



Request for Quotation

City of Lowell Rockcrest Dr. Trench Drain Installation Project #2101-001-02CES

Contact: Matt Wadlington, PE, Principal
Civil West Engineering Services, Inc
(541) 266-8601

1.0 SUMMARY

The City of Lowell is issuing this Request for Quotation (RFQ) for the construction of a trench drain. The City's previous request for quotes made in November and December by telephone and email correspondence, is cancelled and replaced by this RFQ.

2.0 CONSTRUCTION LOCATION

The construction site is located east of the property line of 275 Rockcrest Dr., Lowell, OR 97452 on map/tax lot number 19-01-11-31-02900.

3.0 SCOPE OF WORK

Construction of a 4-foot wide, 4-foot deep, 150-foot long trench drain according to construction note 59 on page 4 of the "Public Improvement Plans for Crestview Estates" and project specifications.

3.1.PROJECT REQUIREMENTS:

3.1.1. Attached drawing entitled "Public Improvement Plans for Crestview Estates." This RFQ includes only the portions of the drawings inside the red rectangles. Only sheets 1 and 4 of this set are provided for this project.

3.1.2. Attached specifications entitled "Rockcrest Drive Trench Drain – Technical Specifications."

3.1.3. Quotes received in response to this RFQ must take into consideration the following:

3.1.3.1. The storm drain is located on a private utility easement. The contractor must not drive on the area outside of that easement when the ground is wet enough to

cause rutting and compaction. Placing excavated materials outside of the easement during construction, however, is acceptable.

- 3.1.3.2.** The contractor must restore the site and re-seed it after construction.
- 3.1.3.3.** The contractor must communicate with the property owner of map/tax lot number 19-01-11-31-02900, where the trench drain will be constructed, regarding access to the property and scheduling the construction.
- 3.1.3.4.** The contractor shall not source material from McDougal Bros.
- 3.1.3.5.** The contractor will be required to coordinate with the property owner of 275 Rockcrest Dr. on the installation of a fence. The property owner has recently installed a fence adjacent to the drain. Any dismantling of that fence must be approved by the homeowner and the schedule shall be coordinated with the homeowner. If the fence is damaged or partially removed (with approval) it must be reconstructed in like new condition. A photo of the existing fence is shown below.
- 3.1.3.6.** The City will provide the contractor contact information for the owners of the properties mentioned above.

Figure 3.1.3.5 - Existing fence on site



4.0 INSTRUCTIONS TO SUBMIT A QUOTATION AND PROCUREMENT PROCESS

- 4.1. Submit all quotes by email to the City Engineer, Matt Wadlington at mwadlington@civilwest.net.
- 4.2. Quotes shall be submitted using the attached Bid Form.
- 4.3. The deadline to submit responses to this RFQ is **1/25/2023 at 4:00 pm**. Responses received after the deadline will not be considered.
- 4.4. City Council approval of the contract at a regular or special meeting is required.
- 4.5. The City may cancel this RFQ at any time for any reason.
- 4.6. Selection Criteria:
 - 4.6.1. Selection will be based on the quote that is most advantageous to the City. This includes consideration of the preferences of the property owner where the construction is located.
- 4.7. Protests and Appeals: L.R.C. Sec. 2.115 discusses the process for protests and appeals of procurement decisions and can be accessed at the following link.
<https://library.municode.com/or/lowell/codes/code_of_ordinances?nodeId=CITY_LOWELL_TITWOGOAD_PUCO_S2.115PRAP>

5.0 REQUESTS FOR INFORMATION

For general requests for information, or clarifications about this RFQ, please contact:

Mr. Matt Wadlington, PE
Civil West Engineering Services, Inc.
(541) 266-8601
mwadlington@civilwest.com

All quotes and bid forms shall be sent to Mr. Wadlington.

BID FORM

City of Lowell
Rockcrest Drive Trench Drain

Due Date/Time: January 25, 2023 / 4 P.M.

Return To:

Attn: Matt Wadlington
Civil West Engineering Services, Inc.
200 Ferry St SW
Albany, OR 97321
Phone: (541) 266-8601
Email: mwadlington@civilwest.net

ITEM	Est. Quantity	Unit	Unit Amount	Total
Mobilization, Bonds, and Insurance	1	LS		
Construction Facilities and Temporary Controls	1	LS		
Erosion Control	1	LS		
Demolition and Site Preparation	1	LS		
Trench Excavation	98	CY		
12" PVC or HDPE Perforated Pipe	158	LF		
2" – 1" Open Drain Rock	98	CY		
Filter Fabric Liner	1,890	SQ FT		
Disposal of Spoils	1	LS		
Landscape, Fence, and Misc Restoration	1	LS		
Total Bid Price \$				

NAME OF FIRM _____

AUTHORIZED SIGNATURE _____

TITLE: _____

DATE: _____

TECHNICAL SPECIFICATIONS

LOWELL – ROCKCREST DR. TRENCH DRAIN

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SECTION 01010 – SUMMARY OF THE WORK

PART 1 GENERAL

1.01 WORK SUMMARY:

- A. The Contractor shall furnish all labor, equipment, and materials necessary to complete all work in accordance with the Contract Documents.
- B. The work shall be performed at the Crestview Estates Development (also known as “Rockcrest”), City of Lowell, Oregon.
- C. The Project Scope for each schedule is briefly described below.
 - 1. The Crestview Estates Trench Drain Project will construct a new trench drain in the Crestview Estates subdivision. The trench drain will consist of a 12” perforated pipe, drain rock, and filter fabric. The drain will be connected to an existing ditch inlet. Work will also include hauling and disposing of spoils.
- D. Work shall not begin until City has issued the Notice to Proceed to the Contractor.

1.02 WORK PROGRESS

- A. It is the intent of these Contract Documents that the Work proceed in a systematic manner so that a minimum of inconvenience to the public results in the progression of the work. Suitable equipment will be required to properly execute the work with the least amount of disruption to services and access through the work area. Contractor shall contain operations to within the designated public properties, rights-of-way and within any construction easements obtained for this project.
- B. Contractor shall order and schedule delivery of materials in ample time to avoid delays in construction. If any item is found to be unavailable, notify the Engineer immediately to permit the Engineer's selection of suitable substitute. Timely delivery of all materials and equipment is Contractor's responsibility. No extensions in Contract Time will be allowed due to delays caused by late delivery of items. Availability of items should be determined during bidding.
- C. The Contractor shall protect the work and materials from damage due to the nature of the work, the elements, carelessness of others, or from any other cause until the completion and final acceptance of the work. All loss or damage arising out of the nature of the work to be done under these Contract Documents, or from any unseen obstruction or defects which may be encountered in the execution of the work, or from the action of the elements, shall be sustained by the Contractor.
- D. The Contractor shall remove completely all materials designated for removal, to the extent specified and/or indicated in the drawings. For such materials, removal, hauling, disposal (including providing disposal location), and applicable precautions are entirely the Contractor's responsibility. Allow no excess accumulation of non-reusable material at job site(s).
- E. Contractor is responsible for the protection of all existing improvements that are to remain in place. This includes, but is not necessarily limited to: existing utilities, roads, driveways, drainage ditches, culverts, fencing, shrubbery, and all landscaping structures and vegetation. Temporary enclosures, walls, covers, or other protection shall be provided and maintained by the Contractor as required. Contractor shall cooperate with

the owners of such improvements and shall restore and/or replace all damaged items as directed, without any additional expense to the Owner or payments to the Contractor.

1. The location and depth shown on the drawings for the existing utilities are approximate only and are based on Record Drawings, valve locations and other information.
 2. Contractor shall pothole and locate the existing utilities prior to construction. Minor field adjustments to the proposed pipe routes may be required.
- F. The Contractor shall be responsible to properly phase all work to allow continued operations of existing system and facilities during course of construction. The following general phases of construction will be required:
1. Complete all clearing & grubbing along with required earthwork, site grading, placement of fills, site piping all as required for complete site preparation for the new facilities.
 2. Construct/ place new facilities as specified and shown.
 3. Connect new facilities to existing system.

END OF SECTION

SECTION 01025 – MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Wherever in these Specifications an article, device or piece of equipment is referred to in the singular, such reference shall include as many such items as are shown on the Drawings or are required to complete the installation.
- B. Miscellaneous items required in the project that do not have a corresponding Section in the Bid Form are to be considered incidental costs to the project. Compensation for such items and/or work shall be incorporated into other related bid items or total costs. No separate measurement and payment will occur for such incidental costs.
- C. Monthly progress payments and final payment will be made in accordance with the Contract, the General Conditions, and the Supplementary General Conditions. A portion of all progress payments will be withheld as “retainage” in accordance with the General and Supplementary General Conditions.
- D. Additional detail on measurement and payment may be found in other Sections detailing specific items. If no payment information is provided in specific sections, payment for materials or workmanship shall be included with the related items on the bid form for each part of the project.

1.02 UNIT PRICES

- A. Payment will be made on a unit price basis according to the prices provided by the Contractor in the accepted Bid Form (Proposal). Payment will be made for the actual quantity of individual items (units) incorporated and installed in the project.
- B. Several items are included on the Bid Form as a unit price. These have a unit price associated with it because actual quantity may vary depending on site conditions. Contractor to maintain and submit quantity data on all material installed as required in the project construction documents.

1.03 LUMP SUMS

- A. Payments on lump sum or bid items will be made based on the percentage of work complete at the end of the particular payment period.
- B. Percentage of work complete will be recorded and submitted by the Contractor and estimated by the Engineer based on inspection.

1.04 PROGRESS PAYMENTS

- A. Monthly progress payments will be made as set forth in the Agreement and in accordance with the General Conditions and Supplementary General Conditions.
- B. At the stated day of the month, submit a monthly payment request in accordance with the General Conditions and Supplementary General Conditions. Base request on actual quantities installed and completed, and/or approved schedule of values with percent complete of each item. Show payment requested for each item, and total payment requested.

- C. Engineer will review payment requests and compare with inspection records to verify quantities and completed items. Engineer will recommend payment amounts for Owner approval and payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. All Work described in this section is considered incidental to the Work. No additional measurement or payment shall be made.

END OF SECTION

SECTION 01028 – CHANGE ORDER PROCEDURE

PART 1 GENERAL

1.01 SUMMARY

- A. Change orders may be required to make such changes in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as described by Change Orders signed by the Owner, Engineer, Funding Agency, and the Contractor.
- B. See also applicable sections of the General Conditions and applicable portions of the Supplementary General Conditions.
- C. Work outside the scope of the original Contract Document intent will not be paid for by Owner or Engineer unless an approved Change Order precedes such work.

1.02 PROCESSING CHANGE ORDERS

- A. Change Orders will be numbered in sequence and dated. The Change Order will describe the changes and will be signed by the Owner, Engineer, Funding Agency, and the Contractor. Request for estimates for possible changes are not to be considered Change Orders or direction to proceed with the proposed changes.
- B. Change Orders will be prepared by the Engineer.
- C. Contractor may request that the Owner consider a Change Order by sending a written Change Order Request to both Owner and Engineer to initiate the Change Order process. Any increase in cost or time requested by Contractor shall be reasonable and based on the provisions in the Contract Documents.
- D. When requested, Contractor shall provide written evidence substantiating cost changes including receipts, cost proposals from suppliers, and wage forms showing labor used for a particular change.
- E. Change Orders will be processed using the form shown in these Contract Documents.
- F. Change Order may include changes for costs, time, material selections, or other changes to the Contract Documents as necessary.
- G. Change Order costs, if not directly related to bid item unit costs, shall be based on the lowest price that the Contractor can provide the additional necessary work, plus a profit of 15%.

END OF SECTION

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SECTION 01040 – COORDINATION

PART 1 GENERAL

1.01 SUMMARY

- A. Restrict work to within public rights-of-way and easements obtained for this project. Do not enter private property neighboring project location without written permission.
- B. The Contractor shall coordinate his work with the following:
 - 1. City of Lowell
 - 2. Lane County
 - 3. Other affected utilities and agencies
 - 4. Private Property Owners and general public (particularly the owner of Lot 12 and the owner of the uphill property)
- C. Coordinate with Owner for site access and any required water service shut-downs. Notify Owner at least 2 days in advance of when shutdowns of water service are needed. Contractor shall not operate system valves without Owner approval
- D. Permit and maintain access for the Owner and/or residents to any adjacent facilities that are not part of work included within the project.
- E. Coordinate with Owner to determine the locations of underground piping, vaults, valves and other items that could be damaged during construction.
- F. Restoration and cleanup work shall be completed with each phase of the construction project. Parking lots and properties shall be maintained and kept clean and clear of excess excavation, debris, dirt and other materials.
- G. The storm drain is located on a private utility easement. The contractor must not drive on the area outside of that easement when the ground is wet enough to cause rutting and compaction. Placing excavated materials outside of the easement during construction is acceptable.
- H. The contractor must restore the site and re-seed it after construction.
- I. The contractor must communicate with the property owner of map/tax lot number 19-01-11-31-02900, where the trench drain will be constructed, regarding access to the property and scheduling the construction.
- J. The contractor will be required to coordinate with the property owner of 275 Rockcrest Dr. on the installation of a fence. The property owner has recently installed a fence adjacent to the drain. Any dismantling of that fence must be approved by the homeowner and the schedule shall be coordinated with the homeowner. If the fence is damaged or partially removed (with approval) it must be reconstructed in like new condition.
- K. The City will provide contractor contact information for the owners of the properties mentioned above.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. All Work described in this section is considered incidental to the Work. No additional measurement or payment shall be made.

END OF SECTION

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SECTION 01046 – PROTECTION OF EXISTING IMPROVEMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Where Contractor's operations are near utility systems, structures, or are adjacent to other property, no work shall be started until all arrangements necessary for protection thereof have been made by the Contractor. Contractor shall exercise all possible precautions to prevent damage to existing structures, improvements, and underground utilities which are to remain.
- B. Approximate locations of known underground utilities are shown on the Plans. Exact location or extent of such utilities is not guaranteed, and utilities may exist which are not shown on the Plans. Contractor shall call for utility locates prior to any digging. Contractor shall also pothole as required ahead of the work to verify the location and depths of affected utilities. No additional compensation will be given for such work or for utilities being different from shown on the plans.
 - 1. All trench excavations and structure excavations within two (2) feet of any existing underground utility shall be performed by hand methods in accordance with state laws.
- C. The Contractor shall be solely and directly responsible to the owner's and operator's of such properties and services for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the carrying out of the work to be done under this Contract.
- D. Restoration of Existing Improvements. Except as shown on the Plans or as provided elsewhere in these specifications, the Contractor shall, at their own expense, repair and/or replace all utilities, services, landscaping, structures, substructures and other improvements damaged by the operations associated with this project, as directed. These repairs and replacements shall all be suitable and proper for intended use and in every respect acceptable to the Owner, Engineer and appropriate governing body or owner of such improvement. At minimum, restoration will be required to match the existing adjacent structure/improvement in thickness, finish, quality, quantity, and aesthetics.
 - 1. In the event of interruption of domestic water, electric, telephone, sewer, or other utility services, the Contractor shall promptly notify the proper authority, the Engineer, and the Owner. The Contractor shall cooperate with the proper authority in restoration of service as promptly as possible and shall bear all costs of repair.
- E. The Contractor shall pothole existing utilities and other underground structures ahead of their work so that potential conflicts can be minimized or that minor relocation of the piping routes can be made. Potholing is defined as exploratory excavation of existing utilities to verify their depth and location.

1.02 INTERFERING STRUCTURES, IMPROVEMENTS AND LANDSCAPING

- A. It shall be entirely the responsibility of the Contractor to locate and protect all existing structures, landscaping, and other improvements in advance of the work. Neither the Owner, Engineer, nor any of their officers or agents shall be responsible to the Contractor

for damages as a result of any structures or improvements being located differently than indicated in the drawings, nor which exist and are not indicated on the drawings.

