## SECTION 00150 - CONTROL OF WORK

Comply with Section 00150 of the Standard Specifications modified as follows:

**00150.15(b) Agency Responsibilities** - Replace this subsection, except for the subsection number and title, with the following:

The Engineer will perform the Agency responsibilities described in the *Construction Surveying Manual for Contractors*, Chapter 1.5 (see Section 00305).

**00150.15(c) Contractor Responsibