cases, pavement base shall be compacted to a minimum depth of 6 inches. Bring the top of the pavement base to a smooth, even grade at a distance below finished grade equivalent to the required pavement depth.

B. Compact the pavement base with mechanical vibratory or impact tampers to a density of not less than 95 percent of the maximum density, as determined by AASHTO T-99.

C. Obtain the Engineer's acceptance of the subgrade before beginning construction of the aggregate base course.

D. When, in the judgment of the Engineer, the weather is such that satisfactory results cannot be secured, suspend operations. Place no aggregate base course in snow or in soft, muddy, or frozen subgrade.

E. If the required compacted depth of aggregate base course exceeds six (6) inches, construct in two or more lifts of approximately equal thickness. Maximum compacted thickness of any one lift shall not exceed six (6) inches. Compact each layer to the specified density before a succeeding lift is placed.

3.2 ASPHALT CONCRETE PAVEMENT

A. Construct asphalt concrete pavement in accordance with Section 00745 of the Standard Specifications.

B. Conform to the requirements for prime coat and tack coat in the Standard Specifications. Tack coat all edges of existing pavement, manhole and clean out frames, inlet boxes and like items. When rate is not specified, asphalt will be applied at the rate of 0.1 gallon per square yard.

C. Obtain the Engineer's acceptance of the aggregate base course before beginning construction of the asphalt concrete wearing course.

D. Hot mix asphalt shall be placed on dry, prepared surfaces, when air temperature in the shade of 40° F or warmer are observed for asphalt base lifts of 3" thickness and 50° F or warmer for asphalt base lifts of less than 3" thickness, unless otherwise authorized by the Engineer.

E. Placing asphalt pavement during rain or other adverse weather conditions will not be permitted unless otherwise authorized by the Engineer, except that asphalt mix in transit at the time these adverse conditions occur may be placed provided it is of proper temperature, the mix has been covered during transit, and it is placed on a foundation free from mud or free-standing water.

F. Correct any defects in material and workmanship, as directed, when determined detrimental by the Engineer. These include segregation of materials, non-uniform texture, and fouled surfaces preventing full bond between successive spreads of mixture. The corrections or replacement of defective material or workmanship shall be at the Contractor's expense.

G. Compact the bituminous mixture to at least 92 percent of the Theoretical Maximum Density.

H. The finished surface of each course of layer of mixture shall be of uniform texture, smooth, and free of defects and shall closely parallel that specified for the top surface finished grade. Remove and replace boils and slicks immediately with suitable materials.

I. The surface of each layer when tested with a Contractor-furnished 10-foot straightedge shall not vary from the testing edge by more than 0.02-foot for underlying courses of pavements and 0.015-foot for finished top courses or wearing courses of pavements. At no point shall the finished top of the wearing course vary more than 0.03-foot from the specified finished grade.

J. Lift thickness shall be as shown on the drawings or specified, but not to exceed 3 inches.

K. Do not place asphalt concrete pavement on emulsified asphalt (tack coat) until the asphalt separates from the water (breaks) but before it loses its tackiness.

L. Asphalt and sand seal edges where new asphalt concrete meets existing pavement.

3.3 FIELD QUALITY CONTROL

A. Job mix will be sampled immediately behind the paving machine.

B. Temperature of the mix will be measured immediately behind the paver.

C. The theoretical maximum specific gravity of the bituminous mixture will be determined in accordance with ASTM D2041.

D. Properties of the job mix will be measured using ASTM D2041.

E. Density of the compacted job mix will be measured in accordance with ASTM D2922.

3.4 ADJUSTMENT OF EXISTING MANHOLE COVERS AND VALVE BOXES

Prior to placing asphalt concrete pavement, the CONTRACTOR shall make all necessary adjustments to existing manhole frames and covers and valve box covers to ensure that the tops of the manhole covers or valve box lids are flush with the finished grade of the adjoining pavement or ground surface, and that valve boxes and PVC pipes are centered and plumb over operating nut valve.

END OF SECTION

# SECTION 33 05 13

# CONCRETE MANHOLES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes cast-in-place and precast concrete manholes and covers for access to subsurface utilities.

B. Section Includes:

1. Modular precast concrete manhole with tongue-and-groove joints with precast transition to cover frame, covers, anchorage, and accessories.

2. Bedding and cover materials.

### 1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M-198B – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

B. American Concrete Institute:

1. ACI 301 – Building Code Requirements for Structural Concrete.
2. ACI 315 – Details and Detailing of Concrete Reinforcement.
3. ACI 318 – Building Code Requirements for Structural Concrete.

C. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.

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

3. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

4. ASTM C55 - Standard Specification for Concrete Building Brick.

5. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).

6. ASTM C150 - Specifications for Portland Cement.

7. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.

8. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

9. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.

10. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.

11. ASTM C827 – Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.

12. ASTM C913 - Standard Specification for Precast Concrete Stormwater and Wastewater Structures.

13. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

14. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

D. Federal Specifications:

1. SS-S-00210 (210-A) – Specification for Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints.

E. US Army Corp of Engineers:

1. CRD-C 621 – Specifications for Non-Shrink Grout.

1.3 SUBMITTALS

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

B. Product Data:

1. Pre-cast concrete manholes:

a. Design criteria and calculations.
b. Details of reinforcement.

2. Steps.

3. Cover and frame construction, features, configuration, dimensions and material specifications.

4. Rubber gaskets.

5. Grout and mortar.

C. Shop Drawings:

1. Indicate manhole by location.

2. Provide dimensions, elevations, joints, location and type of lifting inserts.

3. Indicate connecting piping material, piping size, piping connection angles and offsets, and sizes of penetrations.

D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

E. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer’s original packaging and inspect for damage.

B. Comply with precast concrete manufacturer's instructions and ASTM C913 for unloading, storing, and moving precast manholes and drainage structures.

C. Storage:

1. Store precast concrete manholes as to prevent damage to City's property or other public or private property.

2. Repair property damaged from materials storage.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA FOR MANHOLES

A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.

B. Design of Lifting Devices for Precast Components: According to ASTM C913.

C. Design of Joints for Precast Components:

1. According to ASTM C913.
2. Lipped male/female joints.
3. Maximum Leakage: 0.025 gal. per hour per foot of joint at 3 feet of head.

D. Shaft Construction:

1. Reinforced concrete.
2. Concentric with concentric cone top section
3. Sleeved to receive pipe connections.

E. Wall Thickness:

1. Minimum wall thickness shall be 5 inches.
2. Cones shall have the same wall thickness and reinforcement as riser sections.

F. Shape: Cylindrical.

G. Clear Inside Dimensions:

1. As indicated on Drawings.
2. Sections shall consist of circular sections in standard nominal inside diameters of 42, 48, 54, 60, 72, 84, 96, 108, 120, 132, or 144 inches.

H. Design Depth:

1. As indicated on Drawings.

I. Clear Cover Opening: As indicated on Drawings, minimum of 30 inches.

J. Pipe Entry: Furnish openings as required and as indicated on the Drawings.

K. Steps:

1. Rungs:

a. Material: Formed polypropylene with 1/2-inch diameter, Grade 60 reinforcing bar.

b. Comply with ASTM C478.

c. Reinforcing bar to comply with ASTM A615.

2. Formed integral with manhole sections.

3. Width: Minimum 12 inches.

4. Spacing: 12 inches o.c. vertically.

2.2 MANHOLES

A. Precast Concrete Manholes:

1. Sections:

a. Description: Reinforced precast concrete according to ASTM C478.
b. Gaskets: According to ASTM C923.
c. Heights: Multiples of 6 inches.

2. Bases:

a. Base slab integral with sidewalls.
b. Monolithic construction, conforming to ASTM C478.

B. Cast-in-Place Concrete Manholes:

1. Sections: Reinforced cast-in-place concrete as specified in Section 03 30 00 - Cast-in-Place Concrete.

2. Concrete forming in accordance with Section 03 10 00, Concrete Work.

C. Joint Materials:

1. Mortar:

a. Conform to ASTM C387.

b. Admixtures

1) Allowable, not exceeding the following percentages of weight of cement:

a) Hydrated lime, 10 percent;
b) Diatomaceous earth or other inert materials, five (5) percent;

c. Consistency: Shall be such that it will readily adhere to the precast concrete if using the standard tongue and groove type joint.

d. Mortar not used within 30 minutes of initial mixing shall be discarded and not be used.

2. Non-Shrink Grout:

a. Description: Non-metallic, cementitious, commercial grout exhibiting zero shrinkage per ASTM C827 and CRD-C-621.

b. Manufacturers:

1) Preco-Patch;
2) Sika 212;
3) Euco N-S;
4) Five-Star;
5) Approved equal

3. Grout shall not be amended with water after initial mixing.

4. Grout not used within 20 minutes of initial mixing shall be discarded and not be used.

5. Commercial Concrete Bonding Agent:

a. Non-shrink grout shall be placed or packed only with the use of an approved commercial concrete bonding agent applied to all cured concrete surfaces being grouted.

b. Bonding agent shall be compatible with the brand of grout used.

c. Water shall not be used as a substitute for the commercial bonding agent.

D. Preformed mastic gaskets for manhole joints shall meet Federal Specifications SS-S-00210 (210-A), AASHTO M-198B and ASTM C990.

E. Reinforcement:

1. Formed steel wire.

2.3 FRAMES AND COVERS

A. Description:

1. Construction: ASTM A48, Class 30B cast iron.

2. Lid:

a. Machined flat bearing surface.
b. Removable.

3. Cover Design: Closed.

4. Live Load Rating: AASHTO H20 loading.

5. Cover: Molded with “S” cast in.

6. Coefficient of Friction on Outside Face: Minimum of 0.60.

2.4 RISER RINGS

A. Description:

1. 4 Inches to 6 Inches Thick:

a. Material: Precast concrete.
b. Comply with ASTM C478.

2. Less than 4 Inches Thick:

a. Material: Cast iron.
b. Comply with AASHTO M306.

3. Rubber Seal Wraps:

a. Wraps and Band Widths: Conform to ASTM C877, Type III.
b. Cone/Riser Ring Joint: Minimum 3 inches overlap.
c. Frame/Riser Ring Joint: 2 inches overlap.
d. Additional Bands: Overlap upper band by 2 inches.

2.5 MATERIALS

A. Bedding and Cover:

1. Bedding: Crushed Rock Foundation, as specified in Section 32 11 23, Aggregates Base Courses. Aggregate size as shown in the Drawings, as applicable.

2. Backfill Around Structure: Class B Trench Backfill, as specified in Section 31 23 17, Trenching, Backfilling & Compacting for Utilities. Aggregate size as shown in the Drawings, as applicable.

2.6 FINISHES

A. Steel:

1. Galvanizing:

a. ASTM A123.
b. Hot dip galvanize after fabrication.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify items provided by other Sections of Work are properly sized and located.

B. Verify built-in items are in proper location and ready for roughing into Work.

C. Verify correct size of manhole excavation.

3.2 PREPARATION

A. Design the method of placement for all precast items and add all reinforcing steel, embeds, bracing and other items necessary for placement. All portions of embeds which remain embedded in the concrete shall be made of stainless steel.

B. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.

C. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.

D. Do not install manholes where site conditions induce loads exceeding structural capacity of manhole components.

E. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage; remove and replace damaged units.

F. Subgrade

1. Subgrade shall be compacted to 95 percent of maximum density.

2. Compacted subgrade shall be covered with a minimum of six (6) inches of aggregate base compacted to 95 percent of maximum density, extending a minimum of six (6) inches beyond the outside limits of the manhole, unless otherwise indicated on Drawings.

3. Grade the aggregate base to a uniform, level surface which will fully support the structure and to an elevation that will ensure proper positioning of the top slab or lid.

3.3 INSTALLATION

A. Excavation and Backfill:

1. Excavate manholes as shown on Drawings in location and to indicated depth.

2. Provide 12 inches of clearance around sidewalls of structure for construction operations.

3. When groundwater is encountered, prevent accumulation of water in excavations; place manholes in dry trench.

B. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation as approved by Engineer.

C. Base Pad:

1. Place base pad.
2. Trowel top surface level.

D. Backfill excavations for manholes.

E. Form and place manhole cylinder plumb and level and to correct dimensions and elevations.

F. Grout base of shaft sections to achieve slope to exit piping, trowel smooth, and contour to form continuous drainage channel.

G. Set cover frames and covers level without tipping and to correct elevations.

H. Coordinate with other Sections of Work to provide correct size, shape, and location.

I. Precast Concrete Manholes:

1. Assembly:

a. Install precast structures in accordance with the manufacturer's recommendations unless otherwise required by the Contract Documents.

b. Verify installed manholes meet required alignment and grade.

c. Lift precast components at lifting points designated by manufacturer.

d. When lowering manholes into excavations and joining pipe to units, take precautions to ensure that interior of pipeline and structure remains clean.

e. Set precast structures bearing firmly and fully on compacted crushed stone bedding.

f. Assemble multi-section structures by lowering each section into excavation; set level and firmly position base section before placing additional sections.

g. Place manhole sections plumb and level, trim to correct elevations, and anchor to base pad.

h. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.

i. Maintain alignment between sections by using guide devices affixed to lower section.

2. Joints:

a. Sealing materials may be installed onsite or at manufacturers plant.

b. All joints shall be sealed watertight by the use of rubber gaskets or other approved preformed sealant.

c. All joints shall then be filled with non-shrink grout on both the inside and outside surfaces to produce smooth interior and exterior surfaces.

3. Concrete Base Installation:

a. Bases shall be set at the proper grade to allow pipe openings to match the grades for connecting pipes.

b. Invert shall be constructed to a section identical with that of the sewer pipe.

c. Where the size of sewer pipe is changed at the manhole, the invert shall be constructed to form a smooth transition without abrupt breaks or unevenness of the invert surfaces.

d. Prevent sewage or water from contacting the new concrete or mortar surfaces to prevent damage to the fresh concrete or mortar until the initial set has been achieved.

e. Manhole bases shall be set level so base gravel fully and uniformly supports them in true alignment with uniform bearing throughout full circumference.

f. Do not level the base sections by wedging gravel, or other material, under the edges.

g. Flexible connectors shall be installed in the base section to form a permanently watertight seal.

4. Manhole Riser Sections:

a. Precast manhole components may be used to construct standard, drop and carry-through manholes. Manholes less than four (4) feet in depth measured

from the spring line of the pipe to the bottom of the lower riser ring shall be flat-top manholes.

b. Install manhole riser sections at the location shown on the plans. All sanitary sewer and pollution control manholes joints shall be watertight and shall use rubber gaskets or a preformed sealant. All joints shall then be filled with non-shrink grout inside and out so as to produce smooth interior and exterior surfaces. All manhole penetrations shall be watertight. Complete manholes shall be rigid. Compact backfill in accordance with the provisions stated elsewhere in this document.

c. All lift holes shall be thoroughly wetted, completely filled with mortar, and smoothed and pointed both inside and out to ensure watertightness.

d. The shortest length of riser section to be incorporated into the manhole shall be installed immediately below the flat slab top or cone.

e. Properly locate and plumb each manhole riser section.

f. Install manhole extensions and top slabs in accordance with manufacturer's specifications and as shown on the plans. Lay section risers with the sides plumb and the tops level. Make joints and penetrations watertight.

g. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe; fill annular spaces with mortar.

5. Entrances / Exits:

   a. Cut pipe flush with interior of structure.

   b. Shape inverts through manhole as indicated on Drawings.

   c. All rigid non-reinforced pipe entering or leaving the manhole (new or existing manhole) shall be provided with flexible joints within one (1) foot of the structure and shall be placed on compacted bedding.

   d. Ribbed HDPE pipe connections shall be grouted watertight with non-shrink grout.

   e. PVC pipe shall be connected to manholes using an approved adapter specifically manufactured for the intended service.

      1) Adapters shall be Fernco, Kor-N-Seal, or approved equal.

6. Grates, Frames, and Covers:

a. Manhole frames, grates and covers shall be installed in such a manner as to prevent infiltration of surface or groundwater between the frame and the concrete of the manhole section. Use preformed rubber ring to form a watertight seal.

b. Manhole frames and covers shall be installed to grades shown on the drawings or as directed.

c. Adjustment of manhole castings shall be made using specified precast grade rings and approved rubber ring joints.

d. The maximum depth of adjustment below any manhole casting shall be 16 inches, and a minimum depth of adjustment shall be four (4) inches.

3.4 FIELD QUALITY CONTROL

A. Test concrete manhole and structure sections according to ASTM C497.

B. Vertical Adjustment of Existing Manholes:

1. If required, adjust top elevation of existing manholes to finished grades as indicated on Drawings.

2. Reset existing frames, grates, and covers that were carefully removed and cleaned of mortar fragments to required elevation according to requirements specified for installation of castings.

3. When removal of existing concrete wall is required, remove concrete without damaging existing vertical reinforcing bars, clean concrete from vertical bars, and bend into new concrete top slab or splice to required vertical reinforcement as indicated on Drawings.

4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete as specified in Standard Specification Section 00540.

END OF SECTION

# SECTION 33 05 17

# PRECAST CONCRETE VALVE VAULTS AND METER BOXES

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Precast concrete valve vaults.
2. Precast concrete meter boxes.

### 1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
3. ASTM A536 - Standard Specification for Ductile Iron Castings.
4. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
5. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM C33 - Standard Specification for Concrete Aggregates.
7. ASTM C150 - Standard Specification for Portland Cement.
8. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
9. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
10. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
11. ASTM C890 - Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
12. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.

13. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

14. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3)).

15. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

16. ASTM D4104 - Standard Test Method (Analytical Procedure) for Determining Transmissivity of Nonleaky Confined Aquifers by Overdamped Well Response to Instantaneous Change in Head (Slug Tests).

17. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 COORDINATION

A. Coordinate Work with utilities within construction area.

B. The drawings identify precast vaults and meter boxes by manufacturer and model number. This information is provided for dimensional information only. Provide precast items in accordance with the requirements of this Section.

1.4 SUBMITTALS

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

B. Product Data: Submit data on valve vaults and meter boxes.

C. Shop Drawings for Precast Concrete Valve Vaults:

1. Indicate plan, location, and inverts of connecting piping.
2. All interior and exterior dimensions.
3. Location and type of connection embeds and joints.
4. Details of reinforcement.
5. Covers.
6. Ladders.
7. Grade Rings

D. Manufacturer's Certificate: Certify that precast concrete valve vaults and meter boxes meet or exceed ASTM standards and specified requirements.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Manufacturer's Installation Instructions: Submit special procedures for precast concrete valve vault installation.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations and inverts of buried pipe, components, and connections.

1.6 QUALITY ASSURANCE

A. Perform Work according to standards identified in Article 1.2 herein.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Transport and handle precast concrete units with equipment designed to protect units from damage.

C. Storage:

1. Store precast concrete valve vaults and meter boxes according to manufacturer instructions.

2. Do not place concrete units in position to cause overstress, warping, or twisting.

PART 2 PRODUCTS

2.1 DESIGN REQUIREMENTS

A. Performance and Design Criteria:

1. Watertight, Precast, Reinforced, Air-Entrained Concrete Structures:

a. Manufactured to conform to ASTM C913.

2. Loading:

a. Design to AASHTO H-20 live loading and installation conditions.

b. Where vaults are below grade, a dead load of 125 pounds per cubic foot shall be added for the soil.

c. Lateral loads:

1) Static: 105 x Depth of fill per square foot (psf) triangular equivalent fluid pressure plus a surcharge of an additional 3 feet of soil depth in areas subject to vehicular traffic (assume traffic load in all areas, unless indicated otherwise by the Contract Documents).

2) Seismic acceleration: UBC Zone 3 requirements (I = 1.25) where I = importance factor, I = 1.25, but not less than 0.20 grams (g) acting on structure mass. Seismic loading need not be considered simultaneously with traffic surcharge.

3. Minimum 28-Day Compressive Strength: 5000 pounds per square inch (psi).

4. Honeycombed or re-tempered concrete is not permitted.

5. No knockouts shall be cast into vault walls. All pipe penetrations shall be pre-formed or core-drilled at the required locations.

6. Accessories: Accessories such as ladders and other features shall be provided as shown on the Drawings.

7. Size: Vault dimensions shall be as required by the Drawings.

2.2 PRECAST CONCRETE VALVES AND METER BOXES

A. Manufacturers:

1. Furnish materials according to City standards as shown in the details of the Drawings and in accordance with the requirements of this Section.

2. Furnish materials manufactured at a NPCA certified plant.

3. Approved Manufacturers:

a. Oldcastle Infrastructure - Model 577-WA Solid Wall, 57-42C Top, 30-inch Manhole Frame and Cover

b. Or approved equal

B. Valve Vault and Meter Box Frames and Covers:

1. Cast Iron Castings:

a. ASTM A48, Class 30 or better.
b. Free of bubbles, sand, air holes, and other imperfections.

C. Access Steps:

1. Steel reinforced formed polypropylene:

    a. ASTM C478
    b. Reinforced rod: ASTM A615, Grade 60, 1/2-inch diameter

2. Aluminum: ASTM B221, Alloy 6061-T6

3. Width: Minimum 12 inches

4. Spacing: 12 inches on center vertically.

D. Grade Rings:

1. Description:

    a. 4 Inches to 6 Inches Thick:

        1) Material: Precast concrete.

        2) Comply with ASTM C478.

    b. Less than 4 Inches Thick:

        1) Material: Cast iron.

        2) Comply with AASHTO M306.

    c. Rubber Seal Wraps:

        1) Wraps and Band Widths: Conform to ASTM C877, Type III.

        2) Riser Ring Joint: Minimum 3 inches overlap.

        3) Frame/Riser Ring Joint: 2 inches overlap.

        4) Additional Bands: Overlap upper band by 2 inches.

## 2.3 ACCESS HATCHES AND LIDS

A. Unless noted otherwise elsewhere in the Contract Documents, vaults shall have concrete top slabs with access openings as shown on the Drawings.

B. Lids shall have lifting holes.

C. When leveling bolts are used to set the vault top sections, ensure the load from the top slab is transferred through grout to the vault walls so that the load is not carried by the leveling bolts.

2.4 MATERIALS

A. Portland Cement:

1. ASTM C150, Type II

B. Coarse Aggregates:

1. ASTM C33
2. Graded 1 inch to No. 4 sieve

C. Sand:

1. ASTM C33
2. Fineness Modulus: 2.35

D. Water:

1. Potable.

2. Clean and free of injurious amounts of acids, alkalis, salts, organic materials, and substances incompatible with concrete or steel.

E. Air-Entraining Admixtures: ASTM C260

F. Reinforcing Steel:

1. Deformed Bars: ASTM A615, Grade 60 minimum
2. Welded Wire Fabric: ASTM A185

G. Gaskets:

1. Rubber gaskets: ASTM C443

H. Joint Sealant:

1. ASTM C990

I. Bedding:

1. Aggregate Bedding Material: Fill crushed rock foundation as specified in Section 32 11 23, Aggregate Base Courses. Size as shown in the Drawings.

2.5 FABRICATION

A. Fabricate precast reinforced concrete structures according to ASTM C913, to dimensions indicated on Drawings, and to specified design criteria.

B. Vaults may be formed with separate top and bottom slabs.

C. Walls shall be cast so that all sides are continuous at corners and their full length with no block-outs or knockouts.

D. Horizontal joints may be provided so that walls can be placed in horizontal segments.

E. All horizontal joints shall be keyed to prevent offsets and shall be provided with a watertight gasket.

F. Finish:

1. Formed surfaces shall be smooth and uniform with no fins, bulges, or other irregularities.

2. Any void greater in width than 1/2-inch or deeper than 3/8-inch shall be repaired.

3. Unformed interior slab surfaces shall have a smooth steel trowel finish.

4. Unformed exterior slab surfaces shall have a light broom finish applied to a steel trowel finish.

2.6 MIXES

A. Design concrete mix to produce required concrete strength, air-entrainment, watertight properties, and loading requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that piping connections, sizes, locations, and inverts are as indicated on Drawings.

3.2 PREPARATION

A. Ream pipe ends and remove burrs.

B. Remove scale and dirt from components before assembly.

C. Establish invert elevations for each component in system.

D. Hand trim excavation to suit valve vaults and meter boxes; remove stones, roots, and other obstructions.

3.3 INSTALLATION

A. Vaults/Meter and Bedding:

1. Excavate to minimum limits required to set vault and backfill around structure with imported crushed rock material, compacted to 95% maximum density. .

2. Hand trim excavation for accurate placement of vaults and meter boxes to elevations indicated.

3. Place bedding material level in one continuous layer to a minimum compacted depth of 12-inches inches.

4. Compact bedding material to 95 percent maximum density.

5. Bases for precast concrete structures shall be set level so that bedding material fully and uniformly supports them in true alignment with uniform bearing throughout full perimeter. Do not level bases by wedging gravel under the edges.

6. Backfill around sides of vaults and meter boxes as required.

B. Connect piping.

3.4 FIELD QUALITY CONTROL

A. Request examination of subgrade by Engineer prior to placing aggregate base under precast materials.

B. Compaction Testing: In accordance with the following:

1. Density Tests: ASTM D2922.
2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

END OF SECTION

# SECTION 33 05 23.13

# HORIZONTAL DIRECTIONAL DRILLING

## PART 1 GENERAL

### 1.1 SUMMARY

A. Work covered in this Section includes the installation of an HDPE water main pipe of the size, length, and location shown on the Drawings and as specified herein, utilizing horizontal directional drilling (HDD) methods.

B. The pilot bore, reaming and pullback shall be conducted from the HDD entry pit location and the pipe shall be fused and staged for pullback at the HDD exit pit location as shown in the Drawings. The pipe can be laid out and assembled in one continuous pipe string or it may be staged in multiple pipe strings that are fused during pullback.

C. Maintain the work area in a neat, clean, and sanitary condition to the satisfaction of the City. Streets, highway shoulders, and pathways shall be kept clean of debris, with dust and other construction nuisances controlled at all times.

### 1.2 REFERENCES

A. Refer to the following report provided to the Contractor as Supplementary Information as described in Section 02 30 00 - Subsurface Investigation:

1. McMillen Jacobs Associates - Geotechnical Exploration & Evaluation Report, Washington Ave Bore Crossing, dated March 2021.

### 1.3 QUALIFICATIONS

A. The Contractor shall submit with its Bid for this Project, the following qualifications and experience documentation. The City will verify the submitted documentation as part of its evaluation of Bids received for this Project.

B. The HDD Contractor and key HDD Personnel shall have the following minimum experience and qualifications for acceptance by the City:

1. The HDD Contractor shall document a minimum of 5 years of experience in HDD and successfully completed at least seven projects during the last three years installing pipelines of similar diameter and length. At least four of the past projects shall have included HDPE pipe installation.

2. The HDD Superintendent shall have at least five years of HDD pipeline installation experience and shall have been superintendent on at least three projects in similar ground conditions using the same equipment required for this Project.

3. The HDD Drilling Operators shall have at least five years of experience operating the HDD equipment proposed for this Project and successfully completed at least five projects installing pipelines of similar diameter and length.

4. The HDD Guidance System Operator shall have at least two years of experience operating the HDD guidance system equipment proposed for this Project and successfully completed and been responsible for the HDD guidance system for at least one river crossing.

5. The HDD Soil Separation Plant Operator shall have completed at least three projects during the last five years operating soil separation plants for HDD rigs of similar size and capacity proposed for this Project.

C. The HDD Contractor shall submit verifiable references for at least three recent projects. Include the Owner's name and telephone numbers, pipe size, bore lengths, subsurface conditions, and equipment used.

D. The HDPE Fusion Welders shall have the following qualifications and certifications:

1. The HDPE pipe shall be joined by heat fusion butt welding in accordance with the manufacturer's recommended procedures using butt fusion equipment recommended by the manufacturer.

2. All workers performing heat fusion welding operations shall have received training in the manufacturer's recommended procedures and equipment and be certified by the HDPE pipe manufacturer to perform heat fusion welding.

3. The Contractor shall submit welding certifications for all workers who will be performing HDPE heat fusion butt welding activities on the Project. Certifications shall be dated within 12 months of the Bid date.

1.4 SUBMITTALS

A. Submit information in accordance with Section 01 33 00 - Submittal Procedures.

B. Submit technical data for Materials, dimensioned fabrication drawings, and sample testing forms.

C. Work Plan: Before beginning work, submit a Work Plan that includes the following:

1. Detailed description of methods, equipment, and materials to be used for the HDD operation. Include rated drill rig capacity, general rig dimensions, and systems to

monitor drilling fluid volumes, return rates, and pressures. List equipment and procedures for controlling drilling fluid pressures. Describe drilling and reaming tooling, anticipated number of reaming passes, and corresponding ream upsize increments.

2. Detailed site utilization plan delineating the locations of all excavations, equipment, piping, tanks, pumps, work trailers, selected pipe laydown and assembly areas, material storage areas and other items for approval before starting work. Site utilization plan shall demonstrate that all work will be accomplished within the areas shown on the Drawings without adverse effect on the public access and use.

3. Schematic drawing showing the planned pipeline profile to be installed. If the Contractor proposes a pipeline profile different than that shown on the Drawings, then the Contractor shall submit a narrative explanation of the proposed modifications and calculations stamped by a licensed Professional Engineer from the State of Oregon for pullback loads and pipe stresses for the revised alignment.

4. Information on the equipment and methods for monitoring bore location and guidance. Include records of equipment calibrations and certifications for down-hole surveys and tracking of the drill head.

5. Drilling fluid management plan including the following details:

    a. Types of drilling fluids, cleaning and recycling equipment, and estimated flow rates. Include drilling fluid product information and Safety Data Sheets (SDS) for fluid components and additives. Include descriptions of drilling fluid mixing and handling equipment.

    b. Procedures for monitoring the composition of the drilling fluid.

    c. Procedures for disposal of drilling fluid, cuttings, and any water encountered, identification of water, drilling fluid, and cuttings disposal sites, and written permission to utilize those sites.

    d. Secondary containment at the HDD entry pit and HDD exit pit to ensure that drilling fluids are contained in the hole and spilled fluids do not escape into the river and adjacent riverbanks.

6. Pipe assembly and pullback plan including the following details:

    a. Procedures and plan for pipe assembly, staging, and testing. Include layout drawings showing the planned pipe assembly area.

    b. Procedure for securing tracer wires to the HDPE pipe.

    c. Procedures and plan for pipe pullback. Include layout drawings to illustrate.

    d. Methods for handling and offsite removal of excess drilling mud displaced from the reamed hole.

e. Indicate whether or not the product pipe will be filled with water during pipe pullback. If the pipe will be filled with water, provide methods for filling and draining the pipe and disposing the water.

7. Plan for grouting the annular space between the excavated borehole and the product pipe following HDD pullback at the HDD entry pit as shown on the Drawings. Provide the mix design as well as procedures and sequencing to ensure grout remains in the annular space and does not force drilling fluid to flow out of the HDD exit pit due to the difference in elevation between the entry pit and exit pit. Include measures to prevent buckling or damage to the product pipe and to prevent pipe flotation.

8. Methods and procedures for disposal of waste materials resulting from the HDD operation such as drilling fluids, cuttings, waste oils, and fuel. Include information on the planned disposal sites with written permission to utilize those sites.

9. Methods and procedures for use and disposal of water.

10. Project Schedule in accordance with Section 01 33 00 - Submittal Procedures. At a minimum, include the following activities in the Project Schedule:
    a. Mobilization and set-up
    b. Installation of environmental controls
    c. HDPE pipe and fittings delivery and assembly
    d. HDD entry pit installation
    e. HDD exit pit installation
    f. Pilot hole drilling
    g. Reaming
    h. Pipe pulling
    i. Pipe completion and testing
    j. Grouting of annular space and installation of concrete backfill plugs at exit and entry pits
    k. Pipe connections to open cut water pipes
    l. Demobilization
    m. Restoration of disturbed areas

D. Contingency Plan: Before beginning work, submit a Contingency Plan that outlines the Contractor's planned corrective and remedial actions for the various scenarios outlined below. For each, describe which operational parameters the Contractor plans to monitor to avoid the scenario or trigger corrective action.

1. Inadvertent drilling fluid return

2. Deviation from planned bore path exceeding the specified tolerance

3. Borehole collapse

4. Hydrolock due to borehole collapse

5. Loss of drilling fluids into the formation without inadvertent fluid return to the ground surface

6. Pullback loads exceed 80% of the manufacturer's recommended maximum allowable pull load

E. Submit Qualifications according to Part 1, Para 1.3.

F. Submit Daily Construction Reports by noon of the following day.

G. Submit the following data at least three days prior to pipe pullback:

1. Documentation for each fused joint showing plate temperatures, times, pressures, and other information required as part of the pipe manufacturer's procedure for fusing the pipe

2. Results of hydrostatic pressure testing

H. Submit the following data within three days of completing the pilot hole installation:

1. Bore tracking monitoring readings accurately describing location of the drill head.

2. Tabulation of coordinates referenced to the drilling entry point accurately describing location of the pilot hole at frequencies required herein.

I. Submit the following data within five days of completing all reaming passes and prior to pipe pullback:

1. Log of all readings during the HDD operation including thrust, torque, and slurry flow rate recorded at frequencies required herein.

J. Submit within three days of completing pipe pullback a record of pullback loads recorded for each drill pipe, at a maximum spacing of 25 feet of pipeline installed.

1.5 DAILY CONSTRUCTION REPORTS

A. Records of HDD progress shall be reported for each shift. At a minimum, include the following information:

1. Start time and finish time for each crew shift each day
2. Drilling lengths
3. Configuration of drill head and reamers
4. Number of each pipe installed
5. For each drill pipe during pilot, reaming, and pullback, provide the following:
    a. Location of drill head or reamers
    b. Rotational torque
    c. Installation loads including maximum forces exerted on the drill pipe
    d. Drilling times required for each drill pipe
    e. Drilling fluid pressure and drilling mud pump rates
6. Provide update on HDD bore location and tracking. Include the following:
    a. Position of the drill tool in relation to the design bore path
    b. Station and length along alignment
    c. Depth/elevation
    d. Inclination and azimuth
7. Instances of retraction and re-drilling of the pilot bore
8. Drilling fluid properties such as density, viscosity, sand content, gel strength, etc. Measurements shall be taken at least two times per shift or whenever the drilling fluid mix is modified by adding bentonite or additives.
9. Other relevant observations including hard drilling zones, steering problems, circulation problems, observed settlement, heave, drilling fluid losses, inadvertent returns, or surface spills.

## PART 2 PRODUCTS

### 2.1 MATERIALS

A. HDPE Pipe and Fittings

1. HDPE Pipe
    a. Pipe Size: 14–inch HDPE pipe DIPS
    b. High density polyethylene (HDPE) 4710

c. DR 11, 200 psi pressure class

d. Conforming to the ANSI/NSF Standard 61 and ASTM D3350 with a cell classification of PE 445574C

e. Full depth fusion welded joints

f. Include blue longitudinal stripes extruded into the pipe

2. Fittings: Provide fittings in accordance with Section 33 11 10 - Water Utility Distribution & Transmission Piping for HDPE to Ductile Iron Pipe transition.

B. Drilling Fluid

1. Biodegradable admixture and water. Obtain water from a potable water source.

2. Use Clean Water-approved additives only, satisfying NSF 061 or equal. Additives shall not be used until the SDS for the additive is submitted and approved.

C. Tracer Wire

1. Copperhead reinforced tracer wires (or equivalent): 12 AWG – Solid CCS Tracer Wire w/30 mil HDPE coating rated for 30 volts and direct burial.

2. Tracer wires shall be a continuous length (no splices).

D. Annular Space Grout

1. Shall consist of cement-bentonite mixture that achieves a minimum 28-day compressive strength of 50 pounds per square inch (psi).

2. Volume of water shall be as required to produce a flowable, pumpable consistency that will fill the annular space between the carrier pipe and the excavated borehole.

E. Concrete Backfill Plugs at Exit and Entry Pits: 3-sack concrete mix, grade ASTM C150, Type II, Portland Cement Concrete.

2.2 EQUIPMENT

A. The Contractor shall provide all necessary equipment to install the pipeline to the specified line and grade.

B. Directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, capable of steering to the design plan and profile, and designed for excavating, transporting, and separating the materials along the alignment. The HDD rig used for pipe pullback shall have a minimum pullback capacity of the estimated pullback loads with a safety factor of 2.0.

C. Drilling system shall include a fluid pump and separation plant with shaker screens, hydro-cyclones, and centrifuges for efficient mud cleaning at anticipated drilling rates.

D. Select tooling that is suitable for the ground conditions at the Project site. Ground conditions are anticipated to consist primarily of weak to strong basalt bedrock, with fine- to coarse-grained soils at shallower depths. Refer to the Geotechnical Exploration & Evaluation Report, included as Supplementary Information, for subsurface conditions and laboratory testing results. Inspect and maintain tooling during all phases of the work. Account for tooling wear, decreased effectiveness as the tooling wears, and efforts required to keep tooling in effective working order.

E. Guidance system shall be used to provide a continuous and accurate location of the drill head during the HDD drilling operation. The guidance system shall be capable of tracking at all depths up to eighty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction). The guidance system shall be accurate to +/- 5% of the vertical depth of the borehole.

## PART 3 EXECUTION

### 3.1 GENERAL

A. Install a continuous HDPE water main pipe to the minimum cover, clearance and approximate profile as shown on the Drawings utilizing HDD methods.

1. The Contractor is responsible for design and construction of the HDD entry pit and HDD exit pit. Construct the pits within the staging areas shown on the Drawings.

2. Create a continuous hole along the alignment using the HDD drilling machine with steerable bore head and enlarge the hole to the required diameter with reamers.

3. Fabricate the required length of HDPE pipe within the pipe laydown areas shown on the Drawings, or as approved by the City. The pipe can be laid out and assembled in one continuous pipe string or it may be staged in multiple pipe strings that are fused during pullback.

4. No intermediate excavations shall be permitted.

B. Conduct all operations while maintaining access to the surrounding streets, driveways, and businesses and controlling dust and other construction nuisance.

C. All work shall be done to minimize disturbance or damage to roadways, adjacent structures, utilities, or landscaped areas. Promptly repair any damage from operations to the satisfaction of the City, Engineer, property owner or utility involved.

D. Comply with all Permit requirements, environmental protection requirements, and work hour regulations of the local jurisdiction.

3.2 PERMITS, EASEMENTS AND GEOTECHNICAL INFORMATION

A. Refer to the General Conditions and Section 01 10 00 - Summary of Work, Part 1, Para 1.6.

B. The City has procured easements for the Project as shown in the Drawings. The Contractor shall obtain any additional permissions required to complete the Work.

C. Refer to the geotechnical and subsurface information provided as Supplementary Information solely for the convenience of the Contractor.

3.3 HORIZONTAL DIRECTIONAL DRILLING PROFILE LAYOUT

A. The proposed profile of the pipeline to be installed by HDD methods is shown on the Drawings.

B. The Contractor shall be responsible to verify the proposed profile and revise as necessary – including entry and exit angles, minimum radius, and depths – to successfully install the pipeline as close to the proposed profile as practicable, while preventing frac-out and maintaining required clearances from the river, existing utilities, and other features identified on the Drawings.

C. The Contractor shall submit any desired revisions to the proposed profile for approval by the Engineer before starting work.

D. The Contractor shall check the alignment and equipment entry angle before starting the pilot bore.

3.4 PROTECTION OF UNDERGROUND FACILITIES

A. The area where the pipeline is to be constructed contains other underground utilities. The approximate locations of existing utilities known to the City have been identified on the Drawings. The utilities and locations shown are not guaranteed to be complete or accurate.

B. Call Local Utility Line Information service at 1-800-332-2344 at least three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

2. Coordinate with and notify utility companies should it be necessary to remove or relocate facilities.

3. Maintain and protect above and below grade utilities indicated to remain.

C. Potholing / Exploratory Test Pits: Dig such exploratory test pits and perform potholing as necessary prior to any excavation to determine the exact location and elevation of subsurface structures, pipelines, duct banks, conduits, and other obstructions.

D. The Contractor shall take all precautions to locate and avoid damage to existing utilities including:

1. Follow rules adopted by the Oregon Utility Location Center and obtain a copy of OAR 952-001-0010 through OAR 952-001-0090 to be kept at the job site.

2. Do not proceed with the Work until the utilities have been marked.

E. Locate and size the HDD entry pit and HDD exit pit excavations to minimize conflicts with existing utilities. Pothole all utilities known to be located within 10 feet of the proposed bore path. Modify the HDD plan, profile, and equipment selection as necessary to prevent damage to existing underground facilities.

3.5 CONTROL OF LINE AND GRADE

A. The pipeline shall be installed by HDD methods to the line and grade indicated on the Drawings, or as modified and approved pursuant to Part 3, Para 3.3.

B. Construction Tolerances

1. Vertical Tolerance: Maximum deviation of three feet from the centerline of the design HDD profile. Maintain a minimum clearance of 15 feet below the river channel bottom.

2. Horizontal Tolerance: Maximum deviation of three feet from the centerline of the design HDD alignment.

3. Any deviation to the profile shown on the Drawings shall not result in localized high points along the pipe profile.

4. Any deviation to the radii of curvatures or entry and exit angles shown on the Drawings shall be submitted to the Engineer for approval.

5. The minimum installed radius of curvature shall not be less than the minimum bend radius of the HDPE pipe as specified by the pipe manufacturer.

6. The Contractor shall advise the Engineer immediately of failure to obtain the specified tolerances.

7. If the pipeline installed by HDD methods fails to meet specified tolerances, then:

a. The Contractor shall forfeit all payment for Bid Items not completed.

b. The Contractor shall remove the installed pipe, re-drill the HDD bore, re-ream, install a new pipe, and re-test.

c. The Contractor shall retain possession of the removed pipe and dispose offsite.

d. If the pipe cannot be removed, then it shall be cut off at least three feet below grade and filled with grout.

e. If the HDD borehole must be abandoned, then the Contractor shall completely fill the borehole with sand-cement grout to prevent settlement.

C. Bore Tracking and Monitoring

1. At all times during the pilot bore, the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length, or every 25 feet, whichever is most frequent.

2. Deviations between the recorded and design bore paths shall be calculated and reported in the Daily Construction Report. The Contractor shall prevent deviations that result in abrupt changes in elevation or create highpoints in the profile.

3. Allow the Engineer unrestricted access to the records and read-outs and interpret the data for the Engineer during the HDD operation as may be requested.

3.6 CONTROL OF DRILLING FLUIDS, CUTTINGS AND WATER

A. The Contractor shall control operational pressures, drilling mud weights, drilling speeds, and other operational parameters to avoid hydro-fracture fluid losses to formations and to control drilling fluid spillage.

B. The Contractor shall provide secondary containment systems down slope of the HDD entry pit and HDD exit pit, capable of preventing spills from flowing into the river and adjacent riverbanks.

C. The Contractor shall maintain onsite mobile spill removal equipment during all drilling, pre-reaming, reaming and pullback operations to be capable of quickly removing spills, frac-out, and inadvertent returns. The Contractor shall conduct periodic visual inspections of the river during drilling or when a loss of pressure is experienced during drilling to ensure that drilling fluids do not enter the river. The Contractor shall immediately notify the Engineer of any spills, frac-out, or inadvertent returns and immediately perform the corrective and remediation measures outlined in the Contractor's Contingency Plan.

D. Drilling Fluids

1. The Contractor shall select the drilling fluid mix proportions to ensure continuous circulation and bore stability, reduce drag on the pipe, and completely fill the annular space between the bore and the pipe to control settlement.

2. Recirculation: Provide solids control and fluid cleaning equipment sufficient to handle and process the recirculated drilling fluid for suitable reuse.

3. Dispose of drilling fluid offsite as described in the Work Plan submittal, in compliance with applicable state and local regulations.

4. Drilling fluid shall not be discharged into any surface ditch, waterway, storm drain, sanitary sewer, or any other conveyance.

E. Cuttings

1. Dispose of cuttings offsite as described in the Work Plan submittal, in compliance with applicable state and local regulations.

2. Cuttings shall not be discharged into any surface ditch, waterway, storm drain, sanitary sewer, or any other conveyance.

F. Water

1. The Contractor shall be prepared to encounter and handle groundwater.

2. Dispose of groundwater and construction process water as described in the Work Plan submittal, in compliance with applicable state and local regulations.

3.7 BORE HOLE INSTALLATION

A. HDD Entry Pit and HDD Exit Pit

1. Construct the HDD entry pit and HDD exit pit as required and within the work areas shown on the Drawings.

2. The Contractor shall plate or completely backfill open holes overnight in accordance with ODOT, County, and City permits.

B. Pilot Hole

1. Drill the pilot hole along the profile indicated on the Drawings, or as modified and approved pursuant to Part 3, Para 3.3.

2. Provide and maintain instrumentation to monitor the drilling fluid flow rate, fluid pressure and volume.

3. Maintain the pilot hole location along the profile indicated on the Drawings and within tolerances specified to satisfy Permit conditions and right-of-way restrictions unless otherwise approved.

C. Ream

1. Ream as required to enlarge the pilot hole to ensure the borehole diameter is sufficient to accommodate the HDPE pullback.

2. Ream the bore to a minimum diameter of 150% of the effective outside diameter of the pipe or as approved.

3. Conduct a swab pass of the bore upon completion of the final ream, prior to pullback of the pipe. The swab pass reamer shall have an outside diameter larger than the product pipe outside diameter.

3.8 PIPE INSTALLATION

A. Pipe Assembly

1. Assemble the HDPE pipe to be installed by HDD methods in the pipe laydown areas identified on the Drawings. Refer to Section 01 10 00 - Summary of Work, Part 1, Para 1.6 for staging area and pipe laydown requirements.

2. Join the HDPE pipes by full depth butt welding using an appropriately sized heat fusion welding machine with trained operators following the manufacturer's instructions.

3. Seal the ends of the assembled pipe and perform hydrostatic pressure testing as specified in Section 33 13 00 - Testing & Disinfecting of Water Utility Piping prior to installation. If the pipeline does not pass the pressure test, then repair the pipeline as necessary and retest until it passes.

B. Pipe Installation

1. Plan the pipe pullback operation to ensure that once started, the operation continues until the entire pipe is pulled back.

2. Determine and apply safe pulling load for proper installation.

3. Provide adequate support/rollers along the pipe assembly in the pipe laydown area. Arrange rollers to allow free movement during pullback. Monitor rollers and use side-booms if necessary. Do not allow pipe sages or the tail end of the pipe to drag on the ground.

4. Attach two tracer wires to the pipe prior to pullback per approved submittal. Access to tracer wires will be via the locate stations at each end of the pipe as shown on the Drawings.

5. Fill the pipe with water in accordance with approved submittal as it enters the bore to reduce pullback loads. Completely seal the pipe to prevent drilling fluid from entering the pipe during pullback.

6. Pull the assembled pipe back through the reamed hole. Leave a minimum length of pipe extending from both ends of the bore to allow recovery from the elastic strain of installation without drawing the end of the pipe back into the bore at either end.
    a. Take care as the pipeline is pulled to the borehole entrance to avoid damage.
    b. The tensile pulling load imposed on the HDPE pipe in the pull section shall not exceed the maximum allowable tensile load as specified by the pipe manufacturer.
    c. Control torsional stress by use of a fully operational swivel to connect the pull section to the reaming assembly to minimize torsional stress. The torsional stress imposed on the pull section shall not exceed the maximum allowable torsional stress as specified by the pipe manufacturer.

7. Allow the pipe to relax for at least 8 hours to recover from the installation tension.

8. After the relaxation period, cut the pipe to final length and install transition fittings to mate with the ductile iron fittings and valves as shown on the Drawings.

9. Fill the annulus between the product pipe and the excavated borehole with grout as shown on the Drawings. Prevent the product pipe from floating or displacement during grouting of the annular space.

10. Place pipe bedding material at the base of the HDD entry pit and HDD exit pit as shown on the Drawings.

11. Place concrete backfill plugs around the HDPE pipe in the HDD entry pit and HDD exit pit as shown on the Drawings.

C. HDD Completion

1. After the HDD pipeline has been installed, perform a post-installation survey to locate the as-constructed HDD exit and entry locations.

2. After the HDD pipeline has been installed, verify the roundness of the installed pipe at least 5 days after installation but prior to grouting of the annular space. The deflection of the pipe shall not exceed 10% when tested with a mandrel specifically designed for the type and size of pipe installed.

D. Testing and Disinfection

1. Testing: After the pipe has been fully installed, perform hydrostatic pressure testing as specified in Section 33 13 00 - Testing & Disinfecting of Water Utility Piping. If the pipeline does not pass the pressure test, then repair the pipeline as necessary and retest until it passes.

2. Clean and disinfect the installed pipeline in accordance with Section 33 13 00 - Testing & Disinfecting of Water Utility Piping.

## 3.9 CLEANUP AND RESTORATION

A. While the Work is in progress, make every effort to maintain the site in a neat and orderly condition.

B. Control settlement and heave of the ground surface, utilities, and other features above the HDD centerline, within the zone influenced by the HDD construction. Repair any damage from settlement or heave caused by HDD activities.

C. Grout any voids caused by or encountered during drilling.

D. Upon conclusion of the Work, remove all HDD equipment, materials, and waste from the site.

E. Clean up all disturbed areas and restore as shown and specified.

F. Restore pavement, sidewalks, and landscaped areas in accordance with ODOT, County and City requirements.

END OF SECTION

# SECTION 33 11 10

# WATER UTILITY DISTRIBUTION & TRANSMISSION PIPING

## PART 1 GENERAL

### 1.1 SUMMARY

A. Work under this Section applies to furnishing and installation of pipe materials, fittings and appurtenances normally encountered with water distribution and transmission systems, including potable water and fire water systems.

B. Section includes:

1. Pipe and fittings.
2. Flexible couplings.
3. Flanged coupling adapters.
4. Insulating flanged joints.
5. Tapping sleeves and valves.
6. Water service connection and smaller diameter materials (2” and under)
7. HDPE to DI Pipe Transition Materials
8. Flexible expansion joints.
9. Underground Pipeline Markers
10. Bedding and cover materials.
11. Geomembrane for Gas Line Crossings

C. Related Requirements:

1. General

a. Furnish and install all piping systems shown and specified in accordance with the requirements of the Contract Documents.

b. Each buried piping system shall be complete, with all necessary fittings, valves, accessories, lining and coating, testing, excavation, backfill and encasement, to provide a functional installation.

c. Piping layouts shown in the Drawings are intended to define the general layout, configuration, and routing for pipe, as well as the size and type of piping to be installed. The piping plans are not pipe construction or fabrication drawings.

d. The Contractor shall cause the Supplier of pipes, valves, fittings and appurtenances to coordinate piping installation such that all equipment is compatible and is capable of achieving the performance requirements specified in the Contract Documents.

e. It is the Contractor's responsibility to develop the details necessary to construct all piping systems, to accommodate the specific equipment provided, and to provide and install all spools, spacers, adapters, connectors, valves, gaskets, fittings, appurtenances etc., for a complete and functional system.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T99 - Standard Specification for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.

B. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

2. ASME B16.5 - Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.

3. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges.

4. ASME B31.10 - Standards of Pressure Piping.

C. ASTM International:

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

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

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

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

5. ASTM A536, Standard Specification for Ductile Iron Castings.

6. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

7. ASTM D1598 - Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure.

8. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

9. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

10. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

11. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

12. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

13. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

D. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.

2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.

4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

5. AWWA C115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.

7. AWWA C153 - Ductile-Iron Compact Fittings.

8. AWWA C219 - Bolted, Sleeve-Type Couplings for Plain-End Pipe

9. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.

10. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

11. AWWA C606 - Grooved and Shouldered Joints.

12. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.

13. AWWA C905 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm) for Water Transmission and Distribution.

E. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

F. National Sanitation Foundation:

1. NSF Standard 61 - Drinking Water System Components – Health Effects.

2. NSF Standard 372 - Drinking Water System Components – Lead Content.

1.3 SUBMITTALS

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

B. Product Data: Submit data on pipe materials, pipe fittings, restrained joint systems, and accessories.

C. Shop Drawings: Indicate piping layout, including piping specialties.

1. Layout Schedule for applicable segments of proposed transmission main alignment. Schedule shall include layout plan and dimensions, schedule of pipe fittings and specials, materials and class for each size and type of pipe, joint details, pipe supports, and any special provisions required for assembly.

D. Lining and coating data.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Manufacturer’s handling, delivery, storage and installation requirements.

G. Field Quality-Control Submittals:

1. Pipeline hydrostatic testing plan.

2. Indicate results of Contractor-furnished tests and inspections.

H. Preconstruction Photographs:

1. Submit digital files of colored photographs of Work areas and material storage areas.

1.4 CLOSEOUT SUBMITTALS

A. As-Built Drawings:

1. Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Materials:

1. Unless otherwise noted, all water works materials provided for the project shall be new, of first-class quality and shall be made by reputable manufacturers.

2. All material of a like kind shall be provided from a single manufacturer unless otherwise approved by the City's Representative.

3. All material shall be carefully handled and installed in good working order free from defect in manufacture, storage and handling.

4. All fittings and mechanical joint restraints shall be manufactured in the United States of America, except for those procured from Tyler Union, which may be provided as imported/non-domestic upon field acceptance by the City.

B. Markings:

1. Pipes and Fittings: Mark each pipe and fitting at plant. Include date of manufacture, manufacturer's identification, specification standard, inside diameter of pipe, dimension ratio as applicable, pipe class as applicable, pipe number for laying purposes as applicable, and other information required for type of pipe.

2. Bolting materials (washers, nuts and bolts) shall be marked with material type.

C. Testing:

1. Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards.

1.6 MATERIAL DELIVERY, STORAGE, AND HANDLING

A. In accordance with manufacturer's written recommendations and as specified in these Contract Documents.

B. Pipe, specials, and fittings delivered to Project Site in damaged condition will not be accepted.

C. Storage:

1. Store and support pipe securely to prevent accidental rolling and to avoid contact with mud, water, or other deleterious materials.

2. Pipe and fittings shall not be stored on rocks, gravel or other hard material that might damage pipe. This includes storage area and along pipe trench.

3. Do not store materials in direct sunlight.

4. Gaskets: Do not allow contact with oils, fuels, petroleum, or solvents.

D. Handling:

1. Pipe and appurtenances shall be handled in accordance with manufacturer's recommendations or requirements contained in this section or subsequent sections dealing with the specific pipe material, whichever is more stringent.

2. Pipe shall be handled with proper equipment in a manner to prevent distortion or damage. Use of hooks, chains, wire ropes, or clamps that could damage pipe, damage coating or lining, or kink and bend pipe ends is not permitted.

3. Use heavy canvas, or nylon slings of suitable strength for lifting and supporting materials.

4. Lifting pipe during unloading or lifting into trench shall be done using two slings placed at quarter point of pipe section. Pipe may be lifted using one sling near center of pipe, provided pipe is guided to prevent uncontrolled swinging and no damage will result to pipe or harm to workers. Slings shall bear uniformly against pipe.

PART 2 PRODUCTS

2.1 WATER PIPING

A. General

1. All piping materials and specials shall meet the specifications of this Section and of the appropriate AWWA Standard Specifications. In the case of conflict, the more stringent specifications shall apply.

2. All coatings and materials specified herein which may come in contact with potable water shall conform to National Sanitation Foundation (NSF) Standard 61 and 372.

3. Minimum Pressure Ratings: Unless otherwise specified herein or shown in the Drawings, the minimum working pressure rating of all water works materials specified herein shall be 1.5 times the operating pressure or 150 psi minimum.

4. Gaskets:

a. Material: Styrene Butadiene Rubber (SBR) composition.

B. Ductile Iron Pipe:

1. Centrifugally cast, conforming to AWWA Standard C151.

2. Coating: Asphaltic exterior coating in accordance with AWWA Standard C151.

3. Pipe Mortar Lining: Shop-applied NSF 61 cement mortar lining, smoothed finish, complying with AWWA C104.

4. Pipe Thickness Class:

a. Comply with AWWA C151.

b. Class 52, unless shown to be greater in the Plans.

1) The Contractor shall be aware ductile iron piping with thickness class greater than Class 52 may have long fabrication and supplier lead times. The Contractor shall be responsible for coordinating product submittal and delivery times accordingly such as not to delay construction.

5. Gauged Pipe:

a. All ductile iron pipe 24-inch diameter or greater to be cut in the field shall be gauged full length and, along the full length, shall meet the outside diameter

standard dimensions and tolerances required for spigot ends along the full length of pipe to within 2 feet of the bell end.

b. In addition to pipe supplied for anticipated cutting, a minimum of 5% of each size of piping 24-inch diameter or greater shall be provided gauged full length as described above.

c. Pipe shall be externally marked, in manufacturer's color, indicating gauged pipe.

6. Polyethylene Encasement:

a. Comply with AWWA C105.

b. Polyethylene film shall be minimum 8-mil thick virgin linear low-density polyethylene (LLDPE).

7. Joints:

a. Joint types shall be provided as identified in the Drawings and as required for the application.

b. Mechanical Joints:

1) Comply with AWWA C111.

c. Push-on Joints:

1) Comply with AWWA C111.

2) Manufacturers, without exception:

a) Tyton Joint by American Cast Iron Pipe Company, U.S. Pipe and Foundry Company, McWane, and Pacific States Cast Iron Pipe.

b) Fastite Joint by American Cast Iron Pipe Company.

d. Restrained Joints:

1) Joint restraint for pipe shall be accomplished with an integral lock mechanism, except as may be otherwise specified. Any such system shall be a manufacturer's standard proprietary design, shall be as recommended by the manufacturer for the application, and shall be performance proven.

2) Restraining components:

a) Ductile iron complying with AWWA C110 and/or C153, with the exception of a manufacturer's proprietary design dimensions.

b) Push-on joints for such fittings shall comply with AWWA C111.

3) Deflection:

a) The maximum pipe deflection shall not exceed one half of the manufacturer's stated joint deflection allowance.

4) Manufacturers:

a) For pipe larger than 12"

(1) "TR Flex", United States Pipe and Foundry Company.

(2) "Flex-Ring", American Cast Iron Pipe Company.

b) For pipe 12" and smaller

(1) "Field-Lok", United States Pipe and Foundry Company.

(2) "Fast Grip", American Cast Iron Pipe Company.

(3) "TR Flex", United States Pipe and Foundry Company.

(4) "Flex-Ring", American Cast Iron Pipe Company.

c) For all pipe sizes

(1) "MEGALUG", EBAA Iron, Inc.

(a) Where any restrained joint system requires the use of a wedge-type mechanical restraint gland for restraint, the glands shall be provided in quantities as may be required and shall be considered incidental to the joint restraint system.

(b) Wedge-type mechanical restraining glands shall not be used to restrain the plain end of plain end ductile iron or cast iron fittings.

e. Flanged Joints:

1) Flat faced, complying with AWWA C111 and C115, unless otherwise specified.

2) Bolt hole drilling according to ASME/ANSI B16.1, Class 125, or ASME/ANSI B16.1, Class 250, where specified. Flanges shall be attached with bolt holes straddling the vertical axis of the pipe unless otherwise shown.

3) The Contractor shall coordinate with pipe, valve and fitting suppliers to make certain mating pipe, valve and fitting flanges match in bolt pattern.

4) Pressure rating of flange joints shall not exceed the rating of the pipe or fitting of which they are a part and the maximum pressure rating of the joint shall be 250 psi.

5) Flange joint connections shall not be exposed to test pressures greater than 1.5 times their rated working pressure.

6) Threaded flanges:

   a) Ductile iron pipe spools with threaded flanges shall conform to AWWA C115.

   b) Installed only on pipe with a minimum Class 53 wall thickness.

7) Buried flanges:

   a) Flanged connections shall not be buried unless shown as such on the Drawings.

   b) Buried flanges shall be wrapped with 2 layers of 10 mil tape along edges of flanges.

8) Gaskets:

   a) Full faced, composed of synthetic rubber and 1/8-inch thick conforming to ASME B21.1 and AWWA C111.

   b) Ring gaskets will be permitted only where specifically noted in the Drawings and Specifications.

   c) Gaskets for flanged joints shall be as follows:

      (1) Pipe sizes between 6-inch and 24-inch diameter, service pressures of 150 psi or greater shall be Garlock 3760-U or equal.

      (2) Pipe sizes 4-inch diameter and under, service pressures of 150 psi or greater shall be Garlock 3505 or equal.

      (3) All pipe sizes with service pressures of 150 psi or less shall be Garlock 98206 or equal.

d) Insulating flanged joints:

(1) Full faced, conform to ANSI 16.21.

(2) Material: Non-asbestos.

(3) Suitable for operating and test pressures of the pipe system.

(4) Manufacturer:

(a) Garlock GYLON Style 3505 or equal.

2.2 FITTINGS:

A. Material: Ductile iron, complying with AWWA Standard C110.

1. Fittings conforming to AWWA C153 may be substituted in lieu of AWWA C110 fittings.

B. Fittings used for joining ductile iron and PVC pipe shall be of the type, size and strength designated on the Plans, elsewhere in the specifications.

1. Fittings shall be mechanical joint, push-on type, flanged or plain-end as required and shown on the Drawings.

2. All restraint systems and flanged fittings shall be provided with bolts and gaskets as specified herein.

C. Pressure ratings: As specified for joining pipe above and as shown on the Drawings.

D. Coating and Lining:

1. Asphaltic exterior coating in accordance with AWWA Standard C110.

2. Cement Mortar Lining: Comply with AWWA C104.

E. Following information cast upon fittings:

1. Manufacturer's identification.

2. Country of manufacture.

3. Pressure rating.

4. For bends, number of degrees and/or fractions of a circle.

F. City may require additional metallurgical documentation or other certifications.

2.3 NUTS, BOLTS AND WASHERS:

A. All bolts shall have heavy hex head with heavy hex nuts.

B. For operating pressures greater than 150 psi:

1. Bolts: Steel alloy composition. Comply with ASTM A193.

2. Nuts: Comply with ASTM A194, Grade 2H.

3. Washers: Comply with ASTM F436.

C. For operation pressures of 150 psi or less:

1. Bolts: Low-carbon steel composition. Comply with ASTM A307, Grade B.

2. Nuts: Comply with ASTM A563A, Heavy Hex.

3. Washers: Comply with ASTM F844.

D. Higher-strength bolts with higher torque values as specified above for operation pressures greater than 150 psi shall not be used for assembly of flange joints including gray-iron flanges.