- B. If interfering power poles, telephone poles, guy wires, or anchors are encountered, the Contractor shall notify the affected utility and the Engineer at least seven (7) days in advance of construction to permit arrangements for protection or relocation of the structure. However, failure of utility to respond shall create no obligation on Owner, and Contractor shall protect all utilities against damage, or shall stand all costs involved thereof.
- C. Landscaping, Tree, and Plant Protection. Provide adequate protection of existing landscaping against damage from construction operations, including all structures and vegetation. Protect roots, trunk and foliage of existing and new shrubs and trees from all damage including that possible from compaction and dust. Contractor shall be entirely responsible to remove and replace all property which is damaged by work related to the project. Contractor shall bear all costs associated with replacement of existing landscaping, and shall cooperate with the owner of such improvements, the Owner, and the Engineer in all protection and restoration/replacement that is required. In specific circumstances, Contractor may make special arrangements with property owners for removal of landscaping without replacement. Copies of written agreements for all such arrangements shall be furnished to the Engineer.
- D. When construction operations will affect the property of a private citizen (such as driveways, landscaping, etc.), even when such improvements are in the road right-of-way, the Contractor shall notify the owner of such property and the Owner, at least seven (7) days in advance of any affecting Work, so that any desired preparations can be made.

1.03 ROADS AND ACCESS

- A. All work shall be conducted to minimize damage to existing roadways, easements and parking lots, including limiting wheel loads to acceptable levels. At all times keep roadways, shoulders, and ditches free from excess materials and debris.
- B. Spillage of soil, dust, rock, mud, etc. on all roads (including State, County, City and private roads) used by the Contractor (and any working for Contractor) during construction, shall be prevented as much as possible. If spillage cannot be prevented, an hourly patrol shall be provided by the Contractor to police and sweep clean all spillage in accordance to applicable requirements. At the conclusion of each workday, such traveled areas shall be left completely clean and free from all extraneous materials. Contractor is entirely responsible to prevent such spills and follow all related laws and regulations. If spillage of hazardous material occurs, Contractor shall immediately notify the proper authorities and remove the spill in the proper manner. Owner will not be liable for any additional costs due to spillage of any kind. The Contractor shall ensure that all spills of wastewater, biosolids, or sewage sludge are address in accordance to all applicable laws.
- C. All damaged gravel, concrete and/or asphaltic concrete surfaces shall be repaired as required to conditions acceptable to the governing body and Engineer. No cleated or crawl-type equipment shall be operated on paved surfaces, except to cross a road when adequate protection of the surface is provided.
- D. During construction the Contractor shall take necessary measures to avoid and abate excessive dust. Sprinkling of roadways and sites may be necessary and shall be conducted carefully to avoid over wetting while keeping dust to a minimum.

- E. Contractor is responsible for constructing, maintaining, and removing any additional access that Contractor deems necessary for the Work. Contractor must notify Owner and Engineer, and must obtain written consent from the governing body, prior to construction of additional access not shown on the drawings. All applicable regulations shall be followed in such access construction, including obtaining any required permits.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Protection of Existing Improvements shall be included within the lump sum price for Mobilization as stated on the bid form. No additional measurement or payment for these quantities will occur.

END OF SECTION

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SECTION 01050 – FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

- A. Construction stakeout – If necessary, the Contractor shall be responsible for construction staking.
- B. The Contractor shall be solely responsible for laying out the work from this stakeout control and no additional stakeout will be provided except at the expense of the Contractor.
- C. It shall be the responsibility of the Contractor to maintain and preserve the construction stakeout as provided. The Contractor will not be allowed time extensions or damages caused by the loss of control stakes. If control is lost and/or disturbed and in the judgment of the Engineer requires replacement, such replacement will be at the expense of the Contractor.
- D. It is expected that minor revisions of the stakeout may be required during the course of construction. These revisions and relocations shall be made only as directed by the Engineer. The Contractor shall not be entitled to any additional compensation for minor revisions or relocations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Field Engineering shall be included within the lump sum price for Mobilization as stated on the bid form. No additional measurement or payment for these quantities will occur.

END OF SECTION

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SECTION 01100 – REFERENCE STANDARDS

PART 1 GENERAL

1.01 SUMMARY

Abbreviations and Acronyms. Whenever the following abbreviations are used in these specifications or in the drawings, the following definitions apply. Unless otherwise designated, all reference to the following standards, specifications and methods shall imply the latest adopted revision in effect at the time of bid opening. Such standards, except as modified herein, shall have full force and effect as those printed in the specifications.

A.	AASHTO	American Association of State Highway and Transportation Officials
B.	ACI	American Concrete Association
C.	AIA	American Institute of Architects
D.	AISC	American Institute of Steel Construction
E.	ANSI	American National Standards Institute
F.	APWA	American Public Works Association
G.	ASCE	American Society of Civil Engineers
H.	ASME	American Society of Mechanical Engineers
I.	ASTM	American Society of Testing Materials
J.	AWWA	American Water Works Association
K.	EPA	United States Environmental Protection Agency
L.	DEQ	Department of Environmental Quality
M.	FM	Factory Mutual
N.	IFA	Infrastructure Finance Authority, Business Oregon
O.	NEC	National Electric Code
P.	NEMA	National Electric Manufacturers Association
Q.	NFPA	National Fire Protection Association
R.	NSF	National Sanitation Foundation
S.	OAR	Oregon Administrative Rules
T.	ODOT	Oregon Department of Transportation
U.	OHA	Oregon Health Authority, Drinking Water Program
V.	ORS	Oregon Revised Statutes

- | | | |
|-----|------|---|
| W. | OSHA | Occupational Safety and Health Act (both Federal and State) |
| X. | OSSC | Oregon Structural Specialty Code |
| Y. | UL | Underwriters' Laboratories |
| Z. | USDA | United States Department of Agriculture |
| AA. | SSPC | Steel Structures Painting Council or, The Society for Protective Coatings |
- 1.02 The abbreviation of "N.I.C." if shown on the plans or specifications represents work that is "Not in Contract." This work is to be completed at a later date by Owner or others and for which the Contractor will not be responsible.
- 1.03 Definitions:
- A. Approve: The term "approved" where used in conjunction with the Engineer's action on the Contractor's submittals, applications and requests; is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.
 - B. Back Prime: See "Prime".
 - C. Directed: Terms such as "directed", "requested", and "authorized" mean "directed by Engineer", "requested by the Engineer" and similar phrases.
 - D. Furnish: The term "furnish" is used to mean supply and deliver to the Project Site; ready for unloading, unpacking, assembly, installation, and similar operations.
 - E. Indicated: The term "indicated" means indicated by Contract Documents. Where terms such as "shown", "noted", "scheduled" and "specified" are used; it is to help the reader locate the reference. No limitation on location is intended.
 - F. Install: The term "install" is used to describe operations at Project Site including the actual unloading, unpacking, assembly, erection, placing anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
 - G. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work.
 - H. Prime: The term "prime" means the first layer of finishing and means all edges, ends and surfaces, unless otherwise indicated.
 - I. Project Site: The space available to the Contractor for performance of construction activities, as part of the Project. The extent of the Project Site is shown on the Drawings.
 - J. Provide: The term "provide" means to furnish and install, complete and ready for the intended use.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

This section outlines in general the items the Contractor must prepare or assemble during the progress of the work, including technical submittals, Operations and Maintenance (O&M) data, record drawings, and substitution requests. Submittals are required for each piece of equipment or material even when the item being proposed for use is the same as specified.

1.02 RELATED SECTIONS

- A. General Conditions – Article 7.04 “Or-equals” and Article 7.05, Substitutes
- B. Supplementary Conditions – SC 7.05
- C. General Conditions – Article 7.16, Shop Drawings, Samples and Other Submittals
- D. Section 01630 – Product Substitutions
- E. Section 01700 – Contract Closeout
- F. Section 01730 – Operation and Maintenance Manuals
- G. Section 01780 – Record Drawings
- H. Various sections requiring submittals for equipment and materials

1.03 SUBSTITUTION REQUESTS

- A. Where the specifications state “or-equal”, “or approved equal”, or similar statement, the Engineer alone will determine if the proposed substitute item is allowed.
- B. Requests for substitution for items specified by manufacturer or manufacturer's model number as specified throughout the Contract Documents shall be in writing and be accompanied with sufficient information to allow the Engineer to identify the nature and scope of the request. Information to be provided shall include.
 - 1. Reason the substitution request is being made.
 - 2. All submittal information required for the specified item or equipment, including all deviations from the specified requirements necessitated by the proposed substitution.
 - 3. Reproducible contract drawings, marked up to illustrate the alterations to all structural, architectural, mechanical and electrical systems required to accommodate the proposed substitution.

4. If the substitution requires any mechanical, electrical or structural changes, the Contractor will be responsible for costs in evaluating a requested substitution. The cost for such an evaluation will be determined on a case-by-case basis, after receipt of written request. The Engineer will notify the Contractor in writing of said cost. If the Contractor wishes to proceed, he shall advise the Engineer in writing and submit additional information as may be requested. Final approval of a substitution must be made by both the Engineer and Owner.
5. No additional costs of any kind will be incurred by the Owner or Engineer by approval or rejection of any substitution request.

1.04 SUBMITTALS

A. Technical submittals

1. Technical submittals covered by these specifications include manufacturer's information, shop drawings, test procedures, test results, samples, request for substitutions and miscellaneous work related submittals. Submittals shall also include, but not be limited to, all mechanical, electrical and electronic equipment and systems, materials, reinforcing steel, fabricated items, piping and conduit details, and lead time required for delivery to job site.

1.05 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall furnish all drawings, specifications, descriptive data, certifications, dimensional drawings, samples, tests, methods, schedules and manufacturers installation and other instructions as required by the contract documents, or the Engineer, to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the contract documents.
 1. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the specified requirements.
 2. The Contractor shall ensure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work as shown on the Plans.
 3. The Contractor shall coordinate submittals among his subcontractors and suppliers.
 4. Submittals shall coordinate with the work so that work will not be delayed. Coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals.
 5. The Contractor shall not proceed with work related to a submittal until the submittal process is complete.
 6. The Contractor shall certify on each submittal document that he has reviewed the submittal, verified final conditions and complied with the contract documents. The Contractor may authorize in writing a material or equipment supplier to deal directly with the Engineer. This interaction shall be limited to contract interpretations to clarify and expedite the work.

7. Charges will be documented and the Contractor will be charged for review of multiple non-conforming submittals for any one (1) item in excess of two (2) times.

1.06 RECORD DRAWINGS

- A. During the course of construction, Contractor shall maintain a marked-up set of the project drawings. See Section 01780.

1.07 OPERATION AND MAINTENANCE (O&M) MANUALS

- A. Contractor shall collect O&M data from all equipment and material suppliers for all items provided in the project. See Section 01730.

1.08 ENGINEER'S REVIEW

- A. Review shall not extend to means, methods techniques, sequences or procedures of construction, or to verify quantities, dimensions, weights or gages, or to fabrication processes, except when specifically indicated or required by the contract documents, or to safety precautions or programs.
- B. The Contractor shall submit one (1) digital copy in PDF format of all submittal material to Engineer.
- C. Unless otherwise specified, within 14 calendar days after receipt of submittal, the Engineer will return the marked-up copies. The Contractor shall take appropriate action if the submittal needs to be resubmitted. If specified submittal material is to be used for O&M data, all corrections shall be made and new clean copies shall be submitted with the O&M data.
- D. Review of contract documents, method of work or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibilities for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or Owner. The Contractor shall have no claim under the Contract on account of failure or partial failure of the method of work, material or equipment so reviewed.

END OF SECTION

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SECTION 01310 – CONSTRUCTION PROGRESS SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

- A. Provide a progress schedule indicating the times for starting and completing the various stages of work, including any Milestones.
- B. As work progresses, Contractor shall prepare and submit updated progress schedules as necessary.
- C. Schedule duration of each activity shall be based on the work being performed during the normal 40-hour work week with allowances made for legal holidays and normal weather conditions.
- D. Updates – Schedule shall be updated at least once per month as required to maintain accuracy.

1.02 SUBMITTALS

- A. Within 10 days after the date of the Agreement (Contract), submit a proposed progress schedule to the Owner and Engineer for approval.
- B. Interim Schedule
 - 1. Contractor shall submit within 10 days after award of Contract, but before any scheduled pre-construction conference, an Interim Schedule setting forth all activities for the first two (2) months of construction.
 - 2. Review comments by the Engineer concerning the Interim Schedule shall be considered in developing the Overall Schedule.
 - 3. The Contractor shall submit one (1) digital copy in PDF format of the Interim Schedule to the Engineer.
- C. Overall Schedule
 - 1. For Contract Periods exceeding 60 days, the General Contractor shall prepare and submit, within 30 days after the award of Contract, an Overall Schedule composed of all construction operations in connection with the Contract.
 - 2. Overall Schedule, if it is sufficiently developed to equal or exceed the Interim Schedule requirements, may be submitted in lieu of a separately prepared Interim Schedule. In any event, the Interim Schedule shall form the basis for the Overall Schedule and will be considered an integral part of the Overall Schedule.
 - 3. Contractor shall submit one (1) digital copy in PDF format physical copies to the Engineer for his review. Within seven (7) days after receipt of the submittal, the Engineer shall review the submitted schedule and return one copy of the marked-up original to the Contractor. If the Engineer finds that the submitted schedule does not comply with specified requirements, the corrective revisions will be noted on the submittal copy returned to the Contractor for corrections and resubmission.

D. Schedule Content

1. Schedules shall indicate the sequence of work and the time of starting and completion of each activity. Activities shall include, but not be limited to, the following items as they pertain to the Contract:
 - a. Each subcontractor's items of work
 - b. Temporary provisions for continued service
 - c. Installation of specific major items
 - d. Submittals from Contractor to Engineer for review and return to the Contractor.
 - e. Material and equipment order, manufacture and delivery
 - f. Dates for performance of all testing procedures
 - g. Dates for tie-ins to existing systems
 - h. Final cleanup and Start-Up
 - i. The schedule duration of each activity shall be based on the work being performed during the normal 40-hour work week with allowances made for legal holidays and normal weather conditions.
 - j. Schedule shall be updated each month as required, and more often if changes in scheduling are required or if the original schedule is no longer valid.
 - k. After each revision, the Contractor shall submit the revised schedule to the Engineer.
 - l. The Contractor shall consider all critical systems and coordinate existing, temporary, and new construction to ensure continuous treatment of wastewater.

1.03 PROGRESS OF WORK

- A. The Contractor shall execute work with such progress as necessary to prevent delay to the overall completion of the project and with such forces, materials and equipment to assure completion in the time established by the Contract.
- B. The Contractor may find it necessary to work overtime, double shifts, weekends and/or holidays if such a schedule is required to complete the project within the time allowed.

END OF SECTION

SECTION 01400 – QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Work shall conform to these specifications and the standards of quality contained herein.
1. Only new items of recent manufacture and quality specified, free from defects, will be permitted on the Work, unless items are specifically noted as existing to be reused. Remove rejected items immediately from the Work and replace with items of quality specified. Failure to remove rejected materials and equipment shall not relieve the Contractor from responsibility for quality and character of items used, nor from any other obligation imposed by the Contract.
 2. No work defective in construction or quality, or deficient in any requirement of the drawings and specifications will be acceptable in consequence of the Owner's or the Engineer's failure to discover or to point out defects or deficiencies during construction; nor will the presence of Resident Project Representatives on the work relieve the Contractor from responsibility for securing the quality and progress of work as required by the Contract. Defective work revealed within the time required by guarantees shall be replaced by the Contractor by work conforming to the intent of the Contract. No payment, whether partial or final, shall be construed as an acceptance of defective work or improper materials.

