

TECHNICAL SPECIFICATIONS
STADELMAN DRIVE WATERLINE EXTENSION
ODELL, OR

AUGUST 2017
(REVISION 1)

PREPARED FOR



Port of Hood River
1000 E. PORT MARINA DRIVE
HOOD RIVER, OR 97031

AN INTER-GOVERNMENT AGREEMENT WITH



CRYSTAL SPRINGS WATER DISTRICT

PREPARED BY



489 N. 8TH STREET, SUITE 201
HOOD RIVER, OREGON 97031

CERTIFICATION PAGE

The engineering material and data contained in these Special Provisions Technical Specifications were prepared under the supervision and direction of the undersigned, whose seal as a registered Professional Engineer in the State of Oregon is affixed below.



Roger B. North, P.E.
Design Engineer of Record

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01010	SUMMARY OF WORK
SECTION 01025	MEASUREMENT AND PAYMENT
SECTION 01032	INTENT OF CONTRACT PLANS AND TECHNICAL SPECIFICATIONS
SECTION 01042	RESTORATION OF SURFACES
SECTION 01052	LAYOUT OF WORK AND SURVEYS
SECTION 01300	SUBMITTALS
SECTION 01310	CONSTRUCTION SCHEDULE
SECTION 01560	TEMPORARY CONTROLS
SECTION 01600	MATERIALS AND EQUIPMENT
SECTION 01630	PRODUCT OPTIONS AND SUBSTITUTIONS

DIVISION 2 – SITE WORK

SECTION 02223	TRENCHING, BACKFILLING, AND COMPACTING
SECTION 02660	WATERLINES
SECTION 02740	ASPHALT CONCRETE PAVEMENT
SECTION 02790	COLD PLANE PAVEMENT REMOVAL

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Plans, Specifications, and Contract Package including Part 4 Bid Sheet, and Part 8 General Conditions.

1.2 DEFINITION OF TERMS

- A. Whenever used in the Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof.
1. CONTRACT DOCUMENTS – All of the documents and information set forth in the Contract including the General Conditions and Provisions, Technical Specifications, and Contract Plans.
 2. CONTRACT PLANS or DRAWINGS – The part of the Contract Documents which shows the characteristics and scope of the work to be performed and which have been prepared or reviewed by the Engineer.
 3. CONTRACTOR – The persons, firm or corporation to whom this Contract is awarded by the Owner and who is party thereto.
 4. DISTRICT or CRYSTAL SPRINGS WATER DISTRICT – the entity that will eventually own the completed project after the OWNER is complete.
 5. ENGINEER – The Consulting Engineer employed by the OWNER, acting either directly or through his authorized assistants. The OWNER has the right and authority to employ several engineering firms, engineers, inspectors and the like and assign to them various engineering or administrative duties, functions, and responsibilities of the Engineer as that term is used in the Contract.
 6. ENGINEER OF RECORD or EOR – The Responsible Engineer for the Contract Plans and Technical Specifications of the Contract. Individual which bears his or her stamp on the documents. Any changes of the design shall be coordinated with the Engineer of Record or performed in accordance with OAR rules as clarified by Oregon State Board of Examiners for Engineering and Land Surveying.
 7. OWNER - The entity that is a party to this Contract, contracting under the official name set forth in the Agreement. For this project, it is the Port of Hood River.

1.3 DESCRIPTION OF WORK

A. Scope of work

1. This section describes the Project in general and provides an overview of the extent of the Work to be performed by the CONTRACTOR. Detailed requirements and extent of Work is stated in the applicable Specification Sections and shown on the Drawings. CONTRACTOR shall, except as otherwise specifically stated herein or in any applicable part of these Contract Documents, provide and pay for all labor, materials, equipment, tools, construction equipment, and other facilities and services necessary for proper execution, testing, and completion of the Work.

2. Any part or item of the Work which is reasonably implied or normally required to make the installation satisfactorily operable shall be performed by the CONTRACTOR and the expense thereof shall be included in the applicable unit prices or lump sum prices bid for the Work. It is the intent of these Specifications to provide the OWNER with the complete system. All miscellaneous appurtenances and other items of Work that are incidental to meeting the intent of the Specifications shall be considered as having been included in the applicable unit prices or lump sum prices bid for the Work even though these appurtenances and items may not be specifically called for in the Bid Documents.
 3. The Work shall include furnishing all tools, labor, materials, equipment, and miscellaneous items necessary for the installation of 1,312 linear feet of water main within Stadelman Drive, Odell Oregon. The work will involve approximately 1,312 linear feet of 10-inch waterline, two end connections (Connection "A", and Connection "B"), a pressure reducing valve (PRV) and vault, and a relief valve and vault located within two separate pressure zones of the Crystal Springs Water District water system. The CONTRACTOR shall take the necessary precautions for high pressure waterline. Associated work shall include temporary trench repair, temporary access, traffic control, erosion control, native ground surface restoration, and pavement restoration for half-street width along the alignment of the waterline. Port of Hood River is performing this work under an inter-government agreement with the Crystal Springs Water District.
 4. Trenching and Daily Pavement Restoration: This project requires all trenching and underground work within the travel lanes to be completely buttoned up at the end of the day. The surface restoration for pavement within the paved travel lanes for the work (including waterline trenching and underground work) shall include either temporary cold patch or asphalt pavement. No segments within the travel lanes can be temporary surfaced with gravel or steel plating. The CONTRACTOR shall sequence the work accordingly.
- B. CONTRACTOR will be required to complete the Work as indicated on the Construction Drawings and defined in the Contract Documents within the Contract Time.
- C. OWNER or other Contractors may perform other work not covered under these Contract Documents. CONTRACTOR must coordinate its operations with those of OWNER and other Contractors. Other work will be identified during coordination meetings.

1.4 PROJECT SEQUENCE OF WORK

- A. The sequence of work for initiating and completing projects elements is critical for this Work and shall adhere to the Contract Documents. The CONTRACTOR shall provide a Sequence of Work Plan at the preconstruction meeting for review and approval by the Owner.

1.5 CODES AND REGULATIONS

- A. Meet requirements of applicable laws, statutes, regulations, ordinances, safety regulations of federal, state, city, and county jurisdictions and as may be further referenced in the Contract Documents.
- B. Comply with provisions of federal, state, and local statutes, ordinances, and regulations dealing with the prevention of environmental pollution of natural resources that affect the Project.

- C. If CONTRACTOR must undertake additional work due to the enactment of new, or the amendment of existing, statutes, ordinances, and regulations dealing with the Project, OWNER will issue a Change Order setting forth the additional work that must be undertaken. The Change Order will not invalidate the Contract and there will be, in addition to a reasonable extension of Contract Time, if necessary, a reasonable adjustment in the Contract Price to compensate CONTRACTOR for all costs and expenses incurred, including overhead, and profit, as a result of the additional work.

1.6 INSPECTION AND TESTING

- A. CONTRACTOR shall be responsible for testing described in these Technical Specifications as construction quality control (CQC) or Manufacturer's quality control (MQC) testing unless OWNER furnishes products. All testing of the waterline shall be coordinated with Crystal Springs Water District.

1.7 EASEMENTS AND RIGHTS-OF-WAY

- A. CONTRACTOR shall confine his construction operations within the limits indicated on the Drawings, and shall use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies so as to cause the least possible damage to property and interference with traffic. If the CONTRACTOR requires additional easement for his operations, the CONTRACTOR is solely responsible for acquisition and maintenance of the easement. No additional compensation will be provided by the OWNER.
- B. Rights-of-Way Permits for Work in rights-of-way shall be obtained by the CONTRACTOR.

1.8 CONSTRUCTION WATER

- A. CONTRACTOR shall be responsible for securing water supply for construction water and dust control.

1.9 EXISTING UTILITIES

- A. CONTRACTOR Responsibilities:
1. Follow applicable rules adopted by the Oregon Utility Notification Center;
 2. Contact Utility owners during Bid preparation and after the Contract is awarded to verify all Utilities' involvement on the Project Site;
 3. Hold a utility coordination meeting prior to start of construction to identify construction issues and develop a coordinated strategy including construction sequencing, potential conflicts, special requirements, etc. This meeting shall include the OWNER and ENGINEER.
 4. Coordinate Project construction with the Utilities' planned adjustments, take all precautions necessary to prevent disruption of Utility service, and perform its Work in the manner that results in the least inconvenience to the Utility owners; •
 5. Include all Utility adjustment work, whether to be performed by the Contractor or the Utilities, on the Contractor's Project Work schedule; •
 6. Protect from damage or disturbance any Utility that remains within the area in which Work is being performed. Maintain and re-establish location marks according to OAR 952-001-0090(2)(a). Coordinate re-establishment of the location marks with the associated Utility; •
 7. Do not disturb an existing Utility if it requires an unanticipated adjustment, but protect the Utility from damage or disturbance and promptly notify the Owner; •

8. Determine the exact location before excavating within the reasonable accuracy zone according to OAR 952-001-0090(2)(c); •
9. Backfill any exposed utilities as recommended and approved by the Utility representative. Obtain utility locate warning tape from the Utility and replace damaged or removed warning tape. Utility locate warning tape may not be present at all existing utilities; •
10. Stake, place warning tape, and maintain no work limits around critical Utility facilities as shown or directed by the Engineer and the Utility; •
11. In addition to the notification required in OAR 952-001-0090(5), notify the Engineer and the Utility as soon as the Contractor discovers any previously unknown Utility conflicts or issues. Contrary to the OAR, stop excavating until directed by the Engineer and allow the Utility a minimum of two weeks to relocate or resolve the previously unknown utility issues; and •
12. Report to the Owner any Utility owner who fails to cooperate or fails to follow the planned Utility adjustment.

Subject to the Engineer's approval, the Contractor may adjust the Utilities by asking the Utility owners to move, remove, or alter their facilities in ways other than as shown on the Plans, Specifications, or in the Special Provisions. The Contractor shall conduct all negotiations, make all arrangements, and assume all costs that arise from such changes.

B. Utility information

There are no anticipated conflicts with the utilities listed below. Contact those utilities having buried facilities and request that they locate and mark them for their protection prior to construction. CONTRACTOR shall establish and conduct a coordination meeting prior to construction.

Utility	Contact
1. East Fork Irrigation	John Buckley @ 541-354-1185 johnfid@hoodriverelectric.net
2. Odell Water Company	Phil Davis @ 541-354-1393 pkdavis@hoodriverelectric.net
3. Hood River Electric	Clinton Curtis @541-354-1233 hrec@hrec.coop
4. Odell Sanitary District	Ralph Lane @ 541-806-2585 rlane@odellsanitarydistrict.com
5. NW Natural Gas	Sheri Clark @ 541-226-4211 ext. 2045 s6c@nwnatural.com
6. Century Link	Dryk Pritchett@541-387-9255 dyrk.a.pritchett@centurylink.com

Crystal Springs Water District	Fred Schatz @541-354-1818 fred@cswdhr.com [Note: The water company is represented by Tom Ferrell, PACE Engineers @503-597-3222 ext. 313 tomf@paceengrs.com]
--------------------------------	--

C. Notify Utilities – Notify, in writing, at least 72 hours before construction activity the following:

Odell Sanitary District	Before beginning excavation or other road construction activity 10 feet of the sanitary sewer
Century Link	Before beginning excavation or other road construction activity within 10 feet of the underground lines marked on the plans.
Crystal Springs Water District	Before beginning excavation or other road construction activity within 10 feet of the high pressure waterline.

D. This Project is located within the Oregon Utility Notification Center area which is a Utilities notification system for notifying owners of Utilities about Work being performed in the vicinity of their facilities. The Utilities notification system telephone number is 811 (or use the old number which is 1-800-332-2344).

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Methods for measuring and calculating quantities.
- B. Basis of payment for all Contract Bid items.
- C. Values of unit prices.
- D. Description for payment of extra work or changes.
- E. Discussion of payment for rejected materials.
- F. Description of payment for force account work.
- G. Summary of all Contract Bid items.

1.2 MEASUREMENT

- A. Performed according to United States Standard Measure.
- B. Based on actual units installed or neat line dimensions of Work completed.

1.3 CALCULATION OF QUANTITIES

A. Progress Payment Quantities:

- 1. CONTRACTOR will compute all quantities of Work performed, and identify materials and equipment delivered to the Site for progress payment purposes.
- 2. OWNER may at any time verify quantities determined by CONTRACTOR.

B. Final Payment Quantities: CONTRACTOR will compute all quantities of Work performed, and identify materials and equipment delivered to the Site for final payment purposes. Calculation of final quantities will be as described in General Conditions Section E (Part 8 of these Contract Documents).

C. Submit calculations and other documentation of final installed quantities with application for final payment.

1.4 PAYMENT

- A. In accordance with lump sum, unit price, or force account rates provided on the Bid Form.
- B. Includes all costs for overhead and profit and for supplying materials, labor, equipment, and tools, necessary to complete the Work in accordance with the Specifications, Contract Plans, and Contract Conditions.

1.5 QUANTITIES

- A. The number of units and quantities contained in the Bid Schedule are approximate only; final payment will be based on the actual number of units and quantities incorporated in the Work or made necessary to complete the Project.

- B. In the event that work and materials or equipment are required to be furnished to a greater or lesser extent than is indicated by the Contract Documents, such work and materials or equipment will be furnished in greater or lesser quantities.

1.6 CHANGES AND EXTRA WORK

- A. Changes and extra work will be in accordance with General Conditions Section D (Part 8 of these Contract Documents).

1.7 REJECTED MATERIALS

- A. Quantities of material wasted or disposed in a manner not called for in the Technical Specifications; rejected loads of material, including material rejected after it has been placed for CONTRACTOR's failure to conform to the Specifications; material not unloaded from the transporting vehicle; material placed outside the limits indicated by the Contract Plans or established by OWNER; or material remaining on hand after completion of the Work, will not be paid for, and such quantities will not be included in the final total quantities. No compensation will be permitted for loading, hauling, and disposing of rejected material.

1.8 MEASUREMENT AND PAYMENT CONTRACT BID ITEMS

- A. Bid Items

1. Mobilization & Demobilization

- a. **Basis of Measurement:** Lump Sum (LS). Measurement of various items for Mobilization and Demobilization shall not be made for payment and all items shall be included in the Lump Sum (LS) price. This LS price shall not exceed 5% of the total of all bid items.
- b. **Basis for Payment:** Based upon the contract lump sum price for "Mobilization & Demobilization" partial payments will be allowed as follows:
 - 1) With the first pay request, 25 percent.
 - 2) When 25 percent or more of the original contract is earned, an additional 25 percent.
 - 3) When 50 percent or more of the original contract is earned, an additional 40 percent.
 - 4) After Final Inspection, Staging area clean-up, and delivery of all project closeout materials, the final 10 percent.
 - 5) Payment for Mobilization and Demobilization includes all costs for: move personnel, equipment, supplies, and incidentals to the Project site; establish offices, buildings, and other facilities necessary for Work; perform other work and operations or incur costs as necessary before beginning the Work; and cleanup and closeout.

2. Surveying

- a. **Basis of Measurement:** Lump Sum (LS).
- b. **Basis for Payment:** Includes all to perform surveys to layout and provide control for all required elements of the Work, to measure installed quantities, and to prepare record documents in pdf and AutoCAD formats.

3. Erosion Control Measures

- a. **Basis of Measurement:** Lump Sum (LS). Measurement shall be based on satisfactory Erosion and Sediment Control in accordance with the Contract Plans and Specifications including Section 01560 Temporary Controls and all applicable erosion control regulations including City, County, State, and Federal and specifications.
- b. **Basis for Payment:** Payment will be made in full for satisfactorily furnishing all materials, labor, and incidentals to control and prevent sediment transportation from the Work area to adjacent properties and as specified in the Contract Plans and Specifications. The unit price bid shall include installation, maintenance, and removal of temporary erosion and sediment controls including providing, installation, maintenance, of an erosion control fence as indicated on the Plans.

4. Traffic Control Measures

- a. **Basis of Measurement:** Lump Sum (LS). Measurement shall be based on satisfactory maintaining traffic in accordance with the Contract Plans and Specifications.
- b. **Basis for Payment:** Payment will be made in full for satisfactorily furnishing all labor, materials, and equipment necessary to maintain public roadway and pedestrian traffic including flagging, barricades, warning signs. Also included is furnishing, installing and maintaining a Traffic Control Plan, control and safety devices, control of dust, temporary crossing structures over trenches, any necessary detour facilities, and other special requirements for the safe and expeditious movements of traffic and access to the adjacent properties.

5. Cold Plane Pavement Removal, 2-Inch Depth

- a. **Basis of Measurement:** By the Square Foot (SF). Cold plane pavement removal completed and accepted will be measured in place by the square foot to the depth as indicated. Temporary wedges constructed, maintained, and removed to provide access will be at the CONTRACTOR's expense.

Basis for Payment: Payment will be made in full for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

6. Hot Mix AC Pavement, Level 3

- a. **Basis of Measurement:** By the Ton (Ton). Hot mix asphalt cement pavement completed and accepted shall be measured by paving for the areas indicated on the Contract Drawings and as specified and shall be measured by the ton. The areas include the 2-inch lift for the trench repair, and the half street 2-inch lift (for 4-inch total).
- b. **Basis for Payment:** The accepted quantities of hot mix asphalt pavement wearing course will be paid for at the Contract price per ton. The Work shall include installing prime coat, tack coat, and asphalt, compaction, and temporary striping and markings in accordance with the Contract Plans and Specifications. Existing pavement removal and proper disposal shall be paid for by other bid items.

7. 10-Inch Waterline, DI Thickness Class 52

- a. **Basis of Measurement:** By the Lineal Foot (LF). The waterline installation shall be measured in lineal feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves and fittings. Pipe included within the limits of lump sum pay items will not be measured for payment under this item.
- b. **Basis for Payment:** The accepted quantities will be paid for at the contract unit price per lineal foot. Payment will be payment in full for furnishing and placing the materials, including all equipment, labor and incidentals necessary to complete the work as specified. There will be no separate payment for trench excavation, bedding, pipe zone material, and backfill work. Items considered incidental to the work shall include protection of existing utilities, concrete thrust blocks, sheeting, shoring and bracing, dewatering, and flushing, hydrostatic testing, and disinfection, and water testing.

8. 10-inch Butterfly Valve

- a. **Basis of Measurement:** (By the Each (EA). Measurement for Butterfly Valve will be made based on number of valves with valve boxes satisfactorily furnished and installed complete with covers and concrete collars. Butterfly Valves include within the pressure reducing vault shall not be measured for payment under this item. There will be no separate payment for valve boxes or stem extensions.
- b. **Basis for Payment:** Payment will be payment in full for furnishing and installing the valves complete in place, including all earthwork not covered under other pay items, jointing, blocking of valves, protective coatings, valve boxes, valve stem extensions and hydrostatic testing.

9. Pressure Reducing Valve and Vault

- a. **Basis of Measurement:** Lump Sum (LS). Measurement for Pressure Reducing Valve and Vault shall be made per lump sum based on satisfactory furnished and installed complete and functional unit as indicated in the Contract Plans and Specifications.
- b. **Basis for Payment:** Payment will be payment in full for furnishing and installing the pressure reducing valve and vault assembly complete in place, including all earthwork not covered under other pay items, jointing, and hydrostatic testing.

10. Relief Valve and Vault

- a. **Basis of Measurement:** Lump Sum (LS). Measurement for Relief Valve and Vault shall be made per lump sum based on satisfactory furnished and installed complete and functional unit as indicated in the Contract Plans and Specifications.
- b. **Basis for Payment:** Payment will be payment in full for furnishing and installing the relief valve and vault assembly complete in place, including all earthwork, piping, and hydrostatic testing not included in other bid items.

11. Waterline Connection "A"

- a. **Basis of Measurement:** Lump Sum (LS). Measurement for Waterline Connection "A" to the existing main based on lump sum (LS) based on satisfactory furnished and installed complete per the Contract Drawings as described in "Connection Detail 'A'".

- b. **Basis for Payment:** Payment will be payment in full for furnishing and installing the cut-in connection from the constructed water main to the existing water main including coordination with existing utilities, protection of existing utilities and services, excavation, sheeting, shoring and bracing, dewatering, cutting pipe, completely drain and properly dispose of existing pipe contents, connection to the existing main, restraint of existing main in accordance with the Contract Plans and Specifications, backfill, compaction, grading, disinfection, potable water protection, restoration, and cleanup. This item includes all necessary fittings.

12. Waterline Connection "B"

- a. **Basis of Measurement:** Lump Sum (LS). Measurement for Waterline Connection "B" to the existing main based on lump sum (LS) based on satisfactory furnished and installed complete per the Contract Drawings as described in "Connection Detail 'B'".
- b. **Basis for Payment:** Payment will be payment in full for furnishing and installing the cut-in connection from the constructed water main to the existing water main including coordination with existing utilities, protection of existing utilities and services, excavation, sheeting, shoring and bracing, dewatering, cutting pipe, completely drain and properly dispose of existing pipe contents, connection to the existing main, restraint of existing main in accordance with the Contract Plans and Specifications, backfill, compaction, grading, disinfection, potable water protection, restoration, and cleanup. This item includes all necessary fittings.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01032

INTENT OF CONTRACT PLANS AND TECHNICAL SPECIFICATIONS

PART 1 GENERAL

1.1 CONTRACT PLANS AND TECHNICAL SPECIFICATIONS

- A. The intent of the Contract Plans and Technical Specifications is to describe work that the CONTRACTOR shall perform in a manner acceptable to the OWNER and in full compliance with the terms of the Contract.
- B. The Contract Plans show general arrangements for the Work that shall be used by the CONTRACTOR in the preparation of shop and field drawings. Care shall be given to all layouts to make sure all equipment is accessible for operation.
- C. CONTRACTOR shall provide the OWNER with a complete and operable system, even though the Contract Plans and Technical Specifications may not specifically call out all items of work required of the CONTRACTOR to complete tasks, install incidental appurtenances, materials, and the like and perform contract period maintenance.
- D. CONTRACTOR is to perform the Work in accordance with the lines, grades, cross sections, and dimensions shown on the Contract Plans. Any deviations must be approved by the OWNER prior to making the deviation.
- E. The dimensions on the Contract Plans are presumed to be correct, but CONTRACTOR shall be required to check carefully all dimensions prior to beginning the Work. If errors or omissions are discovered by CONTRACTOR, CONTRACTOR shall immediately notify the OWNER in writing.

1.2 CHANGES TO DRAWINGS

- A. It is inherent in the nature of construction that some changes in the Contract Plans and Technical Specifications may be necessary during construction to adjust them to field conditions. It is the essence of the Contract to recognize a normal and expected margin of change. OWNER shall have the right to make such changes, from time to time, in the Contract Plans and Technical Specifications, in the character of the Work as may be necessary or desirable to ensure the completion of the Work in the most satisfactory manner without invalidating the Contract.

1.3 COORDINATION AND INTERPRETATION OF CONTRACT PLANS (DRAWINGS) AND TECHNICAL SPECIFICATIONS

- A. The Contract Plans, Technical Specifications, General Conditions, Supplementary Conditions, Contract Change Orders, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be coordinated and complimentary, and to describe and provide for a complete Work.

- B. Should it appear that the Work or other matters relative thereto are not sufficiently detailed or explained in the Contract Documents, CONTRACTOR shall apply to OWNER for such further explanations in the form of a Request for Information (RFI) as may be necessary and shall conform to OWNER's response as part of the Contract.
- C. In the event of a doubt or question arising regarding the true meaning of the Contract Documents, reference shall be made to the OWNER, whose decision thereon shall be final.
- D. In the event of a discrepancy between a Contract Plan Drawing and the figures and or dimensions written thereon, the figures and or dimensions shall be taken as correct. Figured dimensions shall govern over scaled dimensions. Scaled dimensions shall not be used in the performance of the Work. Cross sections and details take precedent over general plan views.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01042
RESTORATION OF SURFACES

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Roads, Curbs, Driveways and Sidewalks.
- B. Material Storage and Processing Areas.
- C. Measurement and Payment.

1.2 ROADS AND STREETS

- A. CONTRACTOR shall restore all roads and streets in which the surface is removed, broken or damaged, or in which the ground has caved or settled due to the performance of Work covered by the Contract.
- B. CONTRACTOR shall match the existing surfacing for depth, materials, and surface finish, including striping and pavement markings, except as otherwise specified.

1.3 CURBS, DRIVEWAYS AND SIDEWALKS

- A. CONTRACTOR shall reconstruct to the same specifications to the original curbs, driveways, sidewalks, and similar structures which are broken or damaged during construction.
- B. CONTRACTOR shall remove and replace the entire damaged portions between joints or scores.
- C. CONTRACTOR shall match the appearance of the existing improvements as nearly as possible, except as otherwise required.

1.4 MATERIAL STORAGE AND PROCESSING AREAS

- A. CONTRACTOR shall repair contractor staging area to be in the same condition or better prior to construction.

1.5 MEASUREMENT AND PAYMENT

- A. No separate or additional payment will be made for restoration of surfaces.
- B. The costs for restoration of surfaces shall be considered incidental to the Work and shall be included in various unit or lump sum Bid items.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01052
LAYOUT OF WORK AND SURVEYS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Work to be performed under this section shall include all labor, equipment, materials, tools, and incidentals necessary to cover the following:
1. Layout of work including staking of waterline alignment, staking of vault locations, and staking of valve locations.
 2. Field measurements of work quantities.
 3. Determination of as-built locations, lines, and grades at completion of the work for preparation of as-built drawings.

1.2 DESCRIPTION

- A. The Engineer will provide horizontal and vertical survey control data for control points in the field necessary for the CONTRACTOR to proceed with construction staking for the work. The CONTRACTOR shall be responsible for protecting all field control set(s). Replacement by the Engineer of Engineer-established control points which have been damaged or destroyed by the CONTRACTOR will be charged at the Engineer's current rate.
1. The CONTRACTOR shall furnish all necessary detail surveys including all lines, grades, and appropriate surveys.
 2. The Engineer reserves the right to perform any desired checking and/or correction of the CONTRACTOR's surveys but this shall not relieve the CONTRACTOR of responsibility for the adequate performance of the work.

1.3 SURVEYS FOR LAYOUT AND PERFORMANCE OF WORK

- A. Perform surveys for layout and performance of the Work, reduce the field notes, make necessary calculations, and prepare drawings necessary to carry out such Work.

1.4 SURVEYS FOR RECORD DRAWINGS

- A. When the Technical Specifications require as-built conditions of items of Work to be documented by surveying methods, CONTRACTOR will perform the surveys. OWNER may perform independent checks.

1.5 SURVEYS FOR MEASUREMENT FOR PAYMENT

- A. When the Technical Specifications require quantities of Work to be measured by surveying methods, CONTRACTOR will perform the surveys. OWNER may perform independent checks.
- B. Provide surveys to measure final quantities of items listed in Section 01025.

1.6 SURVEYING ACCURACY AND TOLERANCES IN SETTING OF SURVEY STAKES

- A. Perform control traverse field surveys and computations to an accuracy of at least 1:10,000.
- B. The tolerances applicable in setting survey stakes are set forth below. Such tolerances do not supersede stricter tolerances required by the Contract Plans for Specifications, and do not otherwise relieve OWNER of responsibility for measurements in compliance therewith.

<u>Type of Mark</u>	<u>Horizontal Position</u>	<u>Elevation</u>
Permanent reference points	1 in 10,000	±0.01 ft.
General excavation and earthwork	1 in 2,000	±0.10 ft.

- C. Tolerances for design thickness indicated on Contract Plans; elevations indicated on the Construction Drawings are ±0.10 foot unless otherwise specified.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 DESCRIPTION:

- A. This section describes administrative and procedural requirements for all types of submittals including: Proposed Products list, Shop Drawings, Product data, Samples, Manufacturers' installation instructions, and Manufacturers' certificates.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a transmittal form.
- B. Sequentially number the transmittal form. For revised submittals add an alphabetic suffix to the original number.
- C. Identify Project, CONTRACTOR, Subcontractor or Supplier; pertinent Construction Drawing and detail number, and Technical Specification Section number, as appropriate.
- D. Apply CONTRACTOR's stamp, signed or initialed certifying that review; verification of products required; field dimensions; adjacent construction work; and coordination of information; is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite review by the Design Engineer of Record, CQA Engineer of Record, or others as determined by OWNER and deliver in the time frame specified. Coordinate submission of related items.
- F. Allow seven calendar days review time for each submittal excluding delivery time.
- G. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.
- H. Provide space for CONTRACTOR, Design Engineer of Record, and CQA Engineer of Record review stamps.
- I. When revising and resubmitting, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- K. Submittals not requested will not be recognized or processed.

1.3 SHOP DRAWINGS

- A. Submit the number of opaque reproductions that CONTRACTOR requires, plus two copies that will be retained by OWNER.
- B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the technical specifications and the general conditions.

1.4 PRODUCT DATA

- A. Submit the number of copies that CONTRACTOR requires, plus two copies that will be retained by OWNER.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement Manufacturers' standard data to provide information unique to this Project.

1.5 MANUFACTURER INSTALLATION INSTRUCTIONS

- A. When specified in individual specification sections; submit printed instructions for delivery; storage; assembly; installation; start-up; adjusting; and finishing to OWNER in quantities specified for product data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.6 MANUFACTURER CERTIFICATE

- A. When specified in individual specification sections, submit certification by Manufacturer to OWNER in quantities specified for product data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, certifications, and quality control testing.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to OWNER.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Submit initial schedule in duplicate within five days after date of Contract.
- B. Revise and resubmit as required but no less than every 30 days.
- C. Submit revised schedules during weekly progress meetings.
- D. Submit a computer-generated schedule with separate line for each item of Work or operation identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.
- F. Indicate submittal dates and review periods required for Shop Drawings, product data, samples, and product delivery dates, including those furnished by OWNER.
- G. Coordinate schedule for OWNER-provided equipment.

1.2 SCHEDULE REVISIONS

- A. Revise schedule as necessary to reflect changes in scope of Work, but no less than once per month.
- B. Show changes occurring since previous submittal.
 - 1. Major changes in scope.
 - 2. Activities modified since previous submittal.
 - 3. Other identifiable changes.
- C. Submit to OWNER.

1.3 DELAYS AND RECOVERY

- A. If, at any time during Project, CONTRACTOR fails to complete an activity by its latest scheduled Completion Date, CONTRACTOR must, submit within two working days a written statement as to how and when CONTRACTOR will reorganize the work force to return to the current Construction Schedule.
- B. Whenever it becomes apparent from progress evaluation and updated schedules that milestone Completion Dates and/or Contract Completion Dates will not be met, some or all of the following actions will be taken:
 - 1. Increase construction staffing in such quantities and crafts to substantially eliminate backlog of Work.
 - 2. Increase number of working hours per shift, shifts per workday, work days per week, or amount of construction equipment, or combination thereof, to substantially eliminate backlog of Work.
 - 3. Reschedule Work items to achieve concurrence of accomplishment.

- C. Under no circumstances will adding equipment, construction forces, or increasing working hours or any other method, manner or procedure to return to current construction progress schedule be considered justification for Contract modification or for Contract acceleration.

1.4 SUBMITTAL REQUIREMENTS

- A. For initial submittal of final Construction Schedule and subsequent revisions thereof, furnish three copies of schedule to OWNER. Failure to submit schedule and revisions on a timely basis as previously noted may be considered cause for withholding any progress payments otherwise due under this Contract.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01560
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes temporary facilities and controls required during the term of the Contract the protection of the environment, and the health and safety of workers and general public.
- B. Temporary facilities and controls shall include furnishing all equipment, materials, tools, accessories, incidentals, and labor, and performing all Work for the installation of equipment and construction of facilities, including their maintenance and operation during the term of the Contract.
- C. Temporary controls shall include, but not limited to, the following:
 - 1. Temporary Utilities
 - 2. Disposal
 - 3. Dust control
 - 4. Noise control
 - 5. Erosion, sediment, and pollution control
 - 6. Traffic and safety controls
 - 7. Protection of existing infrastructure, fencing, roads, and trees.
- D. Perform Work as specified in this Technical Specification and as required by OWNER. Maintain equipment and accessories in clean, safe and sanitary condition at all times until completion of the Contract.

1.2 APPLICABLE PUBLICATIONS

- A. All required facilities, equipment, and utilities shall also be constructed, installed, maintained, and operated consistent with applicable federal, state, county, and utility laws, rules, and regulations. Notwithstanding contrary provisions of General Conditions and Special Conditions, nothing in the Construction Drawings and Technical Specifications shall be construed to permit work not conforming to such laws, rules, and regulations.

1.3 SUBMITTALS

- A. WORK AREA AND STAGING PLAN: The CONTRACTOR shall submit to the Engineer, for approval, a designated work area and equipment staging plan. This plan will consider areas within the project area right-of-way.
- B. TRAFFIC CONTROL PLAN: The CONTRACTOR shall submit to the Engineer, for approval, the following submittals: Traffic Control Plan: Traffic flow map, including Contractor's equipment and traffic flow; location of signs and traffic control devices and their types.
- C. EROSION AND SEDIMENT CONTROL PLAN: Use either the Agency's ESCP, a Contractor modify version of the Agency's ESCP, or a Contractor developed ESCP. Submit the following for approval ten calendar days before the preconstruction conference:

1. When using the Agency's ESCP without modification, a written notification indicating the Agency's ESCP will be used without modification.
2. When using a Contractor modified version of the Agency's ESCP or when using a Contractor developed ESCP, include the following:
 - a. Proposed ESCP showing all erosion BMP and quantities of all BMP.
 - b. Implementation schedule for all BMP.
3. Do not begin any site activities that have potential to cause erosion or sediment movement until the ESCP and implementation schedules are approved by the Engineer.
4. Update the ESCP and schedule as needed for unexpected storm or other events to ensure that sediment-laden water does not leave the construction site.

1.4 TEMPORARY UTILITIES

- A. The CONTRACTOR shall make arrangements for and provide all necessary facilities for obtaining temporary utilities including water, power, sanitary facilities for performing and conducting the work. This includes water for performing hydrostatic testing.

1.5 DISPOSAL

- A. Disposal of waste material off the project area and in accordance with applicable state, federal, and local regulations.

1.6 WORK AREA, STORAGE, AND PROTECTION OF MATERIAL AND EQUIPMENT

- A. The CONTRACTOR shall designate an area for approval that will serve as a Contractor work area, storage area, and parking for employees. The Contractor shall use measures for protection of materials and equipment temporary stored in this area from damage or theft and fully relieve the OWNER from this responsibility.

1.7 DUST CONTROL

- A. The CONTRACTOR shall be responsible for providing adequate dust control measures during the term of the Contract.
- B. Dust control consists of furnishing water supply, required equipment, additives, accessories, and incidentals, and carrying out proper and efficient measures wherever as often as necessary to reduce dust nuisance, and to prevent dust originating from construction operations throughout the duration of the Contract, as required by OWNER.
- C. Apply water by means of pressure-type distributors or pipelines equipped with a spray system or hoses with nozzles that will ensure a uniform application of water.
- D. Equip all equipment used for the application of water with a positive means of shut-off.
- E. Unless otherwise permitted by OWNER or unless all the water is applied by means of pipelines, provide at least one mobile unit with a minimum capacity of 3,500 gallons at the Site in operating condition for applying water at the Site during construction.

1.8 NOISE CONTROL

- A. Comply with the requirements of OAR 437, Division 2/G, 1910.95, Occupational Noise Exposure.

- B. Where the public and nearby properties are exposed to construction noise that is harmful or disruptive, take steps to mitigate the noise level.

1.9 TRAFFIC AND SAFETY CONTROLS

- A. Post traffic control signs or devices in construction areas and road to protect workers, the public, and equipment. The signs or devices must conform to the American National Standards Institute, Manual on Uniform Traffic Control Devices for Streets and Highways.
- B. Remove signs or traffic control devices as soon as they have served their purpose. It is particularly important to remove any markings on road surfaces that under conditions of poor visibility could cause a driver to turn off the road or into traffic moving in the opposite direction.
- C. Barricades for protection of employees must conform to the portions of the American National Standards Institute, Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades.
- D. Material Haul on Public Roads: Follow all requirements stated in the permits for using public roads for hauling materials to the Site.
- E. Provide flag persons with properly equipped International Orange protective clothing and flags, as necessary, to direct or divert pedestrian or vehicular traffic.
- F. Construct and maintain fences, planking, barricades, lights, shoring, and warning signs as required by local authorities and federal and state safety ordinances, and as required, to protect OWNER's property from injury or loss and as necessary for the protection of the public, and provide walks around any obstructions made in a public place for carrying on the Work covered in this Contract. Leave all such protection in place and maintained until removal is authorized.
- G. Guard and protect all workers, pedestrians, and the public from excavations, blasting operations, construction equipment, all obstructions, and other dangerous items or areas by means of adequate railings, guard rails, temporary walks, barricades, warning signs, sirens, directional signs, overhead protection, planking, decking, danger lights, etc.

1.10 EROSION AND SEDIMENT AND POLLUTION CONTROL

- A. CONTRACTOR shall comply with all local, state, and federal regulations for the protection of state waters and restriction of sediments and pollution from the project area. Measures shall include all erosion control best management practices as shown on the Contract Plans and any other measure necessary to manage the work. All work shall be in accordance with these specifications and with ODOT Standard Specification 0280 Erosion and Sediment Control.
- B. Erosion and Sediment Erosion Control Manager: Designate and provide an ESCM that possesses a valid ODOT ESCM certification.

C. DEWATERING

- 1. CONTRACTOR shall comply with all local, state, and federal regulations for the dewatering activities of the work area. Contractor shall anticipate water within the trench zone and be prepared to manage the water levels through temporary dewatering activities.

1.11 MAINTENANCE

- A. Maintain all temporary controls in good working conditions during the term of the Contract for the safe and efficient transport of equipment and supplies, and for construction of permanent works, as required by OWNER.

1.12 STATUS AT COMPLETION

- A. Upon completion of the Work or prior thereto when so required by OWNER, remove all temporary controls and restore disturbed areas as required by OWNER.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01600
MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. General requirements for material and equipment including handling, transportation, and storage thereof.

1.2 RELATED SECTIONS:

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

1.3 QUALITY OF MATERIALS

- A. Provide new materials and equipment, except as may be indicated in the Technical Specifications or on the Construction Drawings.
- B. Materials and equipment must be manufactured, handled, transported, stored, and used in accordance with the requirements of the Manufacturer and to ensure completed Work meets the requirements of the Contract Documents.

1.4 HANDLING AND TRANSPORTATION

A. Handling:

- 1. Avoid bending, scraping, or overstressing materials and equipment. Protect projecting parts by blocking with wood, by providing bracing, or by other approved methods.
 - 2. Protect materials and equipment from soiling and moisture by wrapping or by other approved means.
 - 3. Protect small parts of equipment and accessories in containers such as boxes, crates, or barrels to avoid dispersal and loss. Firmly secure an itemized list and description of contents to each such container.
- B. Transportation: Load, transport, unload, and store all materials and equipment such that they are kept clean and free from damage.

1.5 STORAGE AND PROTECTION

- A. Provide sheltered, weather-tight, or heated weather-tight storage as required for materials and equipment subject to weather damage.
- B. Provide blocking, platforms, or skids for materials and equipment subject to damage by contact with ground.
- C. Store packaged materials in their original unbroken package or container.
- D. Protect materials and equipment from damage during warehousing operations.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01630

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. This Section describes product options available to BIDDERS and CONTRACTOR, plus procedures for securing approval of proposed substitutions.
- B. Related work:
 - 1. Make submittals in accordance with pertinent provisions of Section 01300.

1.2 PRODUCT OPTIONS

- A. Contract is based on standards of quality established in the Contract Documents.
 - 1. In agreeing to the terms and conditions of the Contract, CONTRACTOR accepts 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 its agreed Construction Schedule.
 - 2. Neither OWNER nor the Design Engineer of Record has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.
- B. Materials and/or methods specified by name:
 - 1. Where materials and/or methods are specified by naming one single Manufacturer and/or model number, without stating that equal products will be considered, only the material and/or method named is approved for incorporation into the Work.
 - 2. Should CONTRACTOR demonstrate to the approval of OWNER that a specified material or method was ordered in a timely manner and will not be available in time for incorporation into this Work, CONTRACTOR must submit to OWNER such data on proposed substitute materials and/or methods as are needed to help OWNER determine suitability of the proposed substitution.
- C. Where materials and/or methods are specified by name and/or model number, followed by the words "*or an equal approved in advance by OWNER*" or similar wording:
 - 1. The material and/or method specified by name establishes the required standard of quality;
 - 2. Materials and/or methods proposed by CONTRACTOR to be used in lieu of materials and/or methods so specified by name must in all ways equal or exceed the qualities of the named materials and/or methods;
 - 3. Proposed substitutions must be described in CONTRACTOR's General Contract Bid.
- D. The following products do not require further approval except for interface within the Work:
 - 1. Products specified by reference to standard specifications such as ASTM and similar standards;
 - 2. Products specified by Manufacturer's name and catalog model number.

E. Where the phrase "*or equal*," or "*or equal as approved by OWNER*," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be accepted as equal unless the item has been specifically so approved for this Work by OWNER.

F. The decision of OWNER is final.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material and/or method will not be considered by OWNER as justifying an extension of the agreed Time of Completion.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02223

TRENCHING, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.1 DESCRIPTION:

- A. This section describes excavating, backfilling, and compacting for underground utilities and structures.
- B. If the Contractor encounters suspected contaminated soil in the work area beyond that mentioned in the contract documents, the Contractor shall immediately stop all work in the area of the suspected contamination and notify the Engineer. Contaminated soil is soil that produces fuel or chemical odors, produces an oil sheen on the surface of water, has staining, contains debris or other visible indicators, or soil designated by the Engineer as contaminated. The Engineer will characterize contaminated soil, obtain profile for disposal, and determine the location of disposal.
- C. GENERAL
 - 1. End of Day – At the end of each day the Contractor shall restore all trenching within the paved right-of-way with Asphalt Pavement or Cold Patch. No exposed trench backfill or steel plating is permitted. All temporary surfacing (cold patch) shall be considered incidental to the work.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01560, Temporary Control
- B. Section 02660, Waterlines

1.3 REFERENCES

- A. AASHTO: American Association of State Highway and Transportation Officials
 - 1. AASHTO T027: Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
 - 2. AASHTO T099: Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop
 - 3. AASHTO T180: Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
- B. ASTM: American Society for Testing and Materials
 - 1. ASTM D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))
 - 2. ASTM D1556: Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - 3. ASTM D1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
 - 4. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
 - 5. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.

C. ODOT: Oregon Department of Transportation – Standard Specifications

1. ODOT Section 00360.10: Sand Drainage Blanket
2. ODOT Section 02630: Base Aggregate

D. OSHA: Occupational Safety and Health Administration

1.4 SUBMITTALS

- A. Submit manufacturer’s product data for utility warning tape, utility locate wire, and electrical splices.

PART 2 PRODUCTS

2.1 TRENCH EXCAVATION MATERIAL

- A. Soil material, regardless of condition, excavated from subgrade to the bottom of the trench; or, where there is no subgrade, from original ground to the bottom of the trench.

2.2 UNSUITABLE MATERIAL

- A. Trench excavation material designated as not usable for backfill.
- B. Material excavated below the bottom of the trench designated as not usable for foundation or backfill.

2.3 TRENCH STABILIZATION

- A. 3/4" -0 pit run or crushed rock. Not more than 10 percent passing a #200 sieve.

2.4 BEDDING

- A. Crushed aggregate: ODOT Section 02630, ¾"-0".

2.5 BACKFILL

- A. Native
1. Approved trench excavation material. Material shall not contain particles larger than ¾".
- B. Imported
1. Crushed aggregate: ODOT Section 02630 ¾"-0" for water lines.

2.6 UTILITY WARNING TAPE

- A. Use 3-inch wide, 3.5-mil thick non-metallic plastic tape for all utilities 4-feet deep or less. For utilities, more than 4-feet deep, use 6-inch wide, 3.5-mil thick non-metallic plastic tape. Tape should be imprinted continuously along its length with "CAUTION – STOP DIGGING – BURIED WATER LINE BELOW", or similar. Tape shall be Blue for Water.

PART 3 EXECUTION

3.1 TRENCH EXCAVATION

- A. Dig trench to lines and grades established on the drawings or as directed.
- B. Trench width shall be as shown on the drawings. If not shown on the drawings, trench width shall be as follows:
 - 1. Not less than the outside diameter of the pipe plus 12 inches.
 - 2. Not more than the inside diameter of the pipe plus 30 inches, to a point 12 inches (minimum) above the top of the pipe, unless otherwise approved.
- C. Trench length shall be sufficient to allow for satisfactory construction and inspection of the project, without endangering other construction work or adjacent facilities.
- D. Slope trench walls to OSHA standards or shore trench walls.
- E. Use hand methods for excavation that cannot be accomplished without endangering existing or new structures or other facilities.

3.2 REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL

- A. Unsuitable Trench Excavation
 - 1. Remove and haul off in accordance with Section 01560, Temporary Controls.
 - 2. Replace with excess approved common excavation material from other portions of the project or imported backfill as directed.
 - 3. Compact as specified below.
- B. Unsuitable Trench Bottom
 - 1. Excavate to established and approved lines and limits.
 - 2. Backfill with trench stabilization material and compact as specified.

3.3 TRENCH PROTECTION

- A. Provide materials, labor, and equipment necessary to protect trenches at all times.

3.4 DEWATERING

- A. CONTRACTOR shall control water in trench through dewatering activities including providing all necessary materials, labor, and equipment as necessary to ensure the integrity of the trench excavation and pipe installation.

3.5 SHEETING AND BRACING

- A. Furnish and install sheeting and bracing as required to prevent caving or sloughing of trench walls in according to OSHA.
- B. Solid sheet trench, if necessary, to preserve a suitable grade for the pipe. Drive far enough below grade to prevent inflow of material from outside of trench lines.
- C. Remove sheeting and bracing from trench before or during backfilling operations unless otherwise directed.

3.6 PIPE BEDDING

- A. Bed pipe shall be as shown on the Contract Plans.
- B. Place bedding material to a uniform grade. Compact to a minimum of 95 percent of maximum dry density as measured by the standard proctor ASTM D698.
- C. Shape bottom of trench or bedding so that the lower quarter of the pipe circumference is in continuous contact with the bottom of the trench. Place in loose lift thickness not exceeding 9 inches.

3.7 BACKFILLING

- A. Conduct utility check tests before backfilling. Backfill and compact trench before acceptance testing.
- B. Place pipe zone backfill uniformly on both sides of the pipe in maximum 6-inch thick uncompacted lifts until 12 inches over the pipe.
- C. Solidly ram and tamp backfill into spaces around pipe and related structures.
- D. Backfill remainder of trench with maximum 12-inch thick uncompacted lifts.
- E. Protect pipe from lateral movement, damage from impact, or unbalanced loading to avoid displacement of pipe and structures.
- F. Do not place backfill against concrete structures until the concrete has cured for at least 14 days or has reached 90 percent of its designed strength.
- G. Maintain backfilled trench surface between any two successive manholes until the following operations have been completed and approved.
 - 1. Service connections installed, backfilled, and compacted, including water settling when required.
 - 2. Construction of manholes and appurtenances.
 - 3. Hydrostatic or air testing.
 - 4. Cleanup and restoration of all physical features.
 - 5. Utilities restored to their original condition or better.
 - 6. All work required between the two manholes accomplished.
- H. Maintain backfilled trench surface between any two successive valves until the following operations have been completed and approved.
 - 1. Service connections installed and backfilled.
 - 2. Valves, valve boxes, and hydrants installed.
 - 3. Hydrostatic testing.
 - 4. Flushing and sterilization.
 - 5. Cleanup and restoration of all physical features.
 - 6. Utilities restored to their original condition or better.
 - 7. All work required between the two valves accomplished, including restoration of surface to specified condition.

3.8 COMPACTION

- A. The Owner will conduct in-place density tests in accordance with ASTM D6938 or D1556 requirements.
- B. Compact backfill deeper than 4 feet below subgrade to 95 percent of maximum density as measured by Standard Proctor ASTM D698, unless otherwise directed.
- C. Compact backfill from subgrade to a depth of 4 feet below subgrade to a minimum of 95 percent of maximum dry density as determined by Standard Proctor ASTM D698, unless otherwise directed.
- D. Do not compact under flooding water.
- E. For compaction testing, excavate test pits in the backfill as directed to demonstrate that the specified compaction has been obtained for the entire depth of the backfill. Density tests may be taken in a lift of compacted backfill immediately before placing the next lift. In general, one successful test for the entire backfill depth and three successful tests at lesser depths per 400 linear feet of pipe installed will be required. Additional successful tests at lateral crossings at various depths may also be required. All costs in connection with excavating test pits, shoring, backfilling, and from standby time during field density test shall be considered as incidental to backfill.
- F. If required compaction density has not been obtained, remove the backfill from trench or structure, replace with approved backfill, and recompact to the specified density. Then, should routine field densities taken during the course of construction show the specified compaction is not being obtained because of changes in soil types or for any other reason, the compacting procedure will be modified. In no case will excavation, pipe-laying, or other operation be allowed to proceed until the specified compaction is attained. Changes in methods may be required to accommodate changes in soil conditions.
- G. Any subsequent settlement of trench or structure backfill during the maintenance period shall be considered to be the result of improper compaction and shall be promptly corrected.

3.9 REMOVAL AND PLUGGING OF ABANDONED PIPES, CONDUITS, CULVERTS, AND MISCELLANEOUS STRUCTURES

- A. Removal of Abandoned Pipes, Conduits, and Other Items:
 - 1. Trenching: Abandoned pipes and conduits encountered during trench excavation shall be removed the full width of the trench. If a pipe is encountered by multiple trenches, remove pipe the full width of affected area.
 - 2. Excavation: Abandoned pipes or portions of other items exposed during excavation shall be removed a minimum of 2 feet back of face of slope or 2 feet below subgrade.
- B. Cap or plug the ends of partially removed pipes, culverts, conduits, and miscellaneous structures with concrete to produce a watertight seal.
- C. Contact the Engineer for direction if unidentified utilities are uncovered during the work.
- D. Dispose of removed pipes, conduits, culverts, and miscellaneous structures, at no additional cost to the Owner.

END OF SECTION

SECTION 02660
WATERLINES

PART 1 GENERAL

1.1 DESCRIPTION

- A. This Section describes the construction of the water line including materials, installation, and testing. This section includes the pipe, fittings, pressure reducing valve vault, and the relief valve.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02223, Trenching, Backfilling, and Compacting

1.3 QUALITY ASSURANCE

A. Testing Before Acceptance

1. The Engineer may require that the first section of pipe, not less than 100 feet in length, installed by each of the Contractor's crews, be tested in order to qualify the crew and installation.

B. Final Acceptance:

1. Prior to final inspection, all pipelines shall be flushed and cleaned of all debris, disinfected, and hydrostatically tested. Crystal Springs Water District shall be notified of when the testing will be completed.
2. Any corrections required shall be made at the expense of the contractor and the line shall be retested.

PART 2 PRODUCTS

2.1 BEDDING MATERIALS

- A. Conform to Section 02223

2.2 ALTERNATE PIPE MATERIALS

- A. When ductile iron pipe is specified, no substitute is permitted.

2.3 VAULT MATERIALS

- A. The vaults shall be precast concrete vaults with a minimum compressive strength of 4,000 psi and be in accordance with ASTM C858.

PART 3 EXECUTION

3.1 BEDDING

- A. Conform to Section 02223

- B. Care shall be taken to prevent any damage to the pipe or its protective coating.

3.2 PIPE LAYING

- A. Pipe laying shall be done in accordance with the specifications and instructions of the manufacturer of the kind of pipe used.
- B. Tools designed especially for installing each particular type and kind of pipe shall be used.
- C. Short Lengths and Field Cut Joints:
 - 1. Short lengths of pipe supplied by the manufacturer shall be used to provide the proper spacing of valves, tees or special fittings.
 - 2. Whenever it becomes necessary to cut a length of pipe, the cut shall be made by abrasive saw or by a special pipe cutter. Pipe ends shall be square with the longitudinal axis of the pipe.

3.3 LAYING OF PIPE ON CURVES:

- A. Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflections at the joints not to exceed the maximum deflection as indicated on the Contract Plans and pipe manufacturer specifications, whichever is less.
- B. Where field conditions require deflection or curves not anticipated by the Plans, the CONTRACTOR shall use deflected joints, short lengths, or special fittings as required. No additional payment will be made for laying pipe on curves as shown on the Plans or for field changes involving pipe deflected at the joints. When special fittings not shown on the plans are required to meet field conditions, additional payment will be made for fittings.

3.4 CONTAMINATION PREVENTION:

- A. Pipe, fittings, and valves shall be carefully cleaned of all dirt and foreign material as they are placed.
- B. Open ends of pipe and fittings shall be plugged with a temporary watertight plug whenever work is stopped and/or when water in the trench threatens to enter the pipe.
- C. Groundwater shall be excluded from the pipe at all times.

3.5 CONDITION OF PIPE AND FITTINGS:

- A. The interior of all pipe, fittings, and other accessories stockpiled on the project shall be kept free of dirt and other foreign matter at all times
- B. Each pipe, fitting, or other accessory shall be carefully inspected and thoroughly cleaned of any dirt or foreign matter that might be present on the inside that might be present on the inside.

3.6 CONNECTION TO EXISTING WATER MAINS

- A. Type and location of connections shall be as shown on the Contract Plans.
- B. Connections to the existing water main shall not be made without first making the necessary arrangements with the Owner and the District in advance and per the Contract Plans.
- C. Work shall not be started until all of the materials, equipment and labor necessary to properly complete the work are assembled on the site.
- D. When work is once started on a connection to an existing main, it shall proceed continuously without interruption and as rapidly as possible until complete.

- E. If the connection to the system involves turning off the water, the CONTRACTOR shall be responsible for notifying the properties affected by the Shut-off and follow the County and District requirements for notification.
- F. The CONTRACTOR shall not operate any valves on the existing system without specific permission of the District or Owner.

3.7 TESTING, DISINFECTION, AND FLUSHING

- A. All work shall be performed in accordance with the Contract Plans and in accordance to the District.
- B. Testing, disinfection, and flushing procedures shall be in accordance with ODOT Specification Section 01140.51, Section 01140.52, and Section 01140.50.

END OF SECTION

SECTION 02740
ASPHALT CONCRETE PAVEMENT

PART 1 GENERAL

1.1 DESCRIPTION:

- A. This section describes the construction of one or more courses of constructing hot mixed asphalt concrete (HMAC) pavement, to the lines, grades, thicknesses, and cross sections shown or established.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02223, TRENCHING, BACKFILLING, AND COMPACTING
B. Section 02790, COLD PLANE PAVEMENT REMOVAL

1.3 DEFINITIONS

- A. Hot-Mixed Asphalt Concrete (HMAC): A hot plant-mixed, uniformly coated mixture of asphalt cement, graded aggregate, and additives as required.
- B. Level 3 HMAC: HMAC for use in applications exposed to moderate truck traffic.
- C. Lot Size - A lot is the total quantity of material or work produced per Job Mix Formula (JMF) per project. The following circumstances will require a different lot: •
1. A new JMF is used. •
 2. The method for measuring compaction is changed.
 3. A change from one test procedure for measuring asphalt content to another test procedure for measuring asphalt content occurs.

The Engineer may allow material for irregular areas not completed during the main paving operations, such as driveways or guardrail flares to be evaluated as a separate lot.

PART 2 PRODUCTS

2.1 RECLAIMED ASPHALT PAVEMENT (RAP) MATERIAL

- A. Reclaimed HMAC pavement (RAP) material used in the production of new HMAC is optional. No more than 30 percent RAP will be allowed in base courses. No more than 20 percent RAP will be allowed in Level 1 and Level 2 wearing courses. No RAP will be allowed in Level 3 and Level 4 wearing courses.

2.2 HOT MIX ASPHALT CONCRETE

- A. Aggregate: Provide and stockpile new aggregates according to the following requirements:
1. Testing of aggregates for soundness, durability, and harmful substances will be at the discretion of the OWNER.

2. Soundness: Provide coarse and fine aggregate for HMAC for soundness testing using sodium sulfate salt according to AASHTO T104. The weighted average percentage of loss shall not exceed 12% by mass (weight).
3. Durability – Provide aggregate not exceeding the following maximum values:

Test	Test Method		Aggregates
	ODOT	AASHTO	Coarse
Abrasion		T 96	30.0%
Degradation			
Passing No. 20 sieve	TM 208		30.0%
Sediment height	TM 208		3.0"

4. Harmful Substances: Do not exceed the following values:

Test	Test Method		Aggregates	
	ODOT	AASHTO	Coarse	Fine
Lightweight Pieces		T 113	1.0%	na
Wood Particles	TM 225		0.10%	na
Elongated Pieces (at a ratio of 5:1)	TM 229		8.0%	na
Plasticity Index		T 90		0 or NP
Sand Equivalent		T 176		45 min *
* 50 min. for Level 4 HMAC				

- B. Asphalt Cement - Use PG 64-28 or PG 70-28 asphalt grade of asphalt cement for this Project. Provide asphalt cement conforming to the requirements of ODOT’s publication, “Standard Specifications for Asphalt Materials.”
- C. Asphalt Cement Additives: Use standard recognized asphalt cement additive products of known value for the intended purpose and approved for use on the basis of laboratory tests. Asphalt cement additives shall have no deleterious effect on the asphalt material and be completely miscible. Do not use silicones as an additive.
- D. Mix Type and Broadband Limits: Mix type and broadband limits shall meet the following:
 1. Mix Type: Furnish the type(s) of HMAC shown or as directed. The broadband limits for each of the mix types are specified below. When the Contract Plans allow an option of two types for a course of pavement, use only one type throughout the course.
 2. Broadband Limits: Provide a JMF for the specified mix type within the control points listed below:

Sieve Size	Dense-Graded Mixes							
	1" Dense		3/4" Dense		1/2" Dense		3/8" Dense	
	Control Points (% Passing by Weight)		Control Points (% Passing by Weight)		Control Points (% Passing by Weight)		Control Points (% Passing by Weight)	
	Min	Max	Min	Max	Min	Max	Min	Max
1-1/2"	100							
1"	90	100	100					
3/4"	--	90	90	100	100			
1/2"	--	--	--	90	90	100	100	
3/8"	--	--	--	--	--	90	90	100

Dense-Graded Mixes								
Sieve Size	1" Dense		3/4" Dense		1/2" Dense		3/8" Dense	
	Control Points (% Passing by Weight)		Control Points (% Passing by Weight)		Control Points (% Passing by Weight)		Control Points (% Passing by Weight)	
	Min	Max	Min	Max	Min	Max	Min	Max
No. 4	--	--	--	--	--	--	--	90
No. 8	19	45	23	49	28	58	32	67
No. 200	1.0	7.0	2.0	8.0	2.0	10.0	2.0	10.0

- E. Job Mix Formula (JMF) Requirements: Provide a JMF for the mixture to be used on the Project meeting the criteria set forth in this specification and the ODOT Contractor Mix Design Guidelines for Asphalt Concrete. Perform a new JMF with an updated tensile strength ratio when the source of the asphalt cement changes. Refer to ODOT Section 00744.13 for the mixture requirements and ODOT Section 0744.14 for acceptable tolerances.

2.3 COLD MIX (TEMPORARY AC PATCH)

- A. Patches constructed of cold mix AC will be acceptable during times when hot mix plants are not operating or to meet temporary trench surface requirements. Cold Mix AC shall meet the requirements of ODOT Section 00735. All cold mix patches shall be dug out and replaced with Hot Mix Asphalt Concrete Pavement at no additional cost to the Owner. The placement and removal of cold mix asphalt shall be considered incidental to the Work.

2.4 TACK COAT

- A. Tack coat shall be in accordance with ODOT Section 00730.11, CSS 1 or CSS 1h.

PART 3 EXECUTION

3.1 GENERAL

- A. For all work that will involve the disturbance of soil or could result in the production of sediments, debris, pollutants, or other matter that may contact stormwater, comply with Section 01560, Temporary Controls.

3.2 PLACEMENT

- A. Season and Temperature Limitations: Place HMAC during the dates indicated below, and when the temperature of the surface that is to be paved is not less than the temperature indicated:

Nominal Compacted Thickness of Individual Lifts and Courses as Shown on the Typical Section of the Drawings	All Levels	Level 1 and Level 2	Level 3 and Level 4	
		All Courses	Travel Lane Wearing Course	All Other Courses
	Surface Temperature*	From To Inclusive	From To Inclusive	From To Inclusive
Less than 2 inches	60°F and rising	All Year**	3/15 9/30	All Year**
2 inches and Greater	40°F and rising	All Year**	3/15 9/30	All Year**

Nominal Compacted Thickness of Individual Lifts and Courses as Shown on the Typical Section of the Drawings	All Levels	Level 1 and Level 2	Level 3 and Level 4	
		All Courses	Travel Lane Wearing Course	All Other Courses
	Surface Temperature*	From To Inclusive	From To Inclusive	From To Inclusive
Temporary	40°F	All Year**	3/15 9/30	All Year**
<p>* Do not use field burners or other devices to heat the pavement surface to the specified minimum temperature.</p> <p>** If placing HMAC between March 15 and September 30, temperature requirement may be lowered 5°F.</p>				

B. Pre-Paving Conference shall be performed prior to start of paving.

3.3 COMPACTION

- A. Obtain the Port’s acceptance of the base course prior to beginning construction of the asphalt concrete wearing course.
- B. Compact the mixture thoroughly and uniformly to a minimum density of 91 percent for the base course and 92 percent for the wearing course of the Maximum Density Test (MDT). Each MDT will be determined using the Gmm (Maximum specific gravity of mixture) determined in accordance with AASHTO T 209, for the particular mix being used.

3.4 ACCEPTANCE OF LINE AND GRADE

- A. The finished top of any base course when tested with a Contractor-furnished 16-foot straightedge shall not vary from the testing edge by more than 3/8 inch at any point, and shall be within 1/2 inch of specified finished grade.
- B. The finished top of the surface course when tested with a Contractor-furnished 16-foot straightedge shall not vary from the testing edge by more than 1/4 inch at any point, and shall be within 1/2 inch of specified finished grade.
- C. Asphalt and sand seal edges where new asphalt concrete meets existing pavement.
- D. Correction of Pavement Roughness: Immediately correct equipment or paving operation procedures when tests show the pavement smoothness does not comply with these specifications. In addition, do the following:
 - 1. Correct surface roughness to the required tolerances, using one of the following methods as approved:
 - a. Base Course:
 - 1) Profile to a maximum depth of 0.4 inch with abrasive grinder(s) equipped with a cutting head comprised of multiple diamond blades.
 - 2) Remove and replace the base lift.
 - b. Wearing Course:
 - 1) Remove and replace the wearing surface lift.

- 2) Profile to a maximum depth of 0.3 inch with abrasive grinder(s) equipped with a cutting head comprised of multiple diamond blades and apply an emulsified asphalt fog coat as directed.

3.5 TRAFFIC

- A. Vehicular traffic, including heavy equipment, is not allowed on newly paved areas until surface temperatures have cooled to at least 120°F. Measure surface temperatures by approved surface thermometers.

END OF SECTION

SECTION 02790
COLD PLANE PAVEMENT REMOVAL

PART 1 GENERAL

1.1 DESCRIPTION:

- A. This section describes the removal of pavement in preparation for the placement of new pavement along half the roadway following the waterline alignment.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02740 ASPHALT CONCRETE PAVEMENT

1.3 EQUIPMENT

1.4 EQUIPMENT

- A. Provide self-propelled planing machines or grinders:
1. Capable of loosening Pavement material.
 2. Capable of accurately establishing profile grades within a tolerance of 0.02 foot by reference from either the existing Pavement or from independent grade control.
 3. With a positive means for controlling cross-slope elevations.
 4. With a totally enclosed cutting drum with replaceable cutting teeth.
 5. With an effective means of removing loosened material from the surface and preventing dust from escaping into the air.
 6. Capable of providing a true cross-slope grade that will allow placement of overlay Pavement to a uniform thickness.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.1 PAVEMENT REMOVAL

- A. General – Remove the existing pavement to the depth, width, grade, and cross section shown or as directed. The use of a heating device to soften the pavement is not allowed.
- B. Access for Traffic – If the depth of the existing pavement to be removed is 2 inches or less, but more than 1 inch and the section will be under traffic, schedule the Work so the full width and length of travel lanes pavement can be removed during the same shift. If the depth exceeds 2 inches and the section will be under traffic, schedule the Work so the full width and length of the travel lanes can be removed leaving no longitudinal or transverse drop-offs.

- C. Temporary Pavement Transition – If unable to complete the pavement removal according to the above paragraph 3.1 B, then within the same day construct a wedge of asphalt concrete, at a slope of 1V:10H or flatter along each exposed longitudinal drop-off, and 1V:50H or flatter along each exposed transverse drop-off. Place wedges completely across the milled area at intersections, points of beginning and ending of the milling operation, and around manholes, valve boxes and other Structures. Longitudinal drop-offs of 1 inch or less do not require a wedge. Maintain wedges as long as the area remains under traffic or until Pavement is replaced. Remove and dispose of wedges before placing new Pavement.
- D. Warning Signs – Provide warning signs as required where abrupt or sloped drop-offs occur at the edge of the existing or new surface.

3.2 DISPOSAL OF MATERIALS

- A. Dispose of all materials at no cost to the Owner.

3.3 MAINTENANCE UNDER TRAFFIC

- A. Traffic will be allowed on the cold planed surface up to 7 Calendar Days after removing the existing surface. Sweep and clean the cold planed surface before opening to traffic. Before beginning paving operations, make repairs to the existing cold planed surface as directed.

END OF SECTION

CONTRACT PLANS
STADLEMAN DRIVE WATERLINE EXTENSION