2.4 FLEXIBLE COUPLINGS

A. General

1. All flexible couplings shall be constructed to inside diameters that properly fit the connecting pipes.

2. The Contractor shall be responsible for selecting sleeve lengths appropriate to the application, subject to review and approval of the Engineer, recognizing that longer sleeves allow for larger deflections and may ease installation.

B. Flexible Couplings:

1. Description:

a. Comply with AWWA C219.

b. Type: Bolted, sleeved.

c. Configuration: Straight, transition or reducing as shown in the Drawings.

d. Center rings and end rings: Ductile iron. Comply with ASTM A536.

e. Gaskets: Virgin styrene butadiene rubber (SBR) compounded for water service. Comply with ASTM D2000.

f. Bolts and nuts: High strength low alloy steel. Comply with AWWA C111.

g. Lining and coating: Factory-applied fusion bonded epoxy.

h. Working pressure: Up to 260 psi.

2. Manufacturers:

a. For 2-inch to 12-inch diameter:

1) Romac Industries, Inc. – Style 501 or equal.

b. For 14-inch diameter and larger:

1) Romac Industries, Inc. – 400 Series or equal.

C. Insulating Flexible Couplings:

1. The Contractor shall be responsible for selecting couplings appropriate to the application, subject to review and approval of the Engineer, recognizing that different pipe materials will require specific sizing and material selection for couplings.

2. Description:

a. Comply with Flexible Coupling specifications above.

b. Insulating Boot: Ethylene propylene diene monomer (EPDM) compounded for water service. Comply with ASTM D2000.

3. Manufacturers:

a. For 4-inch to 14-inch diameter:

1) Romac Industries, Inc. – Style IC501 or equal.

b. For 12-inch to 96-inch diameter:

1) Romac Industries, Inc. – Style IC400 or equal.

D. Restrained Flexible Couplings:

1. Description:

a. Body: Steel. Comply with ASTM A36.

b. Restrained gland: Ductile iron. Comply with ASTM A536, Grade 65-45-12.

c. Gaskets: Virgin styrene butadiene rubber (SBR) compounded for water service. Comply with ASTM D2000.

d. Bolts and nuts: All-thread rod, at a minimum complying with ASTM A193 Grade B7. Nuts per ASTM A194 Grade 2H.

e. Lining and coating: Factory-applied fusion bonded epoxy.

f. Working pressure: 250 psi. Test pressure: 400 psi.

2. Manufacturers:

a. Romac Industries, Inc. – Style 400RG

b. EBAA Iron – 3800 MEGA-COUPLING

2.5 FLANGED COUPLING ADAPTERS

A. Flanged Coupling Adapters:

1. All flanged coupling adapters shall be constructed to diameters that properly fit the connecting plain end pipe and the flanged fitting.

2. Description:

a. Comply with AWWA C219.

b. Flange: AWWA Class D Steel Ring Flange, compatible with ANSI Class 125 & 150 bolt circles.

c. End ring and body:

1) Steel. Comply with ASTM A36.

2) Ductile iron. Comply with ASTM A536, Grade 65-45-12.

d. Flange: Compatible with ANSI Class 125 & 150 bolt circles.

e. Gaskets: Virgin styrene butadiene rubber (SBR) compounded for water service. Comply with ASTM D2000.

f. Bolts and nuts: High strength low alloy steel bolts and nuts. Comply with AWWA C111 composition requirements.

g. Lining and coating: Factory-applied fusion bonded epoxy.

h. Working pressure rating: Equal to the maximum rating of the flange.

3. Manufacturers:

a. Romac Industries, Inc.

1) Style FCA501

a) For 3-inch to 16-inch diameter.

2) Style FC400.

a) For 12-inch to 96-inch diameter.

B. Restrained Flanged Coupling Adapters:

1. Description:

a. Gland and flange body: Ductile iron. Comply with ASTM A536.

b. Flange: Compatible with ANSI Class 125 & 150 bolt circles.

c. Gaskets: Virgin styrene butadiene rubber (SBR) compounded for water service. Comply with ASTM D2000.

d. Restraining bolts and lugs: Ductile iron. Comply with ASTM A536.

e. T-bolts Bolts and nuts: High strength low alloy steel. Comply with AWWA C111 composition requirements.

f. Lining and coating: Factory-applied fusion bonded epoxy.

2. Manufacturers:

a. Romac Industries, Inc. – RFCA Restrained Flanged Coupling Adapters.

b. EBAA Iron – MEGAFLANGE Restrained Flange Adapter.

2.6 TAPPING SLEEVES AND VALVES

A. Tapping Sleeves:

1. Description:

a. Type: Dual compression.

b. Material:

1) Body: Stainless steel, Type 304.

2) Flanged outlet: Stainless steel, Type 304.

c. Outlet Flange Dimensions and Drilling: Comply with ASME B16.1, Class 150 and MSS SP-60.

d. Outlet Gasket:

e. Provide with Type 304 stainless steel test plug.

f. Nuts, bolts and washers: Stainless steel, Type 304.

2. Manufacturers:

a. Romac Industries, Inc. – Model STS 420

b. JMC Industries, Inc.

B. Tapping Valves:

1. Resilient wedge gate valves specified in Section 40 05 23.15, Gate Valves.

2.7 WATER SERVICE CONNECTION AND SMALLER DIAMETER MATERIALS (2" AND UNDER)

A. Saddles

1. General: Saddles used for 1-inch service lines shall have an AWWA tapered thread outlet. Saddles used for 2-inch service lines shall have a female iron pipe thread

2. Service saddles shall be double strap, cast iron Style 202NS as manufactured by Romac Industries. Straps to be stainless steel and cast-iron casting to be coated with fusion bonded nylon. Gasket shall be NBR compounded for water service and bonded integral to sleeve. Bolts and nuts shall be 5/8-inch Type 304 stainless steel with nuts coated to prevent galling. compounded for water service and bonded integral to sleeve. Bolts and nuts shall be 5/8-inch Type 304 stainless steel with nuts coated to prevent galling.

B. Corporation Stops

1. Corporation stops shall be of the ball type and shall be made of bronze alloy. Valves shall have pack joint fittings for service pipe. Corporation stops for direct tapping shall have AWWA tapered thread inlet and outlet connections compatible with polyethylene tubing.

2. Corporation stops used with 1-inch outlet saddles shall have either AWWA tapered thread or male iron pipe thread inlets and outlet connections compatible with

polyethylene tubing. Thread patterns for the saddle outlet and corporation stop inlet shall be the same.

3. Corporation stops used with 1-1/2 to 2-inch outlet saddles shall have male iron pipe thread inlets and outlet connections compatible with connecting service pipes.

4. Corporation stops shall be No Lead Brass as manufactured by Ford Meter Box Company, A.Y. McDonald Company, or approved equal.

C. Angle Meter Valves

1. Angle meter valves shall be of the ball type and shall be made of bronze alloy. Valve shall have pack joint fittings for service pipe and a meter swivel nut. Valves shall be quarter turn and shall have a lock wing. Angle meter valves shall be No Lead Brass as manufactured by Ford Meter Box Company, A.Y. McDonald Company, or approved equal.

D. Curb stops

1. Curb stops shall be of the ball type and shall be made of bronze alloy. Stops shall have pack joint fittings for service pipe. Valves shall be quarter turn. Curb stops shall be Lead Free as manufactured by Ford Meter Box Company, A.Y. McDonald Company, or approved equal.

E. Polyethylene Tubing Service Pipe

1. Polyethylene tubing service pipe shall meet the requirements of AWWA C901. Tubing shall be high molecular mass with a 200 psi rating. Tubing used 5/8x3/4 and 1-inch meter assemblies shall be 1-Inch Dia. SDR 7 (PE 3408) Iron Pipe Size. Tubing used for 1-1/2-Inch and 2-Inch meter assemblies shall be 2-inch Dia. SDR 7 (PE 3408) Iron Pipe Size.

F. Sampling Station

1. Sampling station to be Water Plus Corporation Model 301D Dry Barrel.

2.8 HDPE TO DI PIPE TRANSITION MATERIALS

A. Connections between HDPE pipe and DI pipe shall be made using fittings as shown on the plans. HDPE molded flange adaptor fittings shall be of the same class as the HDPE piping.

B. Gaskets for molded HDPE flange to DI flange connections shall be 1/8” thick, full face and conform to ANSI B16.21, suitable for the operating and test pressures of the pipe system. Gaskets shall be non-asbestos. Gaskets shall be Garlock 3760U, or approved equal.

C. DI backup ring shall be epoxy coated and rated to meet or exceed pressure rating of HDPE force main piping. Fasteners shall be as specified herein for ductile iron piping flange connections.

D. Wax Tape for wrapping backup ring and fasteners shall be a petrolatum wax tape coating system consisting of three parts: surface primer, wax-tape, and out covering. All three parts shall be the product of the same manufacturer. Use Trenton Poly-Ply or approved equal, and install per AWWA C217 and the manufacturers recommendations.

2.9 FLEXIBLE EXPANSION JOINTS

A. Description

1. Installed at locations indicated in the Drawings.

2. End connections: As shown in the Drawings.

3. Material: Ductile iron, AWWA C153.

4. Working pressure: 350 psi, minimum.

5. Construction:

a. An expansion joint designed and cast as an integral part of a double ball and socket type flexible joint.

b. Manufactured of ductile iron, conforming to requirements of AWWA C153 and ASTM A536.

c. Deflection: Minimum of 15 degrees deflection per ball.

d. Expansion:

1) 12-inch diameter and under: 8 inch.

2) Greater than 12-inch diameter: 16 inches.

e. Each flexible expansion joint shall be hydrostatically tested to the manufacturer's published pressure rating prior to shipment.

f. Lining: All interior "wetted" parts shall be shop-lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of AWWA C213 and shall be holiday tested with a 1500-volt spark test conforming to said specification.

g. Coating: Coal tar epoxy.

6. Quality Assurance: Hydrostatically tested to manufacturer's published pressure rating prior to shipment.

7. Appropriately sized polyethylene sleeves, meeting AWWA C105 requirements, shall be included for direct bury applications.

B. Manufacturers

1. EBAA Iron, Inc. – Flex-Tend or equal.

2.10 UNDERGROUND PIPE MARKERS

A. MARKING TAPE

1. Detectable:

a. Solid aluminum foil, visible on unprinted side, encased in protective high visibility, inert polyethylene plastic jacket.

b. Foil Thickness: Minimum 0.35 mils.

c. Laminate Thickness: Minimum 5 mils.

d. Width: 6 inches.

e. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.

f. Joining Clips: Tin or nickel-coated furnished by tape manufacturer.

g. Manufacturers and Products:

1) Reef Industries; Terra Tape, Sentry Line Detectable.

2) Mutual Industries; Detectable Tape.

3) Presco; Detectable Tape.

2. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities and as specified in NEMA Z535.1, Safety Color Code.

| Color | Facility |
|---|---|
| Red | Electric power lines, cables, conduit, and lightning cables |
| Orange | Communicating alarm or signal lines, cables, or conduit |
| Yellow | Gas, oil, steam, petroleum, or gaseous materials |
| Green | Sewers and drain lines |
| Blue | Potable water |

| Color | Facility |
|---|---|
| Purple | Reclaimed water, irrigation, and slurry lines |

B. ELECTRONIC LOCATING MATERIALS

1. Marker Balls:

   a. Exterior Material: High-density polyethylene.

   b. Size: Maximum 4.5 inches in diameter.

   c. Range: Locatable with standard electronic marker locating devices at depths up to 5 feet.

   d. Field Type: Spherical RF field regardless of orientation.

   e. Contain no floating or movable parts, and no batteries or active components.

   f. Color: Provide colored marker balls per Article 2.03 B above.

   g. Manufacturer and Product: Omni Marker Model 162 (green), Omni Marker Model 161 (blue), or approved equal.

2. Tracer Wire:

   a. Direct burial No. 12 AWG solid, annealed copper-clad steel (CCS) high strength tracer wire.

   b. Tensile Breaking Load: 380-pound average.

   c. Jacket:

      1) High molecular weight high-density polyethylene complying with ASTM D1248, 30-volt rating.

      2) Color: Provide in colors per Article 2.03 B above.

   d. Manufacturer and Product: Copperhead Industries; LLC, 12 CCS high strength reinforced tracer wire, or approved equal.

3. Tracer Wire Connectors:

   a. Waterproof, corrosion proof and suitable for No. 12 AWG solid core wire.

   b. Prefilled with silicone and suitable for use with low-voltage tracer lines of less than 50 volts.

c. Lug Connectors:

1) Waterproof plastic housing that encases the silicone prefilled lug terminals.

2) Manufacturer and Product: King Innovations; DryConnTM Direct Bury Lug, or approved equal.

d. Twist Connectors:

1) Waterproof epoxy-filled packaging that encases the silicone prefilled twist connectors.

2) Manufacturer and Product: 3M Division; DBY Direct Bury Splice Kit 09053 connectors, or approved equal.

4. Ground Wire: No. 12 AWG bare solid copper wire.

2.11 CONCRETE ENCASEMENT AND CRADLES

A. Concrete:

1. As specified in Standard Specification Section 005400.

2. Type: reinforced, air entrained as shown in the Drawings.

3. Compressive Strength: Minimum 3,000 psi at 28 days.

4. Finish: Rough troweled.

B. Concrete Reinforcement: As specified in Standard Specification Section 00540.

2.12 BEDDING AND COVER MATERIALS

A. Bedding and Cover:

1. Pipe Bedding: As specified in Section 31 23 17 – Trenching, Backfilling & Compacting for Utilities

2. Pipe Zone Backfill: As specified in Section 31 23 17 – Trenching, Backfilling & Compacting for Utilities.

3. Trench Backfill from Pipe Zone to Finish Grade:

a. Material type varies by location, as shown in the Drawings.

1) Class A Trench Backfill as specified in Section 31 23 17 – Trenching, Backfilling & Compacting for Utilities.

2) Class B Trench Backfill as specified in Section 31 23 17 – Trenching, Backfilling & Compacting for Utilities.

3) Lean concrete or CLSM as specified in Section 31 23 24, Flowable Fill, with compressive strength of 100 - 200 psi.

4. Trench stabilization below bedding where required and approved by City per Section 31 23 17 – Trenching, Backfilling & Compacting for Utilities.

2.13 GEOMEMBRANE FOR GAS LINE CROSSINGS

A. Furnish 40 mil reinforced geomembrane with 300V/mil dielectric strength and minimum 150# puncture resistance and 150# tensile strength. Geomembrane shall be XR-5 as manufactured by Seaman Corporation, or approved equal.

2.14 ACCESSORIES

A. Concrete for Thrust Restraints: As shown on drawings and specified in Standard Specification Section 005400.

B. Manhole and Cover: As specified in Section 33 05 13 - Manholes and Structures.

C. Miscellaneous Steel Rods, Bolt, Lugs, and Brackets:

1. Comply with ASTM A36 or ASTM A307.

2. Grade A carbon steel.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that existing utility water main size, location, and invert are as indicated on Drawings.

3.2 PREPARATION

A. Preconstruction Site Photos:

1. Take photographs along centerline of proposed pipe trench; minimum one photograph for each 50 feet of pipe trench.

2. Show mailboxes, curbing, lawns, driveways, signs, culverts, and other existing Site features.

3. Include Project name, date taken, and sequential number of each photograph in physical log or CD.

B. Inspection:

1. All pipe sections, specials and jointing materials shall be carefully examined for defects.

2. No piping or related materials shall be laid that is known to be defective. Any defective piece installed shall be removed and replaced with a new pipe section in a manner satisfactory to the Engineer at the Contractor's expense.

3. Defective material shall be marked and removed from the job site before the end of the day.

C. Pipe Cutting:

1. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.