END OF SECTION

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SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes mobilization, temporary utilities, temporary construction, safety requirements, temporary environmental controls, and other temporary controls.
- B. Submittals
 - 1. Traffic control plan (see Section 01570).
 - 2. Staging area plan and notification of any obstructions encountered during mobilization.
 - 3. Plans for disposal of waste materials and excavated material not required for fill, including permits as required.
- C. Permits:
 - 1. Contractor shall secure and pay for all permits and fees required pertaining to temporary facilities and all other work.
 - 2. Construction permits as required by the City, Lane County, Department of Environmental Quality, and/ or other agencies or utilities shall be the responsibility of the Contractor to secure.
- D. Mobilization shall include de-mobilization and consist of preparatory work and operations, including but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to and from the project site; for the establishment of offices, buildings and other facilities necessary for work on the project; for premiums on bond and insurance for the project, and for other work and operations which the Contractor must perform or costs he must incur before beginning work on the project and after completion of the project.
- E. Access of Government Officials. Authorized representatives of the Federal, State, and Local Governments shall at all times have safe access to the Work, whenever in preparation or in progress, and Contractor shall provide proper facilities for such access and inspections.

PART 2 PRODUCTS

- A. MATERIALS
 - 1. Contractor shall provide all materials necessary for all work this Section.

PART 3 EXECUTION

A. WORKMANSHIP

1. During all construction operations, the Contractor shall construct and maintain such facilities as may be required to provide access by all property owners to their property. No person shall be cut off from access to their place of business or residence, unless the Contractor has made special arrangements with the affected persons and has notified Engineer and Owner. All temporary facilities shall be removed by the Contractor upon completion of the Work.
2. Sanitary Facilities
 - a. The Contractor shall provide chemical toilets of suitable types and maintain them in a sanitary condition at all times, conforming to code requirements and acceptable to the health authorities. They shall be of watertight construction so that no contamination of the area can result from their use. Arrangements shall be made for frequent emptying of the toilets. Upon completion of the work, toilets shall be removed, and the area restored to its original condition.
 - b. Portable toilet facilities shall be located only at locations approved by the Owner.
3. Water
 - a. Water is available for normal filling, flushing and testing operations through Owner approved connections to the existing system.
 - b. If access to potable water is required, submit request to engineer in writing to engineer no less than 72 hours in advance
4. Safety Requirements
 - a. Proper traffic control shall be provided in accordance with Section 01570.
 - b. Access for Police, Fire, and School Bus Service. Notify the fire department, police department, and, when applicable, the School District and private school before closing any street or portion thereof, and no closing shall be made without the Engineer's approval. Notify said departments when the streets are again passable for emergency vehicles. Do not block off emergency vehicle access to any area, such as consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, unless the Contractor obtains special written permission from the chief of the fire department. Conduct operations so as to cause the least interference with any fire station access and at no time prevent such access.
 - c. The Contractor shall furnish a list of emergency telephone numbers to both the Engineer and the Owner so that contact may be made easily at all times in cases of emergencies.
 - d. Fire Prevention. Contractor shall perform all work in a fire-safe manner. Contractor shall supply and maintain on site all fire-fighting equipment, supplies, and capable personnel for extinguishing incipient fires as required by all Federal, State and local laws and regulations. Each piece of internal combustion engine-driven equipment shall be equipped with a fire extinguisher in accordance with the appropriate recommendation of the

National Fire Protection Association (NFPA). All engines shall be equipped with functional spark arrestors and sound suppression devices.

5. Temporary Environmental Controls

- a. The Contractor shall maintain affected areas from his construction free from environmental pollution that would be in violation of federal, state, or local regulations.

6. Air Pollution Control

- a. Minimize air pollution likely to occur from construction operations by wetting down bare soils to control dust and requiring proper combustion emission control devices on construction vehicles.
- b. Give unpaved streets, roads, and detours or haul roads in the construction area a dust preventative treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.

7. Water Pollution Control and Erosion Control

- a. Discharge from dewatering, or flushing operations shall not directly impact existing water courses.
- b. Turbidity shall not exceed 10 percent above natural stream turbidities as a result of the project. The turbidity standard may be exceeded for a limited duration, provided all practicable erosion control measures have been implemented, including, but not limited to:
 - i. Use of filter bags, sediment fences, silt curtains, leave strips or berms, placing mulch and hay bale silt fences, or other measures sufficient to prevent offsite movement of soil.
 - ii. Use of an impervious material to cover stockpiles when unattended or during a rain event.
 - iii. Graveled construction accesses to prevent movement of material offsite via construction vehicles.
 - iv. Sediment traps or catch basins to settle out solids prior to water entering ditches or waterways.
 - v. Spreading mulch on exposed embankments greater than 3 feet in height.
 - vi. Place hay bale silt fence at any locations where soil erosion potential is evident and as directed by the Engineer.
 - vii. Constructing sediment basins where surface runoff is causing soil erosion or as directed by the Engineer.
- c. Erosion control measures shall be maintained as necessary to ensure their continued effectiveness.
- d. Petroleum products, chemicals, or other deleterious materials shall not be allowed to enter the water.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Mobilization, Bonding, and Insurance - Payment for this item shall be on a lump sum basis at the amount stated on the Bid Form and shall include all activities related to mobilization and demobilization on the project, preparatory work, insurance and bonding costs, project closeout, building permits (as required) and other agency fees and other facilities and equipment necessary for work on the project.

- B. Construction Facilities and Temporary Controls - Payment for work in this item shall be on a lump sum basis at the amount stated on the Bid Form and shall include all temporary construction facilities, traffic control, project offices, miscellaneous equipment, costs related to scheduling, coordination, submittals, and all other Division 1 activities within the scope of work not designated with individual payment items shall be included within this item.

END OF SECTION

SECTION 01570 – TRAFFIC REGULATION

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes traffic control related safety requirements as may be required for the project.
- B. Contractor shall comply with all rules and regulations of County, State, City, and Federal authorities regarding the closing, detouring, and loading of all public streets or highways.
- C. No road (public or private) shall be closed or detoured by the Contractor to the public, except by express written permission of the Engineer and entity governing such roadways. Traffic must be kept open on all roads and streets where no detour is possible. The Contractor shall, at all times, conduct the work so as to assure the least possible obstruction to traffic and normal commercial pursuits. The convenience of the general public and residents, safety, and the protection of property is of prime importance and shall be provided for by the Contractor in an adequate and satisfactory manner.
- D. Submittals
 - 1. If road closures, lane closures, or detours are required, Contractor shall prepare, and submit for approval a Traffic Control Plan and Signing Plan to the appropriate governing body of such road, and a copy of the approved plan must be provided to the Engineer and Owner.
- E. If road closures, lane closures, or detours are required, Contractor shall prepare, and submit for approval a Traffic Control Plan to the appropriate governing body of such road.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Contractor shall furnish all flaggers, barricades, lead cars, warning signs, lights, signals, etc. as required to comply with regulations and provide safety.
- B. All signs, lights, flags and other warning and safety devices shall meet the current ODOT safety manual affecting the location of construction, or to applicable City/County standards.
- C. Barricades shall conform to the Standard Specifications for Highway Construction of the State Highway Department affecting the location of construction, or to City or County Standards where applicable.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Contractor shall, at their own expense, and without further or other order, provide, erect and maintain at all times during the progress or temporary suspension of the work, suitable barricades, fences, signs or other adequate warnings or protection. Contractor shall provide, keep, and maintain such danger lights, signals, and flaggers as may be necessary or as may be ordered by the Engineer to ensure the safety of the public as well as those engaged in connection with the work.

- B. Failure of the Engineer to notify the Contractor to maintain barricades, barriers, lights, flares, danger signals, or watchmen, shall not relieve the Contractor from this responsibility. All barricades and obstructions shall be protected at night by signal lights which shall be suitably distributed and kept lit from sunset to sunrise. Barricades shall be of substantial construction and shall be suitably painted to increase their visibility at night.
- C. Whenever the Contractor's operations create a hazardous condition, Contractor shall furnish flagmen and guards as necessary, or as directed, to give adequate warning to the public of any dangerous conditions to be encountered. Contractor shall furnish, erect, and maintain approved fences, barricades, lights, signs, and any other devices that may be necessary to prevent accidents and to avoid damage and injury to the public. Flaggers and guards, while on duty and assigned to give warning to the public, shall be equipped with approved red wearing apparel and a red flag which shall be kept clean and in good repair.
- D. Contractor shall provide access to private properties at all times, except during urgent stages of construction when it is impractical to carry on the construction and maintain traffic simultaneously. Coordinate all construction activities with the affected property owners.
- E. Contractor shall patrol the traffic-control area and reset all disturbed signs and traffic-control devices immediately, and shall remove or cover all non-applicable signs during periods not needed.
- F. At the end of each day, the Contractor shall leave work in such condition that it can be traveled without damage to the work and without danger to the public.
- G. If, in the opinion of the Engineer or other governing traffic authority, traffic control is lacking or otherwise unsafe or deficient, the Engineer may require that all work be halted until the traffic control measures can be improved to an acceptable level.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for this item shall be included within the lump sum price for Construction Facilities and Temporary Controls. It shall include all activities related to traffic and safety control on the project, preparatory work for work on the project.
- B. No additional compensation or extension of contract times will be given if the Engineer halts work due to the Contractor's failure to provide traffic control measure acceptable to the Engineer.

END OF SECTION

SECTION 01580 – SAFETY

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes:
 - 1. Requirements for safety plans.
 - 2. Data on potential contamination.
- B. The requirements in this Section are minimum requirements and do not relieve the Contractor of the responsibility for ensuring employee's safety and that of site visitors.
- C. The Contractor is responsible for determining safety needs and personal protective equipment for the types of work to be performed at the site.

1.02 RELATED SECTIONS

- A. General Conditions
- B. Section 01300 – Submittals

1.03 SUBMITTALS

- A. The Contractor shall submit a copy of the site-safety plan within 14 calendar days of signing the contract.
- B. The Contractor shall not be issued a Notice to Proceed until the Site Safety plan has been submitted to the Engineer and Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 SITE SAFETY PLANS

- A. The Contractor shall prepare a site-specific safety plan in compliance with Oregon State standards which shall detail methods of ensuring the safety of workers and visitors to the project site. This shall include, but is not limited to, the following:
 - 1. Accident and injury from operations of equipment and other work related to earthwork, trenching, and other construction activities.
 - 2. Accident and injury from the use of equipment (cranes or otherwise) to install mechanical equipment.
 - 3. Accident and injury from work performed in close proximity to or in contact with all chemicals, fuels, and lubricants used onsite.
 - 4. Hygiene and other worker protection methods to minimize the risk of workplace exposure to COVID-19.

- B. The site safety plan shall include emergency response plans for fire and injury, including emergency telephone numbers, and a map and directions to the nearest hospital.
- C. The site safety plan shall comply with all applicable OSHA safety standards.
- D. The site safety plan shall comply with all local and State safety standards.

3.02 SAFETY ORIENTATION AND MEETINGS

- A. Contractor shall conduct a safety orientation prior to beginning work and for new employees. The Contractor shall document the completion of the safety orientation for each employee. No employee shall work onsite without first completing a safety orientation provided by the Contractor's Site Superintendent.
- B. The Contractor shall conduct a weekly safety meeting and document attendance. Notes and attendance lists from the weekly safety meeting shall be submitted to the Engineer. Weekly safety meeting content should be relevant to work occurring onsite.
- C. The Contractor shall maintain a copy of the site safety plan and all material safety data sheets for chemicals, fuels, or lubricants used on the site, in an unlocked location available to all employees, visitors, Owner, and Engineer.

3.03 ADDITIONAL SAFETY REQUIREMENTS

- A. The Contractor shall also comply with Safety Requirements described in other sections of the Contract Documents including, but not limited to, the General Conditions.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for all materials, equipment, labor, superintendence, and incidentals to organize and maintain a safe working environment will be included in the various items of work and no additional payment will be made for this item.

END OF SECTION

SECTION 01610 – STORAGE AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Protect products scheduled for use in the Work by means as described in this Section and as recommended by the manufacturer.

1.02 MANUFACTURER'S RECOMMENDATIONS

- A. Except as otherwise approved by the Owner, Contractor shall determine and comply with manufacturers' instructions on product handling, storage, and protection.

1.03 PACKAGING

- A. Deliver products to the job site in the manufacturer's original container with the labels intact and legible.
- B. Maintain packaged materials with seals unbroken and labels intact until time of use.
- C. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements at no additional cost to the Owner.
- D. The Owner may reject as non-complying such material and products that do not bear identification satisfactory to the Owner as to the manufacturer, grade, quality, and other pertinent information.

1.04 STORAGE

- A. Store materials on-site in coordination with the Owner to provide suitable site access and clearance.
- B. Do not store unnecessary materials that will not be incorporated into the work.
- C. No materials, whether sourced on-site or transported to the site, shall be stored on private property without written permission.

1.05 PROTECTION

- A. Protect stored materials from moisture, UV, and temperature exposure, and unauthorized handling.
- B. Provide protection for finished surfaces.
- C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.
- D. Provide proper protection for all workers.

1.06 REPAIRS AND REPLACEMENTS

- A. In event of damage, promptly make replacements and repairs to the approval of the Owner and at no additional cost to the Owner.

- B. Additional time required to secure replacements and to make repairs will not be considered by the Owner to justify an extension of the Contract Time of Completion.
- C. Repair all scratches and damage to painted surfaces promptly with proper color and material.
- D. Backfill or other soil materials to be incorporated into the Work which have become too wet due to improper storage and protection shall be properly dried or replaced prior to incorporation into the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for this item shall be included within the lump sum price for Construction Facilities and Temporary Controls. It shall include all activities related to the storage and protection of all materials on the Project. No additional Measurement or Payment shall occur for this item.

END OF SECTION

SECTION 01630 – PRODUCT SUBSTITUTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section describes procedures for securing approval of proposed product substitutions.

1.02 PRODUCT OPTIONS

- A. The Contract is based on standards of quality established in the Contract Documents.
- B. See Section 01300 Submittals, General Conditions, and Supplemental Conditions for additional information on submittals and substitutions.
- C. In agreeing to the terms and conditions of the Contract, the Contractor has accepted the responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
- D. The Owner has not agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.
- E. Where materials and methods are specified by naming one single manufacturer or model number, without stating that equal products will be considered, only the material and method named is approved for incorporation into the Work.
- F. Where materials and methods are specified by name or product number, followed by the words "or equal approved in advance", materials and methods proposed by the Contractor to be used in lieu of the named materials and methods shall in all ways be equal or exceed the qualities of the named materials and methods. In addition to all necessary info needed to confirm compliance with specifications submittal shall also include either a statement indicating the item conform with all aspects of the applicable specifications or a comprehensive list of ways in which the proposed substitution does not conform. For consideration as an "equal approved in advance", complete detailed submittals must be received by the Engineer at least ten (10) days prior to the bid opening date. Only those items which specifically state "or equal approved in advance" will have submittals reviewed prior to bid opening. Approved substitute items will be listed by addendum prior to bid opening.
- G. Where the phrase "or equal," or "or approved equal," occurs in the Contract Documents, do not assume that the materials, equipment or methods will be approved as equal unless the item has been specifically so approved for this Work. Prepare detailed submittal and submit to Engineer after Contract Award date. Requests for review and approval of submittals for these items will not be considered prior to bid opening. Substitutes will not be incorporated into the work unless submittal is approved by the Owner via the Engineer.
- H. Submittals shall include all technical information and diagrams as necessary to allow Engineer to evaluate the proposed substitution. Any/all differences between the specifications or specified equipment and the proposed substitution shall be clearly noted in the submittal. Submittals shall clearly indicate the specific model numbers, part numbers, and options of the proposed substitution.

Product Substitutions

- I. Costs associated with changes resulting from an approved equal shall be the responsibility of the Contractor.

1.03 DELAYS

- A. Delays in construction arising because of the time required for approval of substitution requests will not be considered by the Owner as justifying an extension of the agreed Time of Completion.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. All Work described in this section is considered incidental to the Work. No additional measurement or payment shall be made.