2. Use only equipment specifically designed for pipe cutting; use of chisels or hand saws is not permitted.

3. Grind edges smooth with beveled end for push-on connections.

4. Prior to assembly of field cut pipe, the reference mark shall be re-established with a pencil or crayon. The location of the reference mark at the proper distance from the bevel end shall be in accordance with the manufacturer's recommendations.

D. Remove scale and dirt on inside and outside before assembly. Cleaning of each pipe or fitting shall be accomplished by swabbing out, brushing out, blowing out with compressed air, or washing to remove all foreign matter.

E. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION

A. Bedding:

1. Excavation:

a. Excavate pipe trench as specified in Section 31 23 17, Trenching for Work of this Section.

b. All pipe trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of pipe bedding material as scheduled on the Drawings.

c. Remove large stones or other hard matter which could damage pipe or impede consistent pipe bedding backfilling or compaction.

d. Trench base shall be inspected prior to placement of pipe.

e. Hand trim excavation for accurate placement of pipe to elevations as indicated on Drawings.

2. Dewater excavation as specified in Section 31 23 19, Dewatering to maintain dry conditions and to preserve final grades at bottom of excavation.

3. Provide sheeting and shoring as specified in Section 31 23 17, Trenching.

4. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches compacted depth, and compact to 95 percent of maximum density.

B. Piping:

1. Install pipe according to AWWA C600.

2. Handle and assemble pipe according to manufacturer instructions and as indicated on Drawings.

3. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

4. Steel Rods, Bolt, Lugs, and Brackets: Coat buried steel with one coat of coal tar coating before backfilling.

5. Sanitary Sewer Separation:

a. Install new water lines and appurtenances in compliance with local and state regulations governing the horizontal and vertical separations between water and sewer facilities.

b. Variance:

1) If a variance is proposed due to requested design revisions or if an existing facility has been installed at a different location or elevation than indicated on the Plans, submit written proposal for review and approval by the Engineer.

2) Include the reason for the variance, type of material and condition of the sewer line, location of the water and sewer facilities, horizontal and vertical skin-to-skin clearances and corrective measures proposed.

3) Each variance will be considered on a case-by-case basis.

4) Review Time: Allow a minimum of 5 working days review and response to each proposal.

6. Install ductile iron fittings according to AWWA C600.

7. Joints:

   a. Pipe jointing surfaces shall be clean and dry when preparing surfaces for joining.

   b. Lubricants, primers, adhesives, etc. shall be used as recommended by the pipe or joint manufacturer's specifications.

   c. The jointing materials or factory-fabricated joints shall then be placed, fitted, joined, and adjusted in such a manner as to obtain a watertight joint.

   d. Trenches shall be kept water-free and as dry as possible during bedding, laying and jointing.

   e. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of the pipe from any cause.

8. Flanged Joints: Not to be used in underground installations except within structures, unless shown otherwise in the Drawings.

9. HDPE Flange Connection to DI Pipe

   a. Where shown on the plans, the HDPE pipe is adapted to fittings or other systems by means of a gasketed flange assembly consisting of a molded HDPE flange end butt fused to the pipe with a ductile iron backing ring. Backing rings shall be installed per manufacturer's requirements and recommendations, especially those concerning flange bolt installation and torquing and re-torquing procedures. As a minimum requirement, all HDPE flange connections shall be re-torqued 4 hours after initial bolt torquing, and then re-torqued a second time 4 to 24-hours after in first re-tourquing. Refer to the Plastic Pipe Institute's (PPI) Technical Note 38 entitled "Bolt Torque for Polyethylene Flanged Joints" for recommended HDPE flange joint target bolt torque requirements and procedures.

10. Deflection:

    a. The maximum pipe deflection shall not exceed one-half of the manufacturer's stated joint deflection allowance.

b. Set a laser, string line or other approved alignment guide along the centerline of previously installed pipe to the point where pipe joint deflection is required. The approved alignment guide shall extend to the end of the proposed subsequent pipe length. A measurement will be taken from the alignment guide to the centerline of the subsequent pipe length to determine the amount of pipe joint deflection proposed. Measured deflection shall not exceed the specified allowable deflection for the purposes of aligning the pipe.

11. Install pipe and fittings to the line and grade specified on the Drawings, with joints centered, pipe properly supported and restrained against movement, and all valve stems plumb. Re-lay pipe that is out of alignment or grade.

12. High Points:

    a. Install pipe with no high points, unless otherwise shown in the Drawings.

    b. If unforeseen field conditions arise that necessitate high points, install air release valves as directed by Engineer.

13. Bearing:

    a. Install pipe to have bearing along entire length of pipe.

    b. Excavate bell holes to permit proper joint installation where necessary or as directed by Engineer.

    c. Do not lay pipe in wet or frozen trench.

14. Prevent foreign material from entering pipe during placement.

15. Install pipe to allow for expansion and contraction without stressing pipe or joints.

16. Close pipe openings with watertight plugs during Work stoppages.

17. All pipe ends which are to be permanently closed shall be plugged or capped and restrained against internal pressure.

18. Install access fittings to permit disinfection of water system performed under Section 33 13 00 – Testing and Disinfecting of Water Utility Piping.

19. Cover:

    a. Establish elevations of buried distribution main piping with not less than 36 inches of cover and as shown on the Plans.

    b. Measure depth of cover from final surface grade to top of pipe barrel.

20. Potholing / Exploratory Test Pits: Dig such exploratory test pits and perform potholing as may be necessary in advance of trenching to determine the exact location and elevation of subsurface structures, pipelines, duct banks, conduits, and other obstructions which are likely to be encountered or need to be connected to and shall make acceptable provision for their protection, support, and maintenance of their continued operation.

21. Pipe Markers:

    a. MARKING TAPE INSTALLATION

        1) Continuously install marking tape along centerline of all buried piping, install 24 inches below finished grade. Coordinate with piping installation drawings.

    b. ELECTRONIC LOCATING FACILITY INSTALLATION

        1) Marker Balls:

            a) Install according to manufacturer's recommendations and as shown or directed and according to the following requirements:

            b) Install marker balls directly above the pipe alignment at a depth no less than 3 feet and no more than 4.5 feet below final surface grade.

            c) Install marker balls during trench backfill operations by placing the marker ball in compacted backfill.

            d) Cover marker ball with a minimum of 6 inches of backfill and compact backfill before continuing trench backfill operations.

            e) Install markers balls with trenchless pipe installations by core-drilling hole of a minimal diameter needed to allow clearance for placement of marker ball. Backfill with approved trench backfill, pavement base and pavement, as applicable.

            f) Water Marker Ball Locations:

                (1) Install marker balls directly above connection points, air valve and service taps, termination points and all fitting locations, and at a minimum spacing of 100 linear feet on water lines with a straight horizontal alignment.

                (2) Install marker balls at a minimum spacing of 50 lineal feet directly above water mains installed on a deflected radius of curvature.

2) Tracer Wire and Terminal Appurtenances:

a) Tracer Wire:

(1) Install as shown or directed directly over the pipe centerline and on top of the pipe zone in all water pipe trenches.

(2) Extend tracer wire to surface at valve boxes. Extend the tracer wire in one continuous piece up vertically from the pipe trench and into the bottom of the valve can. Leave 18 inches of coiled tracer wire inside valve can.

C. Tapping Sleeves and Valves:

1. As indicated on Drawings and according to manufacturer instructions.

D. Polyethylene Encasement

1. Encase all buried DI piping, pipe fittings, valves and appurtenances in polyethylene to prevent contact with surrounding backfill material per the requirements of AWWA C105.

E. Thrust Restraints:

1. Provide valves, tees, bends, caps, and plugs with concrete thrust blocks at locations shown in the Drawings and as required to facilitate testing of lines.

2. Pour concrete thrust blocks against undisturbed earth.

3. Locate thrust blocks to ensure that pipe and fitting joints will be accessible for repair.

4. Provide thrust restraint bearing area on subsoil as shown in details within the Drawings.

5. Install tie rods, clamps, setscrew retainer glands, or restrained joints.

6. Protect metal-restrained joint components against corrosion with polyethylene film as specified herein.

7. Do not encase pipe and fitting joints to flanges.

F. Backfilling:

1. Backfill of piping systems shall be as specified in Section 31 23 17, Trenching.

G. Testing and Disinfection of Potable Water Piping System:

1. In accordance with AWWA C600 and AWWA C651 and as specified in Section 33 13 00, Testing and Disinfecting of Water Utility Distribution.

2. All chlorinated water used in disinfection of the water main shall either be discharged through an approved connection to a public sanitary sewer system or shall be dechlorinated to limits acceptable by the Oregon State Department of Environmental Quality (DEQ) prior to discharge into any storm drainage system or open drainage way.

3. No chlorinated water shall be discharged into a storm drainage system or open drainage way without a dechlorination under a plan meeting DEQ's requirements.

3.4 FIELD QUALITY CONTROL

A. Compaction Testing: See Section 31 23 17, Trenching for Compaction Testing requirements for piping trenches.

END OF SECTION

# SECTION 33 11 50

# EXISTING PIPE ABANDONMENT

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes the removal of existing exposed piping and pipe supports on Washington Avenue Bridge, and abandonment in place of existing piping located inside of bridge's middle box girders support sections.

B. This Section also includes the removal of existing buried piping where required, and abandonment in place and filling with CLSM of existing buried piping between bridge drop downs and tie-in locations.

C. Section includes:

1. Bridge pipe and pipe support removal.
2. In-place abandonment of pipe located in bridge box girders.
3. In-place abandonment and filling buried pipe.
4. Removal of buried pipe.

### 1.2 SUBMITTALS

A. Provide all submittals in accordance with Section 01 33 00, Submittal Procedures.

B. Bridge Piping Abandonment Work Plan:

1. Provide a narrative describing proposed sequencing and methods for removing and abandoning existing waterline currently attached underneath Washington Avenue Bridge, to limits shown on Drawings.
2. Identify specific equipment required to complete the work.

C. Non-Shrink Grout.

D. CLSM: Mix designs in accordance with Submittal requirements of Section 31 23 24, Flowable Fill.

### 1.3 REQUIREMENTS OF REGULATORY AGENCIES

A. Permits: The City is responsible for obtaining permit from ODOT required for completion of the work described herein. Contractor will submit piping abandonment

work plans as described above, including any proposed traffic control plan revisions, for review and approval from ODOT as required for performing work.

B. Protection of Persons and Property: Meet all federal, state and local safety requirements for the protection of workmen, other persons, and property in the vicinity of the work and requirements of the General Conditions.

1.4 PROTECTION OF EXISTING WORK

A. Carefully examine the Contract Documents to determine the extent of the work of this Section.

B. Carefully coordinate the work of this Section with all other work and construction.

C. Take all necessary precautions to prevent damage to existing facilities or utilities which are to remain in place, and be responsible for any damages to existing facilities or utilities, which are caused by the operations.

1.5 REPAIR OF DAMAGE

A. Work procedures shall provide for safe conduct of the work; careful removal and disposition of materials and equipment; protection of facilities, utilities and property which are to remain undisturbed; coordination with existing facilities and utilities to remain in service.

B. Any damage to existing facilities or utilities to remain as caused by the Contractor's operations shall be repaired to acceptance of Engineer.

C. Damaged items shall be repaired or replaced with new materials as required to restore damaged items or surfaces to a condition equal to and matching that existing prior to damage or start of work of this Contract.

1.6 EXISTING CONDITIONS

A. If the pipe material contains any hazardous materials, such as asbestos, requiring special handling upon removal, it is the responsibility of the Contractor to remove and dispose of the material in accordance with all applicable federal, state and local regulations.

B. A portion of the work is located above the banks of the South Umpqua River. Contractor will take every precaution to avoid dropping debris in the river during work.

PART 2 PRODUCTS

2.1 OWNERSHIP OF EXISTING MATERIALS

A. All materials, equipment, miscellaneous items and debris involved, occurring or resulting from pipe removal work shall become the property of the Contractor at the place of origin, unless otherwise specified in the Drawings or by the Engineer.

2.2 CONTROLLED LOW STRENGTH MATERIAL

A. As specified in Section 31 23 24, Flowable Fill. Provide CLSM mix suitable for pumping as required for filling piping to be abandoned in place.

2.3 GROUT FOR CAPPING PIPE ENDS

A. Non-shrink grout: This type of grout is to be used wherever grout is required in the Contract Documents, unless another type is specifically referenced.

B. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating, non-metallic, non-corrosive, non-chloride, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation of each class of non-shrink grout specified herein shall be that recommended by the manufacturer for the particular application.

C. Non-shrink grouts shall have minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of CRD C621.

2.4 END CAP COUPLING

A. End cap coupling shall be EC501, ductile iron end cap coupling as manufactured by Romac Industries. Contractor to verify existing steel pipe outside diameter at install location prior to ordering.

PART 3 EXECUTION

3.1 PIPE REMOVAL

A. Where identified on the Drawings, remove and dispose of all pipe material and associated appurtenances, including

1. All piping, supports, and appurtenances as shown on Drawings shall be removed.

2. Follow DEQ requirements for removal and disposal of asbestos cement piping, including filing an ASN-6 notification form as required. See Appendix B of the Supplementary Information section for further details.

3.2 IN-PLACE ABANDONMENT OF PIPING

A. Where identified on the Drawings, abandon pipe in place.

B. Filling Pipe with CLSM

1. Where identified on the Plans, pipes abandoned-in-place shall be filled with CLSM.

2. CLSM shall be placed in a manner to ensure complete filling of the pipe, leaving no cavities or voids.

3. Install hot taps, saddles, fill lines and appurtenances as necessary for pumping CLSM from the surface into the pipe being filled.

4. CLSM shall be pumped up grade from fill lines rigidly connected to the pipes being filled.

5. Placement of CLSM by free-flowing (non-pumped) methods will not be acceptable.

6. Fill lines shall be located at elevations lower than the pipe being filled.

7. As the CLSM is being placed, use other fill lines as view ports to ensure complete filling of the pipes.

8. Relocate pumping equipment as necessary to complete filling of the pipes.

9. Excavate and cut access holes in the pipes as necessary to complete filling operations.

10. Perform pipe filling operations in a manner to eliminate all air pockets.

11. Submit volume calculations for CLSM placed in each filled segment of piping to verify that pipelines have been completely filled.

C. Plugging Ends of Pipe - All exposed ends of pipes being abandoned in place shall be cut and plugged with a minimum of two (2) feet of non-shrink grout (where buried and after filling with CLSM) or capped with an end cap coupling (where exposed on bridge, do not fill), as shown on Drawings.

1. Prior to placing grout, where specified, roughen interior pipe surface and apply epoxy bonding agent.

2. Prior to installing end cap coupling, where specified, Contactor to cut and/or prepare plain end of existing pipe as required.

3.3 CLEANUP

A. During and upon completion of work of this Section, promptly remove all unused tools and equipment, surplus materials and debris.

B. Adjacent areas shall be returned to their existing condition prior to the start of work.

END OF SECTION

# SECTION 33 12 16

# WATER UTILITY DISTRIBUTION & TRANSMISSION VALVES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes valves and valve boxes for installation with buried water distribution and transmission main, including fire hydrants and tapping sleeves.

B. Section Includes:

1. Valves.
2. Valve boxes.
3. Valve operator extensions.

### 1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

2. ASME B16.5 - Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.

3. ASME 1.20.1 - General Purpose Pipe Threads (Inch).

B. American Water Works Association:

1. AWWA C504 - Rubber-Seated Butterfly Valves, 3 In. Through 72 In.
2. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
3. AWWA C550 - Protecting Interior Coatings for Valves and Hydrants.
4. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
5. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings.

C. ASTM International:

1. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

2. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

D. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

1.3 COORDINATION

A. The Contractor shall cause the Supplier of valves to coordinate installation such that all pipes, valves, fittings, appurtenances and equipment are compatible and capable of achieving the performance requirements specified in the Contract Documents.