END OF SECTION

SECTION 01700 – CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes procedures and requirements for finalizing and closing out the Project(s).
- B. Final clean-ups and restorations shall be done prior to requesting final inspections.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 RESTORATION AND CLEAN-UP

- A. Upon completion of any portion of the work, promptly remove temporary facilities generated by that portion of the work, including surplus materials, equipment and machinery unless directed otherwise by the Engineer or the Owner. All construction work by the Contractor shall be clean and free of rubbish, dirt, overspray, and extraneous materials to the satisfaction of the Engineer before acceptance of the work.
- B. Street/Road Cleanup. All roadways affected during construction shall be cleaned and restored to a condition as good or better than the condition prior to the commencement of the Project as determined by engineer. All ditches and culverts shall be cleaned and re-graded for proper drainage. Culverts broken or damaged by construction activities shall be restored to their original condition and location. Immediately following construction, remove all dirt, mud, rock, gravel, and other foreign material at the completion of the day or as otherwise required by the Engineer. Street repairs approved by governing agency, Lane County or City of Lowell.
- C. Site Restoration and Cleanup. Restore or replace any ground covering (e.g., bark chips, cinders, gravel, river rock, etc.) to the original condition or better. Replace topsoiled areas, rake and grade to conform to their original contours. Replace any damaged landscaping or plantings to prior conditions in manner acceptable to Owner. Reseed grass areas as approved. Seed and protect any disturbed slopes.

3.02 CERTIFICATIONS

- A. Contractor to prepare Certifications on Contractor's letterhead with project title and number clearly identified. Submit to Engineer with application for Final Payment.
 - 1. Written certification that Contractor has fully completed the Work in strict compliance with the Contract Documents and requesting final inspections.
 - 2. Written certification that all subcontractors and suppliers who have furnished work or materials as part of this project have been paid in full.
 - 3. Written certification that Contractor will replace all materials and workmanship that prove defective within one-year after the date of Substantial Completion. Date Engineer signs Substantial Completion is the start date of the Contractor's one-year guarantee period. Date Engineer signs Final Payment Certificate is date of Final Acceptance.

- B. One-Year Warranty Inspection. On the 11th month following project Substantial Completion, Contractor shall be available to be present during the on-site warranty inspection. Any defects identified in materials or workmanship shall be corrected within 30 days by the Contractor at his own expense.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. All Work described in this section is considered incidental to the Work. No additional measurement or payment shall be made.

END OF SECTION

SECTION 01740 – WARRANTIES

PART 1 GENERAL

1.01 SUMMARY

- A. Installed Materials Warranties. Prior to completion and payment for work under this Contract, the Contractor shall furnish the Owner through the Engineer, all warranty and/or guarantee forms normally furnished by the manufacturer of equipment. Warranty form shall include the specific equipment installed, the duration of the warranty, details of the warranty, and the installer's name, address and phone number. Installation date will be filled in by the Owner and will coincide with date of substantial completion of the work under this contract. All such warranties shall name the Owner as the warranted party.
- B. Attention is directed to various other sections of the Contract Documents where specific material or installation warranties may be required for items specified.

1.02 CONTRACTORS WARRANTY OF WORK

- A. Contractor shall guarantee the Work for a period of one (1) year from the date of Final Acceptance. All materials and workmanship that prove defective within the one-year guarantee period shall be promptly replaced or corrected with no additional cost to the Owner. Written certification that Contractor will replace all materials and workmanship that prove defective within one-year after the date of Final Acceptance is required for project close-out and shall accompany application for Final Payment.
- B. Contractor shall correct any work not in compliance with specifications and is responsible for all repairs of damage to other improvements, natural or artificial structures, systems, equipment and vegetation caused by, or resulting in whole or in part from occurrences beginning during the warranty period and are the result of defects in construction or materials installed under this Contract. Contractor shall be responsible for all costs associated with site cleanup and remediation caused by, or resulting in whole or in part from, defects in its work or materials.
- C. Within 10 calendar days of the Owner's written notice of defects, Contractor shall begin repair of the defects and all related damage. If Contractor or Contractor's Surety fails to correct and repair the defects in a timely manner, the Owner may have the correction and repair performed by others. Contractor or Contractor's Surety shall promptly reimburse the Owner for all expenses incurred to correct and repair the defects.
- D. In case of an emergency where delay could result in serious loss or damage, the Owner may make emergency corrections and repairs without written notice to Contractor. Contractor or Contractor's Surety shall promptly reimburse the Owner for all expenses incurred to correct and repair the defects.
- E. On Contractor's letterhead; provide written letter stating that Work has been completed in accordance with the Contract Documents and that a one year warranty of the work will be provided from the date of Final Acceptance. Written certification that Contractor will replace all materials and workmanship that prove defective within one-year after the date of Final Acceptance is required for project close-out and shall accompany application for Final Payment.

- F. One-Year Warranty Inspection. On the 11th month following final project completion and acceptance, Contractor shall be available to be present during the on-site warranty inspection by Owner. Any defects identified in materials or workmanship shall be corrected within 30 days by the Contractor at his own expense

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. All materials and work described in this section is considered incidental to the Work. No additional measurement or payment shall be made.

END OF SECTION

SECTION 01780 - PROJECT RECORD DRAWINGS

PART 1 GENERAL

1.01 SUMMARY

- A. This section outlines in general the Contractor requirements for preparing and maintaining and record drawings of the project.
- B. Contractor shall provide access to the Record Drawings to the Engineer and Owner throughout construction and shall finalize and submit complete record drawings upon completion of the work.
- C. Accurate Record Drawings or "As-Builts" are considered extremely important and it shall be entirely the Contractor's responsibility to maintain a complete and accurate record of all details of the project as the contractor constructs and installs equipment and materials.
- D. Engineer or Owner may stop work if it is determined that Contractor is not properly recording details in record drawings and require correction and accurate documentation of all previous work before additional work proceeds.
- E. Engineer must accept and approve the drawings prior to recommending final payment.

1.02 RELATED SECTIONS

- A. General Conditions – Article 7 , Section 7.11, Record Documents

1.03 SUBMITTALS

- A. Submit two complete sets of initial marked-up Record Drawings immediately upon completion of construction work. Engineer will review for completeness and either approve or return one set with comments and corrections.
- B. If initial submittal required corrections, submit one complete set of corrected marked-up Record Drawings to Engineer with or before request for final payment.

PART 2 PRODUCTS

2.01 RECORD DRAWINGS

- A. Maintain one set of black-line prints of the Contract Drawings. Mark-up drawings using erasable red-colored pencil. Use additional colors as necessary to clearly document changes from original drawings for different categories of work at the same location.
- B. Use clear original or copy of project drawings for mark-up. Use shop drawings for markup when they are more capable of showing actual physical conditions completely and accurately.
- C. All deviations or differences from the original drawings, including dimensional, location, layout, material, and other details shall be noted clearly. Any additional information discovered during construction shall also be noted including location and depth of buried utilities and structures not shown in the original drawings.

2.02 **FORMAT**

- A. Organize Record Drawings into manageable sets using plans and shop drawings as applicable. Keep sets bound and protected.
- B. Keep on-site during construction and clearly identify as "Record Drawing" on cover.

PART 3 EXECUTION

3.01 **RECORDING AND MAINTENANCE**

- A. Record data as soon as possible after obtaining it. Do not wait until the end of the job or a portion of the job to record data.
- B. Give particular attention to information concealed that would be difficult to identify or measure and record later. Record and check the markup before enclosing concealed installations.
- C. Require the individual who installed or constructed the portion of the work, or otherwise obtained the record data, to prepare that portion of the marked-up record print.
- D. Incorporate changes and additional information previously marked on Record Drawings, erase, redraw, and add details and notations where applicable.
- E. Refer instances of uncertainty to Engineer for resolution.

END OF SECTION

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SECTION 02230 – CLEARING & GRUBBING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. The work to be performed under this section shall include all labor, equipment, and materials necessary for the removal of vegetation and organic matter including, trees, logs, stumps, roots, shrubs, brush, grass and other organic materials as specified herein and as necessary to complete the proposed improvements. This work shall also include the preservation and protection from injury or defacement of all vegetation and objects designated to remain, hauling and disposal of all resulting materials, backfilling of all voids resulting from clearing and grubbing operations, and grading of areas along the project alignment which are not included elsewhere in grading.
- B. Clearing and grubbing work shall be performed in strict compliance with all City, County, State, and Federal laws and requirements pertaining to clearing, disposal, erosion control, and other related operations.
- C. No trimming is allowed within any State or County right-of-way without specific approval from the proper ODOT and/or County official. The Contractor shall obtain any permits required for clearing and grubbing within said right-of-way.
- D. Extra care shall be taken when construction occurs on private property. For areas within easements the Contractor shall coordinate with the Owner and private property owners prior to removal or trimming of any vegetation.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 CLEARING

- A. Clearing shall consist of the felling, trimming or cutting of trees, stumps, shrubs, brush and branches, and the clearing of downed timber, vines, grass and other vegetation to the limits specified herein, with the exception of items designated either on the Plans or within these Specifications to remain. The ground surface shall be cleared completely of all growth and organic matter as specified.
- B. Merchantable timber, shrubs, and other vegetation of value occurring within areas designated for clearing or resulting from the clearing work shall become the property of the Contractor unless otherwise specified.
- C. Trees of which less than one-half (1/2) of the lower portion of the trunk is within the area to be cleared may be left in place unless they are so situated that they interfere with other work to be completed under this contract, in which case they shall be removed.
- D. Trimming
 - 1. Tree branches hanging within the zone extending from the ground surface to 13-feet above the finished roadway grade, or 9-feet above other areas, shall be cut off to the boles in a workmanlike manner in conformance with tree surgeon practice, as directed.

2. The Contractor shall remove additional tree branches as directed by the Engineer in such a manner that the tree presents a balanced appearance.
3. Scars resulting from trimming of branches shall be treated with an approved tree sealant.

E. Clearing Limits

1. Clearing shall be performed within designated rights-of-way and as directed.

3.02 GRUBBING

A. Grubbing shall consist of the removal of all embedded wood and other organic matter. Materials to be removed include stumps, trunks, buried logs, roots one-inch (1") in diameter and larger and other objectionable material.

B. Grubbing Limits

1. Grubbing shall be performed within all clearing area limits, as specified above, to a depth of six-inches (6") below the ground surface, or subgrade, whichever is deeper.
2. At all trenches and other excavations, grubbing shall be conducted to six-inches (6") outside the exposed sides of the excavation. All stumps shall be completely removed to firm undisturbed soils.

3.03 DISPOSAL

- A. All materials and debris resulting from clearing and grubbing operations shall become property of the Contractor at the place of origin, and shall be hauled away and disposed of by the Contractor.
- B. Materials resulting from clearing and grubbing operations shall not be disposed of on lands owned or controlled by the Owner except by written permission. If so permitted, the Contractor shall place materials only at locations and in such manner as directed by the Owner.
- C. The Contractor shall obtain written permission from the owner of any property upon which clearing and grubbing materials are to be disposed. Copies of the agreement between the property owner and the Contractor shall be furnished to the Owner and Engineer.
- D. No burning of materials shall be allowed at the project site unless approved by the Owner in writing. No excess accumulation of materials shall be allowed at the project site.

3.04 PRESERVATION OF EXISTING VEGETATION

- A. The Contractor shall protect from injury all trees, shrubs, vines, plants, grasses and other vegetation outside of areas to be cleared and grubbed, or which are designated by the Engineer to be preserved. Operations which may damage such vegetation to remain shall be conducted in areas where damage will not result.
- B. All items designated to remain which are damaged by the Contractor's operations shall be restored or replaced by the Contractor to as nearly as possible original condition and location at no cost to the Owner.

3.05 COMPLIANCE WITH LAWS AND REGULATIONS

- A. The clearing and grubbing work shall be performed in strict compliance with all City, County, State, and Federal laws and requirements pertaining to clearing, hauling, disposal, erosion control, and related operations.

3.06 BACKFILLING AND GRADING

- A. Stump holes and other excavations which result from clearing and grubbing operations shall be backfilled with suitable material and compacted in accordance with Section 02315.
- B. Holes in areas to be excavated or trenched at a later time may be temporarily backfilled or covered as approved to provide for public safety until completion of final backfill.
- C. Areas subject to Clearing and Grubbing shall be smoothed and reshaped to blend to surrounding grades.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Clearing & Grubbing shall be included within the Lump Sum price for Demolition & Site Preparation for the amount stated on the Bid Form. Payment shall include compensation for the removal and disposal of all cleared debris, permits, materials, and labor required to complete the work described herein.

END OF SECTION

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SECTION 02240 - CONTROL OF WATER

PART 1 GENERAL

1.01 SUMMARY

- A. This section covers the control of surface water runoff, dewatering of pipeline trenches and structural excavations, and other elements required for control of water as dictated by the site conditions during construction.
- B. Contractor shall follow all Federal, State, and local rules and regulations regarding the Control of Water during the completion of the Work.
- C. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor assumes all liability for operation of the dewatering system and shall man the system during its operation. The dewatering system and discharge shall meet the requirements of all codes and regulatory agencies having jurisdiction of the system operation.
- D. Contractor shall inspect the construction site and consult with the City and applicable regulatory agencies to determine the best applicable method of dewatering, discharge filtration, and available options for receiving bodies. Contractor shall be responsible for all applicable permits.
- E. Submittals
 - 1. Prior to performing any excavation, the Contractor shall submit a dewatering plan to the Engineer for review. The submittal shall include method of installation, method and location of discharge, method of discharge filtration, and general details of the proposed dewatering system.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials and equipment required for control of water shall be furnished and maintained as required to perform the construction.
- B. Piping/Hose
 - 1. Contractor shall provide discharge piping constructed of rigid pipe with positive restrained joints.
 - 2. Provide watertight pipe system.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. The necessary machinery, appliances, and equipment shall be furnished, installed, operated, and maintained to keep excavations free from water during construction, and to dispose of the water so as not to cause injury to public or private property or to cause a nuisance, inconvenience, or a menace to the public. Sufficient pumping equipment and machinery in good working condition shall be provided for all emergencies including power outage, and sufficient workmen shall be available at all times for the operation of the pumping equipment. The dewatering systems shall not be shut down between shifts, on holidays or weekends, or during work stoppages without written permission from the Engineer.
- B. The control of surface runoff and groundwater shall be such that softening of the bottom of excavations, or formation of "quick" conditions or "boils" during excavation, shall be prevented. Dewatering systems shall be designed and operated so as to prevent removal of the natural soils. Natural or compacted soils softened by saturation with groundwater or standing surface water shall be removed and replaced as instructed by the Engineer at no additional expense to the Owner.
- C. During construction of structures, installation of pipelines, placing of structure and trench backfill, and the placing and setting of concrete, excavations shall be kept free of water. Surface runoff shall be controlled so as to prevent entry or collection of water in excavations. The static water level shall be drawn a minimum of one (1) foot below the bottom of the excavation, so as to maintain the undisturbed state of the foundation soils and allow the placement of fill or backfill to the required density. The dewatering system shall be installed and operated so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.
- D. Open and cased sumps shall not be used as primary dewatering for excavations deeper than three (3) feet below the static water table. Location of open or cased sumps shall be outside of trench excavation or limits of structural excavation.
- E. 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.
- F. Provisions shall be made to take care of surplus water, mud, silt, or other runoff pumped from excavations and trenches or resulting from slicking or other operations. Siltation of completed or partially completed structures and pipelines by surface water or by disposal of water from dewatering operations shall be cleaned up at the Contractor's expense.
- G. The Contractor shall be responsible for any damages to existing on- and off-site facilities and work in-place resulting from mechanical or electrical failure of the dewatering system.
- H. The Contractor shall comply with all applicable local, State, and Federal laws and regulations pertaining to erosion control and discharge of water off-site.
- I. Necessary filtering media, bags, or other methods shall be used to ensure that turbidity limits in the receiving bodies are not exceeded during dewatering activities.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for all Control of Water and other work in this section shall be included within the lump sum price for Construction Facilities & Temporary Controls for the amount stated on the Bid Form for the Project, and shall include, but not be limited to, compensation for all labor, materials, permits, and equipment required for the completion of the work described herein. No separate measurement for these quantities will occur.

END OF SECTION

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SECTION 02250 – DEMOLITION & SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

- A. The work in this section includes the furnishing of all labor, equipment, materials, incidentals, and performing all work required for the removal and disposal of concrete, miscellaneous structures, water piping as designated for removal, debris, buildings, fences and other items or improvements of manmade origin, in accordance with the Plans and these Specifications.
- B. The removal work described herein does not include the removal or disposal of items or improvements designated to remain.
- C. The area in which removal work, under these Specifications, is to be performed shall be confined to the minimum dimensions, within the public right-of-way or easements, which will permit proper construction of the proposed improvements, or as otherwise indicated.

1.02 RELATED SECTIONS

- A. Clearing and Grubbing shall comply with Section 02230
- B. Trench Excavation and Backfill shall comply with Section 02315.
- C. Landscape restoration and reseeding shall be as specified in Section 02900.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Existing fences requiring removal for the construction of the planned improvements shall be replaced to near original condition and location or installed as shown on the plans and as specified. Any fences designated to remain but damaged during construction shall be replaced to near original condition at the expense of the Contractor.
 - 1. Salvage all major components from wood fences being removed and reuse with the exception of the existing posts. Components not specifically identified for reuse shall be furnished and installed by the Contractor for replacement of fence to original or better condition.
 - 2. Chain Link Fence
 - a. Salvage all major components being removed and reuse with the exception of existing post, fence clips and tension wire. Components not specified for reuse shall be furnished and installed by the Contractor for replacement of fence to original condition.
 - b. Installation shall be by experienced fence erectors and shall be placed at location of existing fence unless fence is being relocated. All fencing shall be true to line, tight and straight.

- c. The Contractor shall take care in dismantling and reconnecting the existing fence to new chain link fence at the corner locations. Any portions of the existing fencing that has become damaged during this operation shall be replaced by the Contractor.
 - d. Fence corner posts shall be set in concrete. No strain shall be placed on the corner posts until concrete has set for at least seven (7) days.
- B. Disposal of Materials
 - 1. All materials, except those determined by the Engineer or Owner to be reusable, shall become property of the Contractor at the place of origin and shall be disposed of by the Contractor in conformance with all laws, regulations, and rules legally imposed on such activities.
 - a. Contractor shall make every effort to salvage or recycle construction demolition items and debris as is feasible.
 - 2. Materials shall not be disposed of on City owned or City controlled lands except by written permission of the City, and if so permitted, the materials shall be placed only at such locations and in such manner as the City may direct. Materials may be disposed of on private properties only with written permission of the property owner(s) involved, and with copies of the agreement furnished to the City and Engineer.
- C. Excavations resulting from the removal of structures and/or obstructions shall be backfilled and compacted in accordance with the requirements of Section 02315. Backfill materials shall consist of the type and class designated on the Plans and specified in Section 02315.
- M. All existing ditches damaged by the Contractor by his operations and incidental ditching shall be re-constructed as required as to maintain existing drainages and ditches. The Contractor shall maintain channel width and side slopes of existing conditions.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Demolition & Site Preparation shall be made on a lump sum basis for the amount stated on the Bid Form for the project and shall include, but not be limited to, compensation for all labor, materials, permits, and equipment required for the completion of the work described herein. Payment shall include the removal and disposal of all portions of fencing, and other items shown on the plans or as directed by the Engineer. Contractor shall sequence his work in such that no disruption existing service or system occurs unless said disruption is approved in writing by the Engineer. No separate measurement for these quantities will occur.

END OF SECTION

SECTION 02260 - SHORING AND BRACING

PART 1 GENERAL

1.01 SUMMARY

- A. This section specifies requirements for shoring and bracing of trenches and other excavations as required to furnish safe and acceptable working conditions; protect existing and new structures and vegetation; and maintain existing slopes, fills, and open excavations.
- B. The Contractor shall have sole responsibility to determine the construction means and methods required to satisfy the requirements of this section. The Contractor shall design sheeting, shoring, and bracing in accordance with Occupational Safety and Health Act (OSHA). The Contractor shall also design sheeting, shoring, and bracing in accordance with other applicable State and local requirements.
- C. The Contractor shall furnish a safe place of work pursuant to the provisions of OSHA and the subsequent amendments and regulations and for the protection of the work, structures, and other improvements. The Contractor shall also perform all shoring and bracing in accordance with other applicable State and local requirements
- D. Shoring and bracing shall include all necessary sheeting, sloping and other means and procedures such as draining and recharging groundwater and routing and disposing of surface runoff, required to maintain the stability of soils.
- E. Slope Stability
 - 1. OSHA Health and Safety Standards for Excavation, 29 CFR Part 1926, or successor regulations shall be strictly enforced and, if they are not followed, the Contractor and/or earthwork and utility subcontractor could be liable for penalties.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. General
 - 1. The construction of sheeting, shoring, and bracing shall not disturb the state of soil adjacent to the excavation or below the excavation bottom. Sheeting, shoring, and bracing shall be removed after placement and compaction of initial backfill, except as otherwise specified.
- B. Structure and Existing Piping
 - 1. The Contractor shall provide support of existing and new structures where shown, specified and at all other locations where excavation infringes on a 1:1 slope extending from the bottom of the footing. Existing piping shall be protected with shoring and bracing where excavation could expose the pipe and/or cause damage to the pipe.

C. Damages

1. Any damages to new or existing structures occurring through settlements, water or earth pressures, or other causes due to failure or lack of sheeting, shoring or bracing, or through negligence or fault of the Contractor shall be repaired by the Contractor at his own expense.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for all shoring, bracing, and other work in this section shall be included within the lump sum price for Construction Facilities and Temporary Controls as stated on the bid form and shall include all facilities, materials, labor, permits, and approvals related to shoring and bracing for completion of the Work. No separate measurement for these quantities will occur.

END OF SECTION

SECTION 02315 – TRENCH EXCAVATION, BEDDING, AND BACKFILL

PART 1 GENERAL

1.01 SUMMARY

- A. This work consists of furnishing all labor, materials, incidentals and equipment, as well as performing all work required for excavation, foundation stabilization, pipe bedding, pipe zone material, trench backfill, compaction, final grading, hauling and disposal of material resulting from the construction of utility piping, and all related appurtenances. Included also is the locating and protecting of existing utilities and other improvements (see Division 1), shoring, and bracing, excepting only such work as is covered and included under other sections of this Division, or other Divisions of these Contract Documents.
- B. This work includes but is not limited to excavation of trenches for the construction of trench drains trenches.
- C. Excavation must be in accordance with ORS 757.541 to 757.571 and all other applicable laws and regulations.

1.02 REFERENCES

- A. Oregon Standard Specifications (OSS) – The 2021 Oregon Department of Transportation/APWA Oregon Chapter Standard Specifications for Construction.

1.03 DEFINITIONS

- A. Trench Excavation – Trench excavation consists of the removal of all material encountered in the trench to the limits shown on the Plans or as directed. Trench excavation shall be classified as either common excavation or rock excavation.
 - 1. Common excavation is defined as the removal of all material as required to complete the planned improvements, regardless of type, nature or condition of materials encountered, except that which is designated as rock excavation.
 - 2. Rock excavation is defined as the removal of boulders composed of igneous, sedimentary or metamorphic stone material which have a least dimension of 36-inches or more, or a displacement of one cubic yard or more; or the removal of solid ledge rock which, in the opinion of the Engineer, requires for its removal drilling and blasting, wedging, sledging, barring or breaking with power operated tools.
 - a. No soft or disintegrated rock; hard-pan or cemented gravel that can be removed with a hand pick or power operated excavator or shovel; no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere; and no rock outside of the minimum limits of measurement allowed, which may fall into the excavation, will be measured or allowed.
 - b. When solid rock layers have an overburden of non-rock material (common material) which cannot practically be stripped and handled separately, and/or when solid rock is interspersed with non-rock material, the entire mass will be classified as solid rock if the actual solid rock fraction exceeds 85% of the entire volume.

- B. Trench Foundation – Trench foundation is defined as the bottom of the trench on which the pipe bedding is to lay and which provides support for the pipe.
- C. Foundation Stabilization – Foundation stabilization is defined as the furnishing, placing, and compacting of specified materials for any unsuitable material removed from the bottom of an excavation, as directed by the Engineer, to provide a firm trench foundation.
- D. Pipe Bedding – Pipe bedding is defined as the furnishing, placing, and compacting of specified materials on the trench foundation as to uniformly support the barrel of the pipe. The total bedding depth shall be as shown on the Contract Drawings.
- E. Pipe Zone – Pipe zone is defined as the furnishing, placing, and compacting of specified materials for the full width of the trench and extending from the top of the bedding to a level above the top outside surface of the barrel of the pipe as shown on the Contract Drawings.
- F. Trench Backfill – Trench backfill is defined as the furnishing, placing, and compacting of material in the trench extending from the top of the pipe zone to the bottom of pavement base, ground surface or surface material.
- G. Drain Rock – Drain rock is defined as the furnishing, placing, and compacting of specified free draining material for the full width of the drain trench (perforated pipe drains) and extending to a level as specified above the top outside surface of the pipe barrel.

1.04 SUBMITTALS

- A. Certifications, test results, source, and samples for all imported material proposed to be used in the work. Samples of materials to be used shall be submitted 2 weeks in advance of use. Samples shall consist of 0.5 cubic feet of each type of material. Samples of Class E material are not required.
- B. Drawings, tabular product data, and method of installation and removal of all sheeting, sheet piling, shoring, and bracing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Trench Foundation – The trench foundation shall be undisturbed native material when suitable. Where ground water or other unstable conditions exist and the native material cannot properly support the pipe, additional excavation may be required. The trench shall be stabilized with foundation stabilization material when such conditions are present in the opinion of the Engineer.
- B. Foundation Stabilization – Foundation Stabilization: 1½"-0 aggregate base rock meeting OSS Sections 00641 and 02630. Required when native trench foundation material contains groundwater or is unsuitable to provide a firm foundation in the opinion of the Engineer.
- C. Pipe Bedding – Material for pipe bedding shall be clean, hard, sound, durable, well-graded, ¾"-0 crushed rock, free from organic matter. Engineer must approve material prior to use.
- D. Pipe Zone – Material for pipe zone shall be the same material used for bedding.
- E. Trench Backfill

1. Class "A" Backfill: Native or common excavated material, free from organic or other deleterious material, free from rock larger than 3-inches, and which meets the characteristics required for the specific surface loading or other criteria of the backfill zone in the opinion of the Engineer. If stockpiled material becomes saturated or unsuitable, Class B, C or D Backfill shall be substituted. Engineer must approve material prior to use.
 2. Class "B" Backfill: $\frac{3}{4}$ "-0 dense-graded aggregate, uniformly graded from coarse to fine and meeting OSS Section 02630.10.
 3. Class "C" Backfill: Clean sand with no particles larger than $\frac{1}{4}$ -inch.
 4. Class "D" Backfill: Pit run or bar run material, well graded from coarse to fine, with maximum aggregate size of 3 inches.
 5. Class "E" Backfill (CLSM or CDF): Controlled Low-Strength Material (cement slurry) conforming to OSS Section 00442.
 - a. Slurry shall consist of a highly flowable lean concrete mix; mixture of Portland cement, fly ash, fine aggregates, water and admixtures as required for a mixture that results in a hardened, dense, non-settling, hand excavatable fill.
- F. Geotextiles shall meet the requirements as specified in Section 02720 Aggregate Base. This material shall be used as the aggregate leveling base and base material beneath structures.

PART 3 EXECUTION

3.01 GENERAL

- A. Remove, haul, and dispose of all formations and materials, natural or man-made, irrespective of nature or conditions encountered, within lines and grades shown on the Plans or defined herein, and as necessary for completion of the proposed improvements. The method of excavation shall be as determined by the Contractor, and as required for special protection of existing improvements. Special care shall be taken to avoid over excavation below subgrades. Store and protect materials suitable for use as backfill where applicable. Clearing & Grubbing and Removal of Structures and Obstructions to be completed prior to excavation.
- B. Coordinate and provide all utility locates prior to any excavation as required by local state and federal laws and regulations. When the precise location of subsurface structures and/or utilities is unknown, locate such items by hand excavation prior to utilizing mechanical excavation equipment. Use hand excavation when mechanical equipment might damage existing improvements which are to remain undisturbed. See Division 1 for other requirements.
- C. Incidental to excavation shall be the furnishing, installing, and removal of all shoring, sheeting, bracing as required to support adjacent earth banks and structures, keep excavations free from water, and to provide for the safety of the public and all personnel working in excavations.

3.02 EXCAVATION

- A. Excavate to the lines and grades shown on the project Plans, allowing for forms, shoring, working space, and gravel base. Provide a minimum clearance around pipe barrel in all directions or greater in accordance with the standard trench detail drawing.
- B. Shoring and Bracing
 - 1. Sheet and brace excavation as necessary to prevent caving and to protect adjacent structures, property, workers, and the public.
 - 2. The design, planning, installation and removal of all sheeting, shoring, sheet piling, lagging, and bracing shall be accomplished in such a manner as to maintain the required excavation or trench section and to maintain the undisturbed state of the soil below and adjacent to the excavation.
 - 3. Horizontal strutting below the barrel of a pipe and the use of pipe as support are not acceptable.
 - 4. All sheeting, shoring, and bracing shall conform to safety requirements of OSHA and other Federal, State, and local agencies.
- C. Dewatering
 - 1. Furnish, install and operate all necessary machinery, appliances and equipment to keep excavations free from water during digging and initial backfilling. Dispose of water in such a manner as to prevent damage to public or private property, or nuisance or menace to the public.
 - 2. At all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outage. Have available, at all times, competent workers for operation of the equipment.
 - 3. Control surface runoff to prevent entry or collection of water within excavations. All excavations shall be kept free of water during placement of backfill and/or concrete placement.
 - 4. Comply with all laws regarding stormwater runoff, protection of natural resources, and other applicable laws and regulations.

3.03 FOUNDATION STABILIZATION

- A. The contractor shall over excavate the trench to firm undisturbed soils or rock when, in the opinion of the Engineer, the trench foundation materials are not suitable for the support of the pipe. Foundation Stabilization materials, as specified, shall be placed and compacted in lifts not exceeding 6-inches in compacted thickness to the required grade. Each lift shall be compacted to at least 95% of the maximum dry density in accordance with ASTM D698.

3.04 DISPOSAL OF EXCESS MATERIALS

- A. Excavated materials not suitable or required for backfill shall be hauled away and disposed of on approved sites arranged by the Contractor. No site shall be used for disposal of materials without written approval of the property owner. All costs associated with the hauling and disposal of materials shall be borne by the Contractor. The Contractor shall be entitled to any proceeds received from the sale of excess materials.

3.05 TEMPORARY STOCKPILING

- A. Place excavated materials suitable for use as backfill (and not excess material) only within construction easements, right-of-way, or approved work area. Stockpiles shall be placed in such manner as to provide the minimum inconvenience to the public.
- B. The Contractor shall obtain written permission from any property owners prior to placement of stockpiles on private property. Provide copies to the Owner and Engineer. Remove stockpiles as soon as possible and restore sites to affected property owners' satisfaction.
- C. Access to all fire hydrants, water valves, and meters shall be maintained. Stockpiles shall not be permitted to block any stormwater drainage ditches, gutters, drain inlets, culverts, or natural water courses.
- D. Protect stockpiled material which is to be later incorporated into the work so that excessive wetting or drying of the material does not occur. Material shall be brought to near optimum moisture content prior to placement and compaction. Depending on the moisture content of stockpiled materials, necessary processing may include aeration, mixing and/or wetting. No additional payment will be allowed for protecting or preparing native backfill materials.
- E. If approved native materials become unsuitable (too wet or mixed with unsuitable materials) due to negligence by the Contractor, then imported granular materials may be required for backfilling at the subject location at no additional cost to the Owner.
- F. Comply with all requirements of the 1200-C Construction Stormwater Permit. Provide necessary protection for stockpiled materials so that silt-laden runoff does not occur during rain events and to prevent wind-blown dust from stockpiles.