B. Coordinate Work of this Section with the City of Roseburg Public Works Department standards and utilities within construction area.

1.4 SUBMITTALS

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

B. Product Data: Submit manufacturer's latest published literature. Include illustrations, installation and maintenance instructions, and parts lists.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

E. Lining and coating data.

F. Valve Labeling: Schedule of valves to be labeled indicating in each case the valve location and the proposed labeling for the valve.

G. Certification of Valves Larger than 12 inches: Furnish certified copies of hydrostatic factory tests, indicating compliance with applicable standards.

H. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

I. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of valves.

B. Operation and Maintenance Data: Submit information for valves.

1.6 QUALITY ASSURANCE

A. Cast manufacturer's name, maximum working pressure, size of valve and year of fabrication into valve body.

B. Valve Testing: Each valve body shall be tested under a test pressure equal to twice its design water-working pressure.

C. Certification: Prior to shipment, submit for all valves over 12 inches in diameter, certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, ASTM, etc. Valves tested and supplied shall be trackable and traceable by serial number, tagged or otherwise noted on valve, upon arrival to Site.

D. Unless otherwise noted, all water works materials provided for the Project shall be new, of first-class quality and shall be made by reputable manufacturers.

E. All material of a like kind shall be provided from a single manufacturer, unless otherwise approved by the Engineer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves and accessories for shipment according to applicable AWWA standards.

B. Seal valve and ends to prevent entry of foreign matter.

C. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

D. Storage:

1. Store materials in areas protected from weather, moisture, or other potential damage.

2. Do not store materials directly on ground.

E. Handle products carefully to prevent damage to interior or exterior surfaces.

F. All defective or damaged materials shall be replaced with new materials at no cost to the City.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials in contact with potable water shall conform to ANSI/NSF Standard 61 and meet the “lead free” requirements of the Safe Drinking Water Act amendment, effective January 4, 2014, as per the lead content evaluation procedures outlined in NSF/ANSI Standard 372.1.

1. All fittings shall either be cast or permanently stamped with markings identifying the item as complying with NSF 61 per the requirements of NSF 372 for “lead free”.

2. All brass in contact with potable water shall comply with ASTM B584.

2.2 RESILIENT WEDGE GATE VALVES

A. As specified in Section 40 05 23.15, Gate Valves.

B. Connecting Hardware:

1. As specified in Article 2.3, Nuts, Bolts and Washers of Section 33 11 10, Water Utility Distribution & Transmission Piping.

C. Gaskets:

1. As required for the end connection types specified in Section 33 11 10, Water Utility Distribution & Transmission Piping.

2.3 ACTUATORS

A. Unless otherwise indicated, all valves shall be furnished with manual actuators.

B. Actuators shall be sized for the valve design pressure in accordance with AWWA C504.

C. All gear-assisted valves that are buried and submerged shall have the actuators hermetically-sealed and grease-packed.

D. All valves 6 inches to 30 inches in diameter may have traveling-nut actuators, worm-gear actuators, spur- or bevel-gear actuators, as appropriate for each valve, or as shown on the plans.

2.4 VALVE BOXES

A. Provide all buried valves with valve boxes, covers and risers.

B. Valve Boxes:

1. Materials: Cast iron.

2. Construction:

    a. Walls not less than 3/16-inch thick at any point.
    b. Internal diameter not less than 5 inches.

3. Type: Two-piece extension.

4. Manufacturers:

    a. Olympic Foundry.
    b. Brooks Products.

C. Covers:

1. Construction:

    a. Prevents dislodging and rotation from traffic.
    b. Allows a hand held pry bar to be applied for easy removal.

2. Materials: Cast iron.

3. Lid Inscription: “WATER” or “W”.

4. Manufacturers: Matching that of valve box.

D. Riser:

1. PVC Pipe:

    a. ASTM D3034, SDR 35 PVC.
    b. White, Schedule 40, 8-inch diameter.
    c. Length as shown on details in the Drawings.

2.5 VALVE OPERATOR EXTENSIONS

A. As shown in the Drawings.

B. Provide operator extensions to a maximum of 12 inches below grade where depth to valve exceeds 36 inches.

2.6 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type as specified in Standard Specification Section 005400.

PART 3 EXECUTION

3.1 PREPARATION

A. Conduct operations to not interfere with, interrupt, damage, destroy, or endanger integrity of surface or subsurface structures, utilities, and landscape in immediate or adjacent areas.

B. Identify required lines, levels, contours, and datum locations.

C. Locate, identify, and protect from damage utilities to remain.

D. Access:

1. All valves shall be installed to provide easy access for operation, removal, and maintenance.

2. Avoid conflicts between valve operators and above grade construction such as structural members or handrails.

E. Valve Accessories:

1. Where combinations of valves, sensors, switches, and controls are specified, it shall be the responsibility of the Contractor to properly assemble and install these various items so that all systems are compatible and operating properly.

2. The relationship between interrelated items shall be clearly noted on shop drawing submittals.

3.2 INSTALLATION

A. General:

1. All valves, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's written instructions and as shown in the Drawings and as specified herein.

2. Valves shall be firmly supported to avoid undue stresses on the pipe.

3. Stem extensions shall be braced at no greater than 10 feet intervals and be provided with double universal joints to allow for misalignment, where applicable.

B. Perform trench excavation, backfilling, and compaction as specified in Section 33 11 10, Water Utility Distribution & Transmission Piping.

C. Install valves in conjunction with pipe laying.

D. Set valves plumb.

E. Provide buried valves with valve boxes installed flush with finished grade.

1. Valves installed out of paved or otherwise hard-surfaced areas shall be set in a concrete pad at finished grade.

2. Concrete valve box pads shall be 18 inches square and be not less than 6 inches thick.

F. Disinfection of Water Piping System:

1. Flush and disinfect system as specified in Section 33 13 00, Testing and Disinfecting of Water Utility Distribution.

3.3 FIELD QUALITY CONTROL

A. Pressure test valving for water distribution system according to AWWA C600 and in accordance with Section 33 13 00, Testing and Disinfecting of Water Utility Distribution.

B. Field Testing of Valves:

1. All valves 24-inch diameter or larger, and all in-line transmission main valves, shall be pressure and leakage tested at the Site and shall pass the field testing prior to installation.

2. Valves shall be tested at 1.5 times normal operating pressure, 150 psi minimum.

3. No valve shall be accepted for installation that fails to pass the field pressure test. Any valves failing field pressure tests shall be replaced by the Contractor at no additional cost to the City.

4. Engineer shall witness field testing.

END OF SECTION

# SECTION 33 13 00

# TESTING & DISINFECTION OF WATER UTILITY PIPING

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes hydrostatic pressure testing, disinfection and purity testing of ductile iron and HDPE potable water systems piping, fittings, valves, and domestic water services.

B. Section Includes:

1. Pressure testing and disinfection of potable water distribution and transmission piping systems and appurtenances.

2. Testing and reporting of results.

### 1.2 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA B300 - Hypochlorites.
2. AWWA B301 - Liquid Chlorine.
3. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.
4. AWWA C651 - Disinfecting Water Mains.
5. AWWA C655 - Field Dechlorination.
6. AWWA M55 – PE Pipe – Design and Installation.

### 1.3 SUBMITTALS

A. Section 01 33 00 – Contractor Submittals: Requirements for submittals.

B. Product Data: Submit procedures, proposed chemicals, and treatment levels.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Pipeline Testing & Disinfection Plan: To be submitted for review and approval by the Engineer a minimum of one month before testing is to start. As a minimum, the plan shall include the following:

1. Testing schedule.

2. Hydrostatic Testing Plan:

    a. Narrative of the proposed process.
    b. Proposed equipment to be used.
    c. Disposal location for excess water used to fill mains.

3. Disinfection Plan:

    a. Narrative of the proposed process.

    b. Proposed chemicals and equipment (including list of all pumps and meters) to be used.

    c. Calculations for the amount of chlorine required to achieve required chlorine residual levels.

    d. Proposed method of mixing, injecting and distributing of chlorine solution throughout all portions of the new water system facilities.

    e. Proposed plan for testing chlorine levels throughout the length of pipeline.

4. Proposed testing locations.

5. Proposed plan for water conveyance, including flow rates.

6. Proposed plan for water control.

7. Proposed plan for water disposal, including flow rates. Include proposed plan for dechlorination of disinfection water, including discharge points.

8. Proposed measures to be incorporated in the project to minimize erosion while discharging water from the pipeline.

1.4 CLOSEOUT SUBMITTALS

A. Disinfection Report:

1. Type and form of disinfectant used.

2. Date and time of disinfectant injection start and time of completion.

3. Test locations.

4. Name of person collecting samples.

5. Initial and 24-hour disinfectant residuals in treated water in ppm for each outlet tested.

6. Date and time of flushing start and completion.

7. Disinfectant residual after flushing in ppm for each outlet tested.

1.5 QUALITY ASSURANCE

A. Perform Work according to AWWA C651.

PART 2 PRODUCTS

2.1 EQUIPMENT

A. All test equipment, chemicals for chlorination, temporary valves, bulkheads, or other water control equipment and materials shall be determined and furnished by the Contractor subject to the Engineer's review. No materials shall be used which would be injurious to the construction or its future functions.

B. All temporary thrust restraint and equipment and facilities required for hydrostatic testing will be considered incidental.

C. As a minimum, furnish the following equipment and materials for the testing:

| Amount | Description |
|---|---|
| 2 | Graduated containers approved by the Engineer. |
| 1 | Hydraulic pump approved by the Engineer with hoses, valves and fittings as needed and required for the testing and disinfection of the facilities. |
| 1 | High range chlorine test kit, as approved by Engineer, with digital readout. Range of detection shall be between 5 & 200 ppm. Accuracy of 3%. |
| 2 | Pressure gauges with pressure range at least 120% greater than the required maximum test pressure with graduations in two (2) psi increments. Gauges shall have been calibrated with 90 days of pressure testing. |

2.2 DISINFECTION CHEMICALS

A. Chemicals:

1. Hypochlorite: Comply with AWWA B300.
2. Liquid chlorine: Comply with AWWA B301.

2.3 DECHLORINATION CHEMICALS

A. Chemicals:

1. Comply with AWWA C655.

## PART 3 EXECUTION

### 3.1 HYDROSTATIC TESTING OF WATER PIPING

A. Make all necessary provisions for conveying water to the points of use and for the disposal of test water.

B. Hydrostatic testing of the HDPE portion(s) of the water pipeline shall be conducted separately from ductile iron pipe portions. Contactor shall make provisions for isolating all segments of different materials required to complete testing of the entire pipeline. Any additional equipment, fittings, water, other materials and labor required to isolate the segments and to test the segments separately shall be considered incidental to this task.

C. No section of the pipeline shall be hydrostatically tested until backfill has been placed, compacted and passed required density testing and all field-placed concrete or mortar has attained full strength.

1. At the Contractor's option, early strength concrete may be used when the full strength requirements conflict with schedule requirements.

2. All such substitutions and installations shall be approved by the Engineer prior to installation.

D. Provide 72-hour notification to the Engineer and City prior to conducting hydrostatic testing.

1. Provide coordination and scheduling required for the City to witness and provide necessary labor for operating City's existing system during hydrostatic testing and disinfecting procedures.

2. The Contractor shall not operate any part of the existing water systems.

E. Pipe Filling:

1. Fill pipes slowly from the lowest elevation to highest point along test section with potable water.

2. Take all required precautions to prevent entrapping air in the pipes.

3. Allow for natural absorption of water by the lining of the pipe to occur.

4. Apply specified test pressure by pumping.

F. Testing of DI and PVC Mains:

1. Ductile Iron: In accordance with AWWA C600.

2. PVC: In accordance with AWWA C605.

3. General:

   a. Tests shall be conducted under a hydrostatic test pressure not less than 1.25 times the stated anticipated maximum sustained working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section, minimum 150 psi, unless otherwise shown in the Drawings.

   b. In no case shall the test pressure exceed the rated working pressure for any joint, thrust restraint, valve, fitting, or other connected appurtenance of the test section.

   c. Testing shall be performed by applying the specified test pressure by pumping.

   d. Once the test pressure has been attained, the pump shall be valved off.

   e. The test will be conducted for a two-hour period with the allowable leakage not to exceed the value as calculated per the Allowable Leakage formula below.

   f. During the test period, there shall be no appreciable or abrupt loss in pressure.

4. Allowable Leakage:

   a. Flanged Joints: Pipe, fittings and valves with flanged joints shall be completely watertight. No leakage allowed.

   b. Mechanical or Push-on Joints: Pipe, fittings and valves with rubber gasketed joints shall have a measured loss not to exceed the rate given in the following Allowable Leakage formula:

$$AL = \frac{LD(P)^{1/2}}{148{,}000}$$

In the above formula:

AL = Allowable leakage, in gallons per hour
L = Length of pipe tested, in feet
D = Nominal diameter of pipe, in inches
P = Average test pressure during the leakage test, in pounds per square inch.

5. Maintaining Pressure:

    a. During the test period, operate the pump as required to maintain pressure in the pipe within 5 psi of the specified test pressure at all times.

    b. At the end of test period, operate the pump until the specified test pressure is again obtained.

        1) The pump suction shall be in a clean, graduated barrel or similar device or metered so that the amount of water required to restore the test pressure may be accurately measured.

        2) Sterilize this makeup water by adding chlorine to a concentration of 25 mg/L.

    c. The Engineer will determine the quantity of water required to maintain and restore the required pressure at the end of the test period.

    d. Each hour's loss stands on its own and will not be averaged.

6. Defects, Leakage, Failure:

    a. If the test reveals any defects, leakage in excess of the allowable, or failure, furnish all labor, equipment and materials required to locate and make necessary repairs.

    b. Correct any visible leakage regardless of the allowable leakage specified above.

    c. All leaks shall be repaired in a manner acceptable to the Engineer.

    d. The testing of the line shall be repeated until a test satisfactory to the Engineer has been achieved.

G. Testing of HDPE Mains:

1. HDPE: In accordance with AWWA M55, and as specified herein.

    a. All HDPE pipe shall be hydrostatically tested twice. The first test shall be conducted above-grade after the pipe is butt fused and ready for installation. The second test shall be conducted after the pipe is in place in the trench or, in the case of installation by the horizontal directional drilling method, the pipe has been pulled into place. Prior to conducting the second test, the pipe shall be flushed.

    b. Before commencing each test, the pipeline shall be filled with water to the specified test pressure and allowed to stand without makeup pressure until the

pressure reaches equilibrium. Equilibrium will usually occur within 2 to 4 hours. After equilibrium has been reached, the test section shall be returned to the specified test pressure and the test period can begin.

c. All HDPE piping shall be tested under a hydrostatic test pressure not less than 150 psi (+/- 5 psi) at the highest point along the test section or as shown on the plans. Testing shall be performed by applying the specified test pressure by pumping. Once the test pressure has been attained, the pump shall be valved off. The test will be conducted for one two-hour period. The required makeup water volume shall not exceed the allowance for expansion during a two-hour test in the following table.

| Nominal Pipe Size (inches) | Allowance for Expansion (US gallons/100ft. of pipe) |
|---|---|
| 14 | 2.30 |

d. During the above-grade test, the pipe shall be visually inspected for leaks. All leaks shall be repaired before installing the pipe in the trench or pulling the pipeline into the borehole. Leaks at fusion joints shall be repaired by cutting out the leaking fusion joint, refusing the joint and conducting a new above grade test.

e. The second pressure test shall be made after the first pressure test has been successfully completed and approved by Engineer and the HDPE pipeline is installed. For HDPE pipe installed by the horizontal directional drilling method, the test section shall be the full length of pipeline that is pulled into place. After the equilibrium period, the pressure test shall proceed for a period of two hours. Makeup water shall not exceed that specified above. If the test fails, the installed pipe section shall be removed and replaced with new HDPE pipe at Contractor's expense.

f. Contractor shall schedule pressure testing such that pressure changes due to thermal expansion or contraction of the pipe during the test period are minimized.

g. If the testing reveals any defects, any leakage, or any failure, Contractor shall furnish all labor, equipment and materials required to locate and make necessary repairs. The testing of the line and repairing of defects, excessive leakage, and failures shall be repeated until a test satisfactory to Engineer has been achieved. All costs for locating, repairing, and retesting shall be borne by Contractor.