3.06 PIPE ZONE AND TRENCH BACKFILL

- A. Place and compact pipe bedding material before placing pipe in the trench. Dig depression for pipe bells to provide uniform bearing along the entire pipe length. Thoroughly compact bedding material to at least 95% of the maximum dry density in accordance with ASTM D698.

- B. Place materials in the pipe zone in layers not greater than 6 inches thick and in a manner that equalizes the pressure on the pipe and minimizes stress. As required under the haunches of pipe and areas not accessible to mechanical tampers or to testing, compact with hand methods to ensure thorough contact between the material and the pipe. Before placing the pipe zone material, condition, aerate, or wet the material so that the moisture content of each layer is within minus 4% to plus 2% of optimum moisture content.
- C. Contractor shall backfill the trench above the pipe zone in successive lifts not exceeding 12-inches in loose thickness. Do not allow the backfill to free-fall into the trench until at least 3 feet of cover is provided over the top of the pipe. Each lift shall be compacted, using suitable mechanical or pneumatic equipment, to a minimum of 95% of the maximum dry density as determined by ASTM D698. If the specified compaction is not obtained, the Contractor may be required to use a modified compaction procedure and/or reduce the thickness of lifts. If approved materials meeting the specifications cannot be compacted to the required density regardless of compactive effort or method, the Engineer may reduce the required density or direct that alternate materials be used. In no case shall excavation and pipe laying operations proceed until the Contractor is able to compact the backfill to the satisfaction of the Engineer.
- D. CLSM. When CLSM Backfill is required, backfill above pipe zone with CLSM material. If the CLSM is to be used as a temporary surfacing, backfill to top of the trench and strike off to provide a smooth surface. If CLSM is not to be used as a temporary surface, backfill to bottom of the proposed resurfacing. Use steel plates to protect the CLSM from traffic a minimum of 24 hours.
- E. When backfilling is complete, the Contractor shall finish the surface area as specified. In paved or graveled areas the Contractor shall maintain the surface of the trench backfill level with existing adjacent grades with $\frac{3}{4}$ "-0 crushed rock until pavement replacement is completed and accepted by Owner.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for all Buried Pipe Trench Excavation, Bedding, and placement of Backfill shall be included as a portion of the Unit Price basis of each buried pipe as stated on the Bid Form and shall include all facilities, materials, labor, permits, and approvals related to trench excavation, bedding, and placement of backfill for completion of the Work.

END OF SECTION

SECTION 02370 – EROSION CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. This section shall include direction and requirements on erosion control for the project. The section should not, however, be considered a comprehensive directive on what erosion control measures will be required on the project. This could vary depending on weather conditions, contractor approach to the work, regulatory agency interaction and requirements, and other factors. The sections should be considered as a general guideline on erosion control issues.
- B. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the life of the contract in accordance with the ECP described later in this Section.
- C. The Contractor shall comply with all local, state, and federal requirements for erosion control including the National Pollutant Discharge Elimination System (NPDES) 1200C Permit if applicable to the project. The Contractor shall be responsible for obtaining said permit and abiding by the requirements of the agencies.

1.02 SUBMITTALS

- A. The Contractor shall submit an erosion control plan (ECP) to the Engineer. The ECP shall incorporate any requirements outlined in the specifications and plans along with additional requirements from DEQ as communicated through the 1200-C permitting process. The ECP will include, at a minimum, the following elements:
 - 1. Narrative site description
 - 2. Site map outlining all areas of development, drainage patterns, areas of planned soil disturbance, areas for storage of soils or waste, boundaries of the 100-year flood plain, ordinary high water, location of storm drain outfalls or features, etc.
 - 3. Erosion control features including BMP and procedures for prevention, runoff control, and sediment control.

1.03 RELATED SECTIONS

- A. Section 02240- Control of Water
- B. Section 02260 – Shoring and Bracing
- C. Section 02316 – Excavation and Backfill
- D. Section 02315 – Trench Excavation, Bedding, and Backfill
- E. Section 02900 – Site Cleanup and Landscape Restoration

PART 2 PRODUCTS

- 2.01 Erosion Control Products – the following products are samples of materials and systems that could be utilized by the Contractor for Erosion control. They do not, however, represent a complete list or requirements for the project.
- A. Plastic sheeting: minimum 6 mil thick, polyethylene plastic sheeting for slope protection, spoils pile coverage, and protection of storage and materials.
 - B. Chemical dust control: non-toxic material that will have no adverse effect on soil structure or establishment and growth of vegetation. Potential products include:
 - 1. Liquid stabilizer emulsion: a tackifier of liquid and polyvinyl polymers with emulsion resins containing not less than 55% total solids by weight. Do not use tackifiers containing polyacrylates or polyvinyl acrylics.
 - 2. Dry powder tackifier: A tackifier consisting of one or more active hydrocolloids from natural plant sources which hydrates in water and blends with other slurry materials, and upon application and drying tacks the slurry particles to the soil surface.
 - 3. Calcium chloride and water for dust control.
 - C. Temporary Mulching: loose hay, straw, netting, wood cellulose, or agriculture silage.
 - D. Matting or blankets: by American Excelsior or approved equal.
 - E. Sediment Fencing: fencing that includes a geotextile fabric to screen and hold sediments. Sediment fencing to be capable of supporting its own weight and sediments. Wooden or metal posts shall support the fencing with wire mesh, if required, for additional strength.
 - F. Bio-filter Bags: Prefabricated bags made from geotextile with filter inserts of biological materials or filtration media manufactured specifically for collecting sediment in drainage inlets or channels.
 - G. Straw Bales: Standard 45 to 65 pound rectangular straw bales that are wire bound or string tied.
 - H. Sand Bags.
 - I. Quick growing grasses for temporary seeding.
 - J. Rip rap for slopes, culvert, storm drain inlets, and outlet aprons.

PART 3 EXECUTION

3.01 PREPARATION

- A. Contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) including all Federal, State, and local laws rules and regulations as they apply to this project.
- B. Any changes to the ECP should be brought to the attention of the Engineer. A copy of the ECP and approved 1200-C Permit must be submitted to Engineer before beginning and site work on the project.

3.02 Erosion Control Plan – Plan shall include the following components:

- A. Narrative Site Description - Including but not limited to:
 - 1. Nature of the construction activity planned for the site
 - 2. Estimates of the total site area and the areas of the site expected to be disturbed
 - 3. Soil types found on the site and their erosion potential
 - 4. The types of fill materials to be used
 - 5. Timetable for sequence of major construction events
- B. Site Map – Including but not limited to:
 - 1. All areas of development
 - 2. Drainage patterns
 - 3. Areas of soil disturbance
 - 4. Areas used for storage of soils or waste materials
 - 5. Location of all erosion or sediment control BMP or structures
 - 6. Springs, wetlands, and other surface waters located on site
 - 7. Location of storm drainage outfalls to receiving waters, if applicable
 - 8. Details of sediment and erosion controls
- C. Required BMP Procedures for Erosion Prevention, Runoff Control, and Sediment Control- Including but not limited to:
 - 1. Construction entrances and parking areas
 - 2. Unpaved site roads and haul roads
 - 3. Water washed from concrete trucks
 - 4. Correct installation of erosion and sediment control BMP's
 - 5. Clearing and grading practices to minimize area of exposed soil throughout the life of the project
 - 6. Vegetative practices including preservation of existing vegetation, seeding and mulching, and buffer strips
 - 7. Limiting runoff from exposed areas
 - 8. Limiting sediment transport within work site areas and keeping sediment from moving off site
 - 9. Additional controls for wet season work and, if required, temporary work suspensions

10. Protection of sensitive areas such as wetlands

11. Stockpile BMP's

3.03 Installation

- A. All erosion control measures and methods shall be installed or applied per manufacturer's recommendations.
- B. Installation methods shall follow the approved ECP and be inspected and approved by the Engineer.
- C. Any erosion control measure not adequately performing its intended purpose shall be removed and replaced, reinforced, or otherwise addressed to meet the intent of the ECP.
- D. Over the life of the project, erosion control measures will require maintenance, repair and replacement. The Contractor shall be vigilant in his inspection, maintenance, and operation of erosion control measures, practices, and BMP's.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Erosion Control shall be included within the lump sum price for Erosion Control as stated on the bid form. No separate measurement for these quantities will occur. Payment shall include, but not be limited to, compensation for all labor, material, permitting, testing, and equipment required for the construction/installation of the work described herein. No separate measurement for these quantities will occur.

END OF SECTION

SECTION 02511 – LOCATOR WIRE & WARNING TAPE

PART 1 GENERAL

1.01 SUMMARY

- A. This section consists of furnishing all labor, material and equipment, and performing all work required for the burying of an insulated copper conductor wire and plastic underground warning tape in the trench with installed non-ferrous and/or nonconductive (plastic, etc.) water and sewer lines. See the Standard Detail Drawings for trench cross section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Storm Drain lines
 - 1. Tracer wire shall be No. 12 AWG minimum, solid copper with green colored insulation. Insulation shall be 0.030-inch thick HDPE designed for direct bury.
 - 2. Underground warning tape shall be 6-inch wide, 4-mil-thick, APWA Standard Green color, reading "CAUTION – STORM DRAIN LINE BURIED BELOW."

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Drainage Lines
 - 1. Wire and warning tape shall be buried the entire length of the trench, placed in accordance with the Standard Detail Drawings, for all nonconductive pipelines.
 - 2. Wire shall be brought to the surface and connected at each manhole, basin, or cleanout. Distance between tracer lead access locations shall not exceed 1,000 feet. All joints and/or splices in the wire shall be made with a designed waterproof splice kit. Wire shall be taped to pipe every 5 feet and shall be run straight with a small amount of slack. Wire shall be routed outside each manhole, basin, or cleanout riser. Wire shall be exposed inside all cleanout covers and a minimum of 24" of wire provided. At manholes and basins, pass wire into manhole between concrete grade ring and manhole lid frame and provide a minimum of 24" coiled wire.
 - 3. Warning tape shall be placed over the pipe zone material, approximately 15 to 18 inches below finish grade, in accordance with the Standard Detail Drawings. Lay tape flat and untwisted, centered over the pipe and with wording facing upwards.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Locator Wire and Warning Tape shall be included as a portion of the Unit Price basis of each buried pipe as stated on the Bid Form and shall include all facilities, materials, labor, permits, and approvals related to the completion of the Work. No separate measurement for these quantities will occur.

END OF SECTION

SECTION 02512 – PERFORATED DRAIN PIPING

PART 1 GENERAL

1.01 SUMMARY

- A. The work in this Section consists of furnishing all labor, materials, equipment and performing all work necessary for the proper installation of the perforated drain piping to provide drainage as indicated on the Plans and/or required for the completion of the proposed project.
- B. Perforated drain piping shall either be a polyvinyl chloride rigid pipe (PVC) or a high density polyethylene flexible pipe (HDPE).

PART 2 PRODUCTS

2.01 MATERIALS

- A. PVC pipe and fittings for perforated drain piping shall conform to Class 12454-B as defined in ASTM D1784. Neoprene gaskets with push on joints shall conform to ASTM F477.
- B. HDPE pipe shall be a bell and spigot design and shall include a rubber gasket conforming to ASTM F477.
- C. Perforated drain piping shall consist of a 12 inch perforated or slotted pipe.
- D. Appurtenances
 - 1. PVC pipe connections to concrete manholes shall utilize appropriately sized flexible, watertight seal adapters designed for such use. Adapters shall be tested watertight to a minimum of 10.8 psi during factory testing. Adapters shall be for connections to precast concrete shall be KOR-N-SEAL as manufactured by NPC, Inc.; or approved equal. Adapters for connections at cast-in-place manhole bases shall be made with a rubber waterstop grouting ring. Ring shall clamp to pipe with stainless steel clamp and have waterstop ribs. Waterstop Grouting Ring by Press-Seal Gasket Corp., or approved equal.

PART 3 EXECUTION

3.01 PIPE INSTALLATION

- A. All pipe and fittings shall be installed in accordance with manufacturer's recommendations and shall be placed to lines and grades as shown on the plans.
- B. PVC gravity pipe shall be installed, stored, and handled in accordance with the manufacturer's installation guide, the Uni-Bell PVC Pipe Association Installation Guide for PVC Sewer Pipe, ASTM D2321, and these specifications.
- C. Remove material from job site, which in the judgment of the Engineer is damaged, not as specified, or otherwise rejected. Payment will not be made for damaged or rejected materials, their removal, or for repairs to such materials.

- D. Preparation of Trench – Excavate and prepare trench for pipe laying to the lines and grades as specified and shown on the Plans. Place any required foundation stabilization and compact pipe bedding prior to laying pipe. Stabilize trench as required and comply with OSHA safety provisions.
- E. Place and compact pipe bedding material before placing pipe in the trench. Dig depression for pipe bells to provide uniform bearing along the entire pipe length. Thoroughly compact bedding material to prevent future bellies.
- F. Prior to lowering pipe into the trench, the Engineer and City representative will check for damage to the pipe. The Contractor shall repair or replace, as directed, all damaged or flawed pipe prior to installation.
- G. Thoroughly clean inside the pipe before laying. Prevent foreign material from entering the pipe while it is being placed in the trench. Remove all foreign material from the inside of the pipe and joint before the next pipe is placed. Keep debris, tools, rags or other materials out of the pipes at all times. When pipe laying is not in progress, seal the open end of the pipe with a watertight plug, or by other approved means to prevent the entry of foreign materials into the pipe.
- H. Lay pipe with bell ends facing the direction of laying. For lines on an appreciable slope, face bells up-grade unless otherwise directed by the Engineer. Thoroughly clean the ends of the pipe to remove all foreign matter from the pipe joint. Lubricate the bell and spigot ends with approved pipe lubricant, as recommended by the manufacturer.
- I. Tolerance. For gravity pipelines, vertical slope shall not be less than 2% in any location. Horizontal tolerance for deviation from line shall be 0.03125 feet (3/8 inch). Depressions or bellies which create the potential for solids deposition are not allowed.
- J. Care must be taken to ensure the pipe is not moved and the side support fill is not disturbed when moving sheeting or trench boxes.
- K. Place materials in the pipe zone in layers not greater than 6 inches thick and in a manner that equalizes the pressure on the pipe and minimizes stress. As required under the haunches of pipe and areas not accessible to mechanical tampers or to testing, compact with hand methods to ensure thorough contact between the material and the pipe.
- L. Provide proper Backfill Class material as required. Backfill the trench above the pipe zone in successive lifts. Do not allow the backfill to free-fall into the trench until at least 3 feet of cover is provided over the top of the pipe. Modify the compaction as necessary to protect the pipe. Compact each lift to not less than 95% of the maximum density.

3.02 MANHOLE CONNECTIONS

- A. Where shown on the Plans or directed by the Engineer, the Contractor shall connect new sewer piping to existing manholes.
- B. Core drill the manhole wall using appropriately sized core drill for the new pipe. Jack-hammering will not be allowed. Install pipe using KOR-N-SEAL boot or an approved equal.
- C. When an existing manhole has a poured-in-place base or other obstruction at the pipe level and core drilling is not feasible, contractor may jackhammer to provide penetration

for new or replacement pipe. Install pipe using Waterstop Grouting Ring or an approved equal.

- D. Install flexible transition couplings on all pipes within 2 feet of the outside walls of manholes. Provide a watertight connection.
- E. Modify the base of the manhole in accordance with Section 02635.

PART 4 SPECIAL PROVISIONS

4.01 MEASUREMENT AND PAYMENT

- A. Payment for Perforated Drain Pipe and other work in this section shall be made on a lineal foot basis as stated on the Bid Form. Payment shall include compensation for trench excavation, backfill material, compaction, toning wire, fittings, and all other work and materials necessary to construct the perforated drain piping systems. No separate measurement or payment for these quantities will occur.

END OF SECTION

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SECTION 02900 – LANDSCAPE RESTORATION & CLEANUP

PART 1 GENERAL

1.01 SUMMARY

- A. This section covers the work necessary to reseed, restore, and cleanup the site(s). Work shall include the removal of all construction equipment, rubbish, construction debris, and unused materials of any kind resulting from the project activities.
- B. Site cleanup shall include the cleanup of all pavement surfaces, whether new or existing, within the limits of the project and shall include the replacement of any disturbed pavement markings.

1.02 SUBMITTAL

- A. Contractor shall submit the following information to the Engineer per the requirements in Section 01300:
 - 1. Trade name and technical name (if applicable) of seed mix(es) to be used.
 - 2. Source of the seed mix(es).
 - 3. Written statement certifying that the seeds/ seed mix(es) have been certified.
 - 4. Botanical names and common names of all seeds in the seed mix(es).
 - 5. Percent composition of the seed mix(es) listed for each seed species.
 - 6. Agronomic application rate for each of the seeds contained in the seed mix(es). Information shall be expressed in terms of minimum pounds of seeds per acre.
 - 7. Seed mix manufacturer's written recommendations for preparation of the planting surface onto or into which the seed mix(es) will be placed.
 - 8. Maintenance requirements for ensuring proper grass growth.

PART 2 PRODUCTS

2.01 RESEEDING MATERIALS

- A. Grass seed shall be from blue tag stock and from the latest crop available. Deliver each variety in standard containers labeled in accordance with Oregon State laws and U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Provide with label showing seed variety, percentage of purity, germination, maximum weed content, date of test within nine months of date of delivery, and as set forth in the General Seed Certification Standard by the Oregon State University Certification Board. Mold or other evidence of container having been wet or otherwise damaged will be cause for rejection of each lot of seed. Grass seed may be delivered to the project as a mixture provided each variety of grass seed in the mixture is identified and labeled as specified.
- B. Where imported topsoil is required, provide natural, fertile, friable topsoil, representative of local productive soil, and 90% free of clay lumps or other foreign matter larger than 2-inches in diameter, not frozen or muddy, with pH 5.0 to 7.0, and not less than 3% humus as determined by loss of ignition of moisture-free samples dried at 100° C. Gravel portion (particles larger than 2 mm) shall not exceed 15% of total volume.

Topsoil shall be free of quack grass, horsetail and other noxious vegetation and seed. Should such regenerative material be present in the soil, all resultant growth, both surface and root, shall be removed by the Contractor within 1-year of acceptance of the work at no expense to the Owner.

- C. Provide a lime compound of ground dolomitic limestone not less than 85% total carbonates and magnesium, ground so that 50% passes a number 100 sieve and 90% passes a number 20 sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the number 100 sieve.
- D. Furnish fertilizer in moisture-proof bags marked with weight and the manufacturer's certified analysis of the contents showing the percentage for each ingredient. Furnish fertilizer in a dry condition free from lumps and caking, in granular or palletized form, of standard commercial grade conforming to all State and Federal regulations and to the standards of the Association of Official Agricultural Chemists.
- E. Provide all other materials required to accomplish the work specified.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Surface Dressing
 - 1. Slopes, sidewalk areas, planting areas, easements, and roadways shall be smoothed and dressed to the required cross section and grade by means of a grading machine insofar as it is possible to do without damaging the work or existing improvements, trees, and shrubs. Supplement machine dressing by hand work as directed.
 - 2. Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. Grade all areas true to line and grade as shown or as approved. Where the existing planting is below sidewalk and curb, fill and dress the area to the walk regardless of limits shown. Wherever fill material is required in the planting area, make finished surface high enough to allow for final settlement.
 - 3. Remove and dispose of all excavated or construction materials, equipment, and rubbish of all kinds resulting from the work. Where brush and trees beyond the limits of the project have been disturbed or damaged, remove and dispose of or restore same, as directed, at no expense to the Owner.
 - 4. Clean all drainage facilities such as inlets, catch basins, culverts, and open ditches of all excess material or debris resulting from the work, to the satisfaction of the Owner.
 - 5. Clean all pavement surfaces, whether new or existing within the limits of the project. Clean existing improvements such as curbs, gutters, walls, sidewalks, castings for manholes, monuments, water gates, lamp poles, vaults, signs, and other similar installations as approved. Flush the roadway with a pressure type flusher as approved. Hand sweep or flush all sidewalks as directed.

B. Restoring Planted Areas

1. Hand rake and drag all formerly grassed and/or planted areas leaving disturbed areas free from rocks, gravel, clay, or any other foreign material and ready, in all respects, for seeding. The finished surface shall conform to the original surface, be free draining and free from holes, rough spots, or other surface features detrimental to a seeded area.
2. Plant grass seed only at times when local weather and other conditions are favorable to the preparation of the soil and to the germination and growth of grass. Sow grassed areas evenly with a mechanical spreader at a rate of one pound per 300 square feet, roll with packer to cover seed, and water with fine spray. Method of seeding may be varied as approved, however, responsibility to establish a smooth, uniformly grassed area will not be waived.

PART 4 SPECIAL PROVISIONS

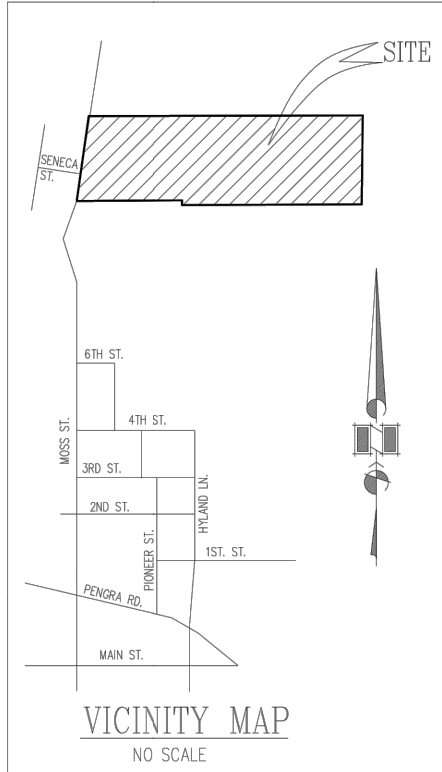
4.01 MEASUREMENT AND PAYMENT

- A. Payment for Landscape Restoration & Cleanup will be made on a lump sum basis for the amount as stated on the Bid Form for the Project, and shall include, but not be limited to, all labor, material, equipment, permits, topsoil, seed, landscape shrubs/trees, site cleanup, miscellaneous painted pavement markings, and all incidentals required for the completion of the work described herein. No separate measurement for these quantities will occur.

END OF SECTION

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PUBLIC IMPROVEMENT PLANS FOR CRESTVIEW ESTATES



LEGEND

- 490 --- EXISTING MAJOR CONTOUR AND ELEVATION
- EXISTING MINOR CONTOUR
- EX. 12" S.D. --- EXISTING STORM DRAIN AND SIZE
- EX. 8" W --- EXISTING WATER AND SIZE
- EX. 8" WW --- EXISTING WASTEWATER AND SIZE
- PROPOSED WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED WASTEWATER
- PROPOSED EASEMENT
- PROPOSED WASTEWATER MANHOLE
- PROPOSED STORMWATER MANHOLE
- ☆ PROPOSED STREET LIGHT
- PROPOSED WATER METER BOX
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED WATER BLOWOFF
- PROPOSED DITCH INLET
- PROPOSED CATCH BASIN
- PROPOSED PAVING
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WASTEWATER MANHOLE
- EXISTING POWER POLE
- WW WASTEWATER
- SD STORM DRAIN
- F.S. FINISH SURFACE
- F.G. FINISH GRADE
- T.C. TOP OF CURB
- INV. INVERT
- B.C.R. BEGIN CURB RETURN
- E.C.R. END CURB RETURN
- CL CENTERLINE
- MH MANHOLE
- P.C. POINT OF CURVATURE
- PVI POINT OF VERTICAL INTERSECTION
- F.L. FLOW LINE
- C.F. CURB FACE

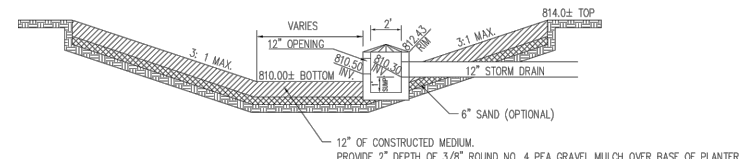
- GENERAL NOTES**
- Construction of public improvements shall comply with the City's Standard Specifications and Drawings.
 - A grading and/or fill permit from the City Building Division may be required for any construction activity outside of the rights-of-way and public easements.
 - Items of work not shown on the plan but necessary for successful completion of this project will be required by the City.
 - The contractor shall submit a traffic control plan and secure approval of the plan from the City and County at least five (5) working days prior to starting work.
 - The contractor shall not perform work without City inspections.
 - Before back-filling the end of a mainline pipe not ending at a manhole or cleanout, the contractor shall perform the TV inspection as required by the standard specifications and allow the consulting engineer to determine the exact location and elevation of the end of the pipe.
 - Where connecting to an existing pipe, the contractor shall expose the end of the existing pipe and allow the engineer to verify exact location and elevation before laying any new pipe on that system.
 - Where the contractor is unable to achieve sub-grade compaction and deflection standards required by the specifications, as determined by field inspection and testing, the sub-grade surface shall be lowered at least 6 inches, fabric shall be placed, and the material removed shall be replaced with 1 1/2" - 0 crushed rock and compacted according to the specifications. If the sub-grade still does not meet specifications over-excavate to a deeper sub-base depth as directed by project engineer and repeat the process until the sub-grade meets specifications.
 - Asphalt shall be formulated for this project in accordance with the City's Standard Specifications.
 - The contractor shall notify Lane County Department of Public Works Permit Section 24 hours before beginning work in the County right-of-way.
 - Requests by the contractor for changes to the plans must be approved by the consulting engineer and the City before the changes are implemented.
 - ATTENTION: Oregon law requires the contractor to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. Contractor may obtain copies of the rules by calling the center. (Note: the telephone number for the Oregon Utility Notification Center is (503) 232-1987 or (800) 332-2344.)
 - At each intersection of at least one post shall be placed displaying street name signs for both intersecting streets. A "sign schedule" indicating names and locations of all signs to be installed shall be submitted to the project inspector within 15 days of the Public Improvement Permit date.
 - Placement or storage of spoils from trench construction is not permitted on hard surface streets within public right-of-way. Spoils stored in other right of way areas shall be covered to prevent erosion.
 - Forms of adequate size and configuration to meet concrete thickness requirements shall be used around outdoors of outside-drop manholes.
 - Construction site shall be managed in accordance with the approved Construction Site Management Plan (CSMP). Contractor is responsible for implementing and maintaining components of the CSMP until Project Final Acceptance is issued.
 - Work requires the electrical contractor to secure an electric permit as well as inspection services from the Building Permit Services Division to assure National Electric Code compliance.
 - All materials in contact with water need to be NSF approved.
 - The contractor is to patch and verify all existing utilities prior to construction and report all discrepancies to the engineer.
 - All pipe backfill shall be compacted class B.
 - A single copper core, 18 gauge, or larger tracer wire with blue insulation shall be installed along all water lines. Access at shown locations of water valves, blowoffs and water meters.

NOTICE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THIS PLAN. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THE PROTECTION OF, AND ANY DAMAGE TO THESE LINES OR STRUCTURES. ANY ESTIMATED QUANTITIES HEREON ARE ONLY FOR THE PURPOSE OF OBTAINING THE NECESSARY PERMITS, AND THE FAVREAU GROUP DOES NOT GUARANTEE THE ACCURACY OF THE ESTIMATED QUANTITIES. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

ENGINEER'S NOTE

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS AND THE CITY OF EUGENE. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND INDEMNIFY AND HOLD DESIGN PROFESSIONALS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

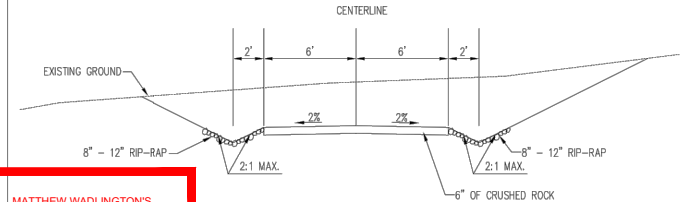


- THE THICKNESS OF THE CONSTRUCTED MEDIUM, INCLUDING OR IN ADDITION TO THE GROWING MEDIUM, AT THE BASE OF THE POND SHALL BE A MINIMUM OF 12 INCHES THICK.
- THE BASE OF THE POND SHALL INCLUDE A CONSTRUCTED MEDIUM COMPRISING A MIXTURE OF SAND, NATIVE SOIL, LOAM, AND COMPOST. THE FRACTION OF ORGANIC CARBON (FOC) IN THE CONSTRUCTED MEDIUM SHALL BE A MINIMUM OF 0.20 (I.E. 40-50%) ORGANIC MATTER. IF THE GROWING MEDIUM DOES NOT CONFORM TO THIS MINIMUM FOC REQUIREMENT, THEN THE CONSTRUCTED MEDIUM WOULD BE PLACED IN ADDITION TO THE REQUIRED GROWING MEDIUM.
- ALL SILT INTRUSION FROM THE STORM DRAIN FACILITY SHALL BE REMOVED PRIOR TO THE PLACEMENT OF THE CONSTRUCTION MEDIUM.

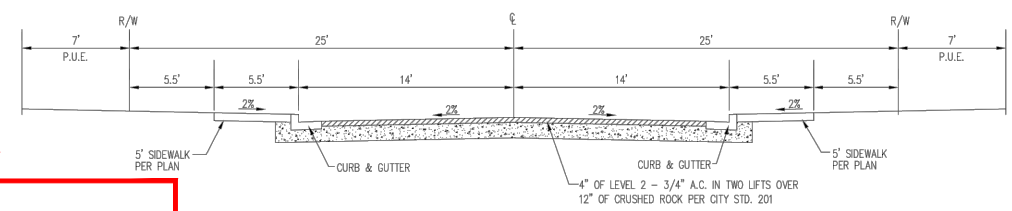
EQUAL NUMBER OF PLANTS FOR EACH ZONE SPACED ONE FOOT ON CENTER OVER THE ENTIRE FACILITY

ZONE A (AT AND BELOW RIM ELEVATION)	ZONE B (ABOVE RIM ELEVATION)
CAREX OBLIQUA 4" POTS 754 EACH	CAMASSIA QUAMASH 4" POTS 232 EACH
JUNCUS PATENS 4" POTS 754 EACH	DESCHAMPSIA CAESPITOSA 4" POTS 232 EACH

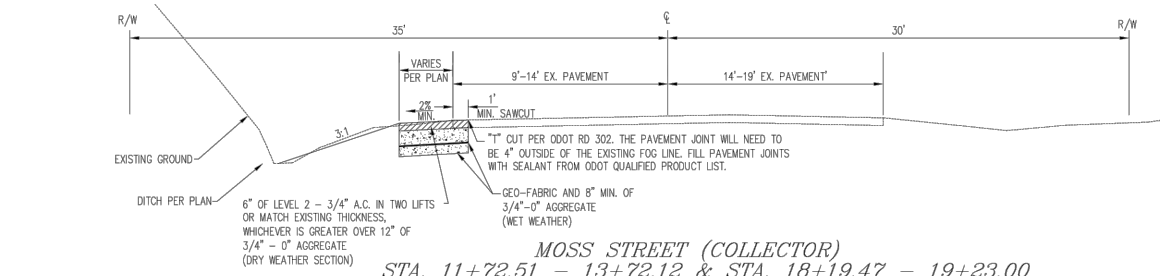
POND & OUTLET DETAIL
NO SCALE



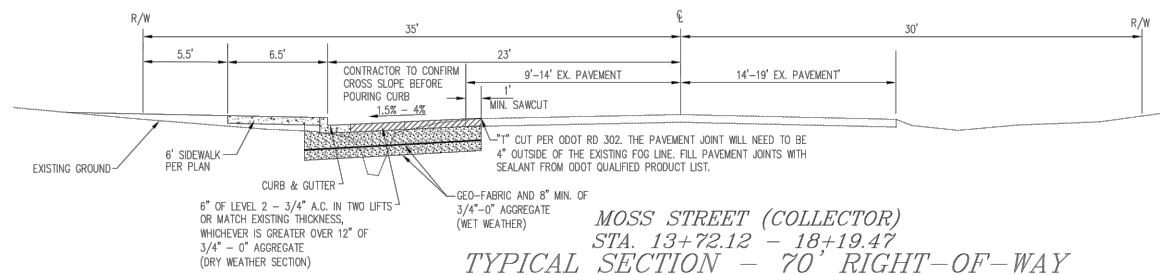
**TYPICAL SECTION
7' PRIVATE ACCESSWAY**
NO SCALE



TYPICAL SECTION - 50' RIGHT-OF-WAY
NO SCALE

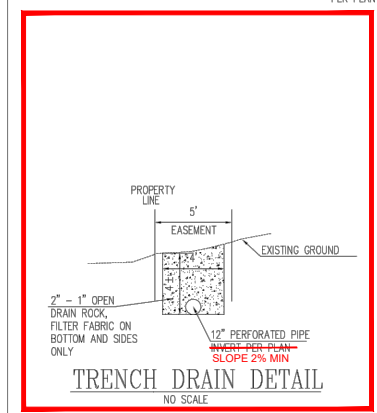
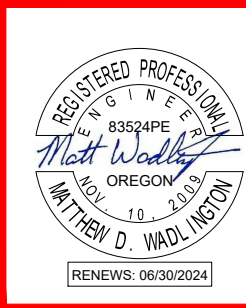


TYPICAL SECTION - 70' RIGHT-OF-WAY
NO SCALE



TYPICAL SECTION - 70' RIGHT-OF-WAY
NO SCALE

MATTHEW WADLINGTON'S STAMP APPLIES ONLY TO DESIGN CHANGES MADE IN RED. ALL ORIGINAL DESIGN IS EXCEPTED FROM THIS STAMP AND REMAINS UNDER THE AUTHORITY OF THE ORIGINAL STAMPING ENGINEER (ANTHONY FAVREAU).