3.2 DISINFECTION OF WATER PIPING

A. Disinfection shall be in accordance with the latest version of AWWA C651 following Engineer's acceptance of hydrostatic testing.

B. Chlorination by means of tablets or powders (calcium hypochlorite) placed in each length of pipe during installation is specifically prohibited.

C. Flush all foreign matter from the pipeline, branches and services.

1. Provide at no additional cost to the City, hoses, temporary pipes, ditches, etc., as required to dispose of flushing water without damage to adjacent properties.

2. Flushing velocities shall be at least 2.5 feet per second (fps).

3. For large diameter pipe where it is impractical or impossible to flush the pipe at 2.5 fps velocity, clean the pipe in place from the inside by brushing and sweeping, then flush the line at a lower velocity.

D. Chlorine Application:

1. Fill the test section of main from the lowest elevation and maintain a steady flow rate while injecting the water main with chlorinated water.

2. Flow (bleed) a blow-off, standpipe or hydrant at the water main's high point(s) to allow air to escape and ensure all interior pipe surfaces are wetted.

E. Chlorine Residual:

1. Measure chlorine residual with a high-range chlorine test kit at a point near to the injection point while filling the main.

2. Adjust the dose rate as necessary to maintain the target dose rate.

F. Potable water piping shall be disinfected with a solution containing a minimum 25 parts per million (ppm) and a maximum 50 ppm chlorine.

1. Once the main is completely filled with super-chlorinated water, measure the chlorine residual a minimum of once every 200 feet of main and once for each main branch, 2-inch service or as directed by the Engineer.

2. The chlorine solution shall remain in the piping system for a period of 24 hours, after which time the sterilizing mixture shall have a strength of at least 10 ppm of chlorine.

3. If check samples fail to produce acceptable results, the disinfection procedure shall be repeated at the expense of the Contractor until satisfactory results are obtained.

G. Flush piping, branches and services with municipal potable water until the chlorine residual is below 1.5 ppm and approximately the same as the source water.

1. There is no minimum flushing velocity for this step.

H. Disposal of any water containing chlorine shall be performed in accordance with the latest edition of AWWA C651 and C655, and all state or local requirements.

1. Disposal may be made into existing sanitary sewer systems providing approvals are obtained from the respective system owners.

2. Any chlorinated water discharged to open stream channels must be dechlorinated prior to discharge to levels acceptable by Oregon State Department of Environmental Quality (DEQ).

## 3.3 DISINFECTION & TESTING OF WATER MAIN END CONNECTIONS AND TIE-INS

A. Disinfection of potable water piping and appurtenances at end connections and tie-ins to the existing system which are required to remain in service due to restrictions in allowable shutdown time shall be disinfected as described below.

B. Prior to connecting new potable water piping and appurtenances with existing piping and appurtenances, the interior of all new pipe, fittings, valves and appurtenances shall be swabbed or sprayed with a 1% to 5% percent calcium hypochlorite solution.

C. In accordance with AWWA C651, swabbing or spraying of connection piping is allowed only if the total length of piping is equal to or less than one pipe length (18 feet). All runs of new piping over 18 feet in total length will require hydrostatic pressure testing, flushing and disinfection as detailed elsewhere in this Section.

D. Following the disinfection procedures described above, connection of the new piping and appurtenances to the existing water system shall be made.

1. During the system startup, the Engineer and Contractor shall visually inspect all new fittings, piping, valves and appurtenances for evidence of leakage.

2. Any leakage observed during this period shall be promptly repaired by the Contractor, at Contractor's expense, as required by the Engineer.

## 3.4 FIELD QUALITY CONTROL

A. Bacteriological Sampling and Testing:

1. The City will collect samples after the line is flushed in accordance with the latest edition of AWWA C651.

a. The locations for sample collection shall be at the sole discretion of the City and Engineer.

b. The chlorine residual must be below 1.5 ppm, or restored to the level maintained in the City's distribution system, when the sample is taken.

2. Bacterial Testing: After completing the chlorination procedure, test the main according to the following:

   a. Bacterial Sampling

      1) Option A:

         a) Take an initial set of samples using sampling site procedures outlined herein.

         b) Resample after a minimum of 24 hours' time has elapsed using sampling site procedures outlined herein.

         c) Both sets of successive samples must pass for the main to be approved for service.

      2) Option B:

         a) Allow main to sit for a minimum of 24 hours without any water use.

         b) Using sampling site procedures outlined herein, collect two sets of samples a minimum of 15 minutes apart while the sampling taps are left running.

         c) Both sets of samples must pass for the main to be approved for service.

      3) Allow 24 hours for the test results for each sample set.

   b. Sampling Locations

      1) The City will take one bacteriological sample from the end of the main and on each branch.

      2) For long runs of main, at least one sample will be taken for every 1,200 feet of new main and as directed.

   c. Sample Testing

      1) The City will test the sample set for coliform bacteria and publish the test results within 24 hours.

d. Evaluating the Test Results

1) If one or more of the sample set tests positive for coliforms (fails), repeat chlorination and sampling processes specified herein after correcting the cause of the failure and as directed by the Engineer.

2) When two consecutive sample sets test negative (passing)for coliform bacteria, the bacterial testing is complete.

e. Completion of Bacterial Testing

1) Upon completion of bacterial testing, notify the City shall notify the Engineer and Contractor in writing that the testing is complete and the main is ready for tie-in.

f. Multiple Positive (Failing) Test Results

1) If sample sets continue to test positive for coliforms, the Engineer will determine how to proceed, up to and including repeating the chlorination procedure or rejecting the pipe.

3. Results of the bacteriological testing shall be satisfactory with the Oregon Health Authority and/or other appropriate regulatory agencies, or disinfection shall be repeated by the Contractor.

B. Optional Sampling and Testing

1. If a pipeline is not promptly returned to service, the situation will be evaluated by the City to determine if the water quality may have been impacted and if additional testing as specified herein is warranted.

END OF SECTION

# SECTION 40 05 23.15

# GATE VALVES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes gate valves for use in buried service and utility vaults. Coordinate with Section 33 12 16, Water Utility Distribution & Transmission Valves.

B. Section Includes:

1. Resilient-seated gate valves.

2. General duty gate valves smaller than 3 inches.

### 1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.

2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard.

3. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

4. ASME B1.20.1 - Pipe Threads, General Purpose (Inch).

B. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

3. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

C. American Water Works Association:

1. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
2. AWWA C550 - Protecting Interior Coatings for Valves and Hydrants.

D. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-70 - Gray Iron Gate Valves, Flanged and Threaded Ends.
2. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.

E. National Sanitation Foundation International:

1. NSF/ANSI Standard 61 - Drinking Water System Components - Health Effects

2. NSF/ANSI Standard 372 - Drinking Water System Components - Lead Content

1.3 SUBMITTALS

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

B. As required by Section 33 12 16, Water Utility Distribution & Transmission Valves.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials in contact with potable water shall conform to ANSI/NSF Standard 61 and meet the "lead free" requirements of the Safe Drinking Water Act amendment, effective January 4, 2014, as per the lead content evaluation procedures outlined in NSF/ANSI Standard 372.1.

1. All fittings shall either be cast or permanently stamped with markings identifying the item as complying with NSF 61 per the requirements of NSF 372 for "lead free".

2. All brass in contact with potable water shall comply with ASTM B584.

2.2 RESILIENT-SEATED GATE VALVES

A. Description:

1. Comply with AWWA C509.

2. Minimum Pressure Rating:

a. 12-inch Diameter and Smaller: 200 psig.
b. 16-inch Diameter and Larger: 150 psig.

3. End Connections: As shown in the Drawings.

a. Standard mechanical joint ends comply with ANSI/AWWA C111.

b. Flanged end dimensions and drilling comply with ANSI/ASME B16.1, class 125. Comply with AWWA C115 & ASME 16.5.

1) The Contractor shall coordinate with pipe, valve and fitting suppliers to make certain pipe, valve and fitting flanges match in bolt pattern.

4. Gear Actuators: Conforming to AWWA C509 for manual valves.

5. Linings and Coatings:

a. Corrosion-resistant fusion bonded epoxy conforming to AWWA C550 and NSF 61.

b. All internal and external ferrous surfaces.

c. Do not coat flange faces of valves.

6. Bi-directional flow.

B. Operation:

1. Non-rising stem.

2. Open counterclockwise when viewing the valve from above, unless otherwise indicated in the Drawings.

3. Buried Valves: All buried valves shall be provided with 2-inch square operating nuts.

4. In-Plant Service Valves: Valves for in-plant or exposed service shall be furnished with handwheel operators, unless shown otherwise on the Drawings.

C. Materials:

1. Wedge:

a. ASTM A126, cast iron or ASTM A536, ductile iron.

b. Fully encapsulated with molded rubber.

2. Body and Bonnet:

a. ASTM A126, cast iron or ASTM A536, ductile iron.

3. Stem, Stem Nuts, Glands, and Bushings: ASTM B584, bronze.

4. Valve Body Bolting: Stainless steel.

D. Manufacturers:

1. American AVK (Series 45)

2. American Flow Control (Series 2500 Resilient Wedge Gate Valve w/ 250 psi rating)

2.3 GENERAL-DUTY GATE VALVES - SMALLER THAN 3 INCHES

A. 2 inches and Smaller:

1. MSS SP 80, Class 125.
2. Body and Trim: ASTM B584, bronze.
3. Bonnet: Union.
4. Operation: Handwheel.
5. Inside screw [with back-seating stem].
6. Wedge Disc: Solid; ASTM B584, bronze.
7. End Connections: Threaded.

B. 2-1/2 inches to 3 inches:

1. MSS SP 70, Class 125.
2. Stem: Non-rising.
3. Body: ASTM A126, cast iron.
4. Trim: Bronze.
5. Bonnet: Bolted bonnet.
6. Handwheel, outside screw and yoke.
7. Wedge Disc: Solid, with bronze seat rings.
8. End Connections: ASME B16.1, ASME B16.5, ASME B16.42, flanged.

2.4 SOURCE QUALITY CONTROL

A. Testing: Test gate valves according to AWWA C509.

PART 3 EXECUTION

3.1 INSTALLATION

A. As required by Section 33 12 16, Water Utility Distribution & Transmission Valves.

B. Install according to manufacturer's instructions.

C. Support valves in plastic piping to prevent undue stresses on piping.

END OF SECTION

# SECTION 40 05 23.72

# MISCELLANEOUS VALVES

## PART 1 GENERAL

### 1.1 SUMMARY

A. This Section includes miscellaneous valves not included in other Sections for use in buried service and utility vaults.

B. Section Includes:

1. Air release valves.
2. Ball valves, 2 inches and under.

### 1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.

2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard.

3. ASME B16.11 - Forged Fittings, Socket-Welding and Threaded.

4. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

5. ASME B1.20.1 - Pipe Threads, General Purpose (Inch).

B. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

2. ASTM A536 - Standard Specification for Ductile Iron Castings.

3. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

### 1.3 COORDINATION

A. Contractor shall be solely responsible to coordinate Work of this Section with piping, equipment, and appurtenances.

1.4 SUBMITTALS

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

B. Product Data:

1. Submit manufacturer's latest published literature. Include illustrations, installation and maintenance instructions, and parts lists.

2. Submit valve cavitation limits.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit installation instructions and special requirements, including storage and handling procedures.

E. Lining and coating data.

F. Valve Labeling Schedule: Indicate valve locations and nametag text.

G. Certification of Valves Larger than 12 inches: Furnish certified copies of hydrostatic factory tests, indicating compliance with applicable standards.

H. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

I. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections, including factory-applied coatings.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of valves and actuators.

B. Operation and Maintenance Data: Submit information for valves.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts:

1. Furnish one set of manufacturer's recommended spare parts.

B. Tools:

1. Furnish special wrenches and other devices required for City to maintain equipment.

2. Furnish compatible and appropriately labeled toolbox when requested by City.

1.7 QUALITY ASSURANCE

A. Cast manufacturer's name, pressure rating, size of valve and year of fabrication into valve body.

B. Valve Testing: Each valve body shall be tested under a test pressure equal to twice its design water-working pressure.

C. Certification: Prior to shipment, submit for all valves over 12 inches in diameter, certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, ASTM, etc. Valves tested and supplied shall be trackable and traceable by serial number, tagged or otherwise noted on valve, upon arrival to Site.

D. Maintain clearances as indicated on Drawings.

E. Unless otherwise noted, all water works materials provided for the Project shall be new, of first-class quality and shall be made by reputable manufacturers.

F. All material of a like kind shall be provided from a single manufacturer, unless otherwise approved by the Engineer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

1. Store materials in areas protected from weather, moisture, or other potential damage.

2. Do not store materials directly on ground.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Protect valve ends from entry of foreign materials by providing temporary covers and plugs.

3. Provide additional protection according to manufacturer instructions.

D. Handle products carefully to prevent damage to interior or exterior surfaces.

E. All defective or damaged materials shall be replaced with new materials at no cost to the City.

## PART 2 PRODUCTS

### 2.1 GENERAL

A. All materials in contact with potable water shall conform to ANSI/NSF Standard 61 and meet the "lead free" requirements of the Safe Drinking Water Act amendment, effective January 4, 2014, as per the lead content evaluation procedures outlined in NSF/ANSI Standard 372.1.

1. All fittings shall either be cast or permanently stamped with markings identifying the item as complying with NSF 61 per the requirements of NSF 372 for "lead free".

2. All brass in contact with potable water shall comply with ASTM B584.

### 2.2 AIR RELEASE VALVES

A. Description:

1. Inlet Size: 2-inch diameter, or as shown on Plans.
2. Has features of both an air release valve and an air & vacuum valve.
3. Ductile-iron body & cover for air & vacuum valve. Comply with ASTM A536, 60-40-18.
4. Orifice seat design: combination of bronze or stainless steel and E.P.D.M rubber.
5. Rolling Seal Mechanism for air release valve with ¼-inch NPT outlet.
6. Fusion bonded epoxy coating.
7. 2" diameter (nominal) air valve to be provided with inlet for NPT threaded connection and special ring gasket for sealing NPSM outlet for direct NPT threaded connection to vent piping per Plans.
8. Max design working pressure: 16 Bar (approx. 232 psig.)

B. Manufacturers:

1. ARI - Series D-060-C HF, or approved equal.

### 2.3 BALL VALVES, 2 INCHES AND UNDER

A. Description:

1. 400 lb. WOG with bronze body and trim, unless otherwise shown on the Drawings.

2. Seat ring: TFE.

3. O-ring seals: Fluorocarbon.

4. Three-piece construction so that maintenance can be performed without distributing the valve body after installation.

B. Manufacturer:

1. Nibco T-590-Y or equal.

2.4 SOURCE QUALITY CONTROL

A. Testing Pressure-Reducing and Pressure-Sustaining Valves:

1. Leakage Testing:

a. Test each assembled valve hydrostatically at 1-1/2 times rated working pressure for minimum five minutes.

b. Test each valve for leakage at rated working pressure against closed valve.

c. Permitted Leakage: None.

2. Functional Testing:

a. Test each valve to verify specified performance.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install valves per manufacturer requirements and recommendations.

B. Install all valves with valve seats level.

END OF SECTION