SHEET INDEX

- SHEET 1 TITLE SHEET
- SHEET 2 CRESTVIEW STREET PLAN AND PROFILE
- SHEET 3 MOSS STREET PLAN AND PROFILE
- SHEET 4 CRESTVIEW STREET STORM DRAIN, SANITARY SEWER AND WATER PLAN AND PROFILE
- SHEET 5 MOSS STREET STORM DRAIN, SANITARY SEWER AND WATER PLAN AND PROFILE
- SHEET 6 SENECA STREET SANITARY SEWER AND WATER PLAN AND PROFILE
- SHEET 7 GRADING PLAN
- SHEET 8 MOSS STREET STRIPING PLAN

SOIL TYPES

- #28 CHELULIPUM, SOIL GROUP D, WELL DRAINED
- #43E DIXON-PHILOMATH-HAZELAIR COMPLEX, SOIL GROUP D, WELL DRAINED

Benchmark used:
Lane County Benchmark 82
USGS Brass Cap "H 362"
NAVD 88 Elev = 719.49 feet



PLANS PREPARED BY:
**THE FAVREAU GROUP
CIVIL ENGINEERING**
3750 NORWICH AVE.
EUGENE, OR 97408 (541) 683-7048

DATE	BY	DESCRIPTION	APP.
REVISIONS			

APPROVED:

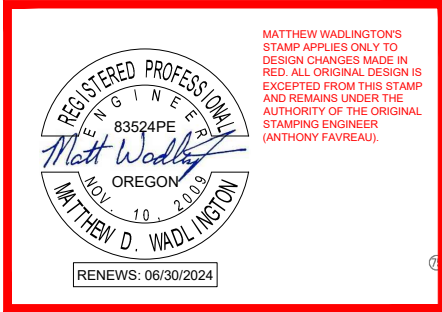
DATE: _____

DESIGNED: AJF
DRAWN: AJF
CHECKED: MW
DATE: 06-22-20

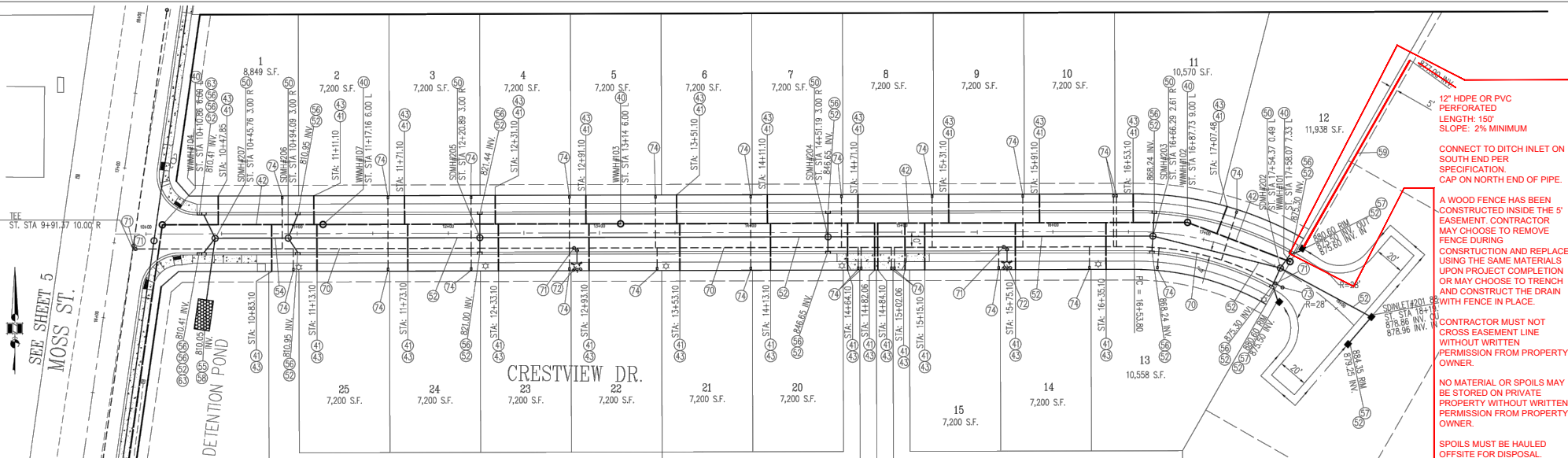
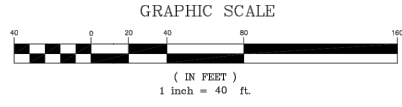
PUBLIC IMPROVEMENT PLANS FOR CRESTVIEW ESTATES

CITY OF LOWELL
PUBLIC WORKS DEPARTMENT

SHT. 1 OF 8



MATTHEW WADLINGTON'S STAMP APPLIES ONLY TO DESIGN CHANGES MADE IN RED. ALL ORIGINAL DESIGN IS EXCEPTED FROM THIS STAMP AND REMAINS UNDER THE AUTHORITY OF THE ORIGINAL STAMPING ENGINEER (ANTHONY FAVREAU).



12" HDPE OR PVC PERFORATED LENGTH: 150' SLOPE: 2% MINIMUM

CONNECT TO DITCH INLET ON SOUTH END PER SPECIFICATION. CAP ON NORTH END OF PIPE.

A WOOD FENCE HAS BEEN CONSTRUCTED INSIDE THE 5' EASEMENT. CONTRACTOR MAY CHOOSE TO REMOVE FENCE DURING CONSTRUCTION AND REPLACE USING THE SAME MATERIALS UPON PROJECT COMPLETION OR MAY CHOOSE TO TRENCH AND CONSTRUCT THE DRAIN WITH FENCE IN PLACE.

CONTRACTOR MUST NOT CROSS EASEMENT LINE WITHOUT WRITTEN PERMISSION FROM PROPERTY OWNER.

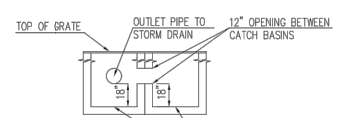
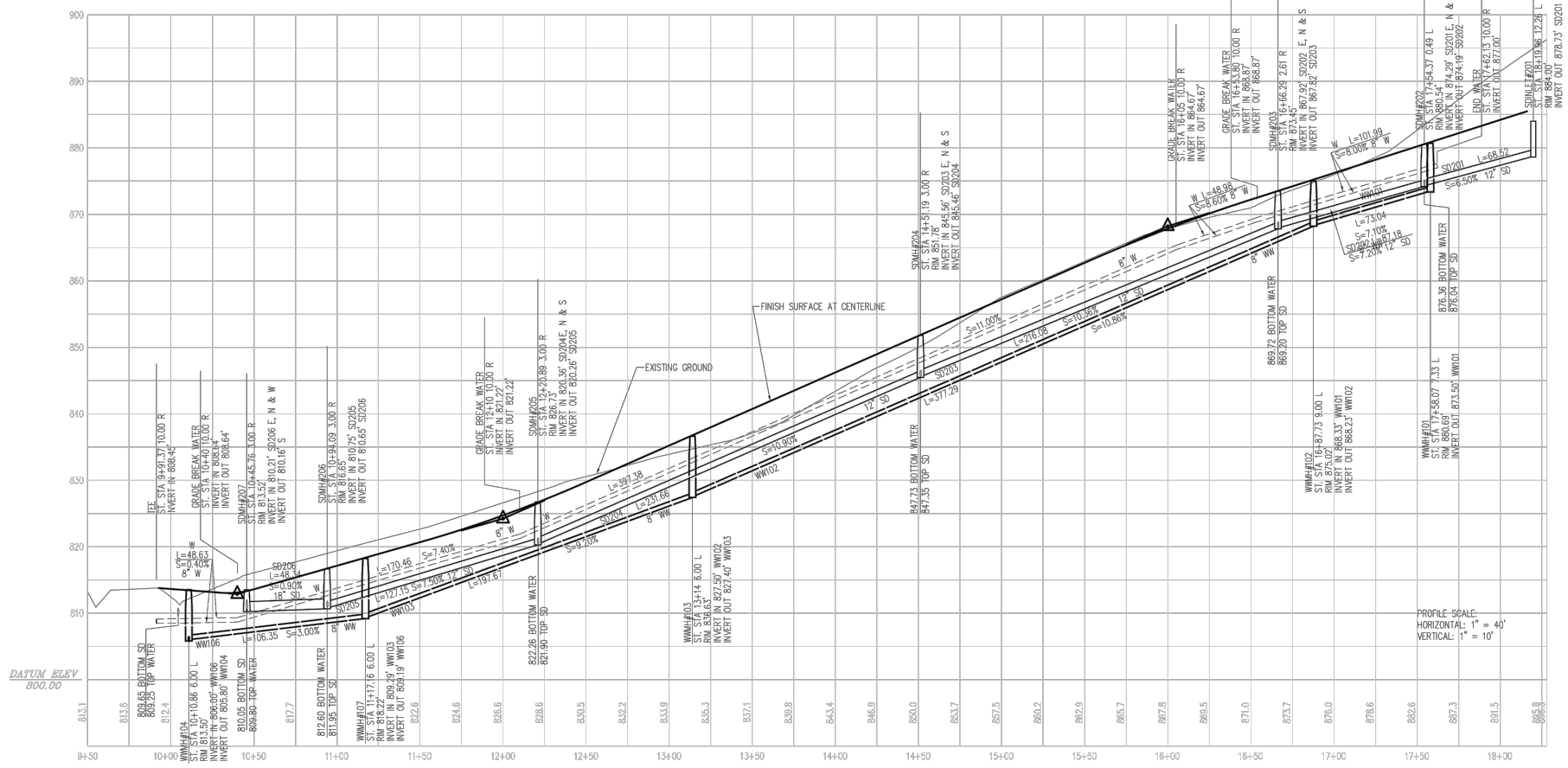
NO MATERIAL OR SPOILS MAY BE STORED ON PRIVATE PROPERTY WITHOUT WRITTEN PERMISSION FROM PROPERTY OWNER.

SPOILS MUST BE HAULED OFFSITE FOR DISPOSAL.

WATER CROSSING NOTE:
ALL WATER AND STORM DRAIN CROSSING OF LESS THAN 1.5' CLEAR, SHALL HAVE A FULL STICK OF WATER PIPE CENTERED ON THE CROSSING.

CONSTRUCTION NOTES

- 40 CONSTRUCT STD. SANITARY SEWER MANHOLE PER CITY STDS. 315A, 316 & 319 ADJUST MANHOLE RIM PER ODOT STD. RD 360, CIRCULAR CUT, METHOD B
- 41 CONSTRUCT STD. 4" PVC SANITARY SEWER PIPE LATERAL ASTM D3034 PER CITY STD. 311. ALL SEWER SERVICE LATERALS ARE TO HAVE CLEANOUTS. PIPE BEDDING PER CITY STD. 301
- 42 CONSTRUCT STD. 8" PVC SANITARY SEWER PIPE ASTM D3034 PIPE BEDDING PER CITY STD. 301
- 43 INSTALL STD. 8" X 6" TEE, ASTM D3034
- 50 CONSTRUCT STD. STORM DRAIN MANHOLE PER CITY STDS. 315A, 316, & 319
- 52 CONSTRUCT STANDARD 12" PVC ASTM D3034 STORM DRAIN PIPE PIPE BEDDING PER CITY STD. 301
- 54 CONSTRUCT STANDARD 18" PVC ASTM D3034 STORM DRAIN PIPE PIPE BEDDING PER CITY STD. 301
- 55 CONSTRUCT STANDARD 21" PVC ASTM D3034 STORM DRAIN PIPE PIPE BEDDING PER CITY STD. 301
- 56 CONSTRUCT CATCH BASIN PER CITY STD. 304
- 57 CONSTRUCT DITCH INLET PER CITY STD. 308
- 58 CONSTRUCT 10' X 20' RIP RAP APRON. ROCK SIZE = 8" - 12" DIAMETER, 1.5' MIN. THICKNESS
- 59 CONSTRUCT TRENCH DRAIN PER DETAIL ON SHEET 1
- 61 CONSTRUCT DETENTION POND OUTLET STRUCTURE PER DETAIL ON SHEET 1
- 63 CONNECT CATCH BASIN WITH A MINIMUM 12" DIAMETER WATER TIGHT OPENING. PER DETAIL HEREON
- 70 CONSTRUCT STANDARD 8" C900 PVC WATER LINE PIPE BEDDING PER CITY STD. 301
- 71 CONSTRUCT 8" GATE VALVE AND BOX PER CITY STD. 403
- 72 CONSTRUCT FIRE HYDRANT PER CITY STD. 402 AND THRUST BLOCK PER CITY STD. 401
- 73 CONSTRUCT 2" BLOW-OFF WITH THRUST BLOCK PER CITY STD. 401 & 404
- 74 CONSTRUCT 1" WATER SERVICE LATERAL WITH WATER METER BOX CITY STD. 407 WATER METER BOX IS TO BE SET WITHIN 3' OF PROPERTY LINE
- 75 CONSTRUCT 8" X 8" X 8" TEE WITH THRUST BLOCK PER CITY STD. 401



CATCH BASIN CONNECTION DETAIL
NO SCALE



PLANS PREPARED BY:
THE FAVREAU GROUP
CIVIL ENGINEERING
3750 NORWICH AVE.
EUGENE, OR 97408 (541) 683-7048

DATE	BY	DESCRIPTION	APP.
REVISIONS			

APPROVED:			
DATE			
DESIGNED	AJF	DRAWN	AJF
CHECKED	MW	DATE	06-22-20

PUBLIC STORM DRAIN, SANITARY SEWER & WATER PLANS FOR CRESTVIEW DR.

CITY OF LOWELL
PUBLIC WORKS DEPARTMENT
SHT. 4 OF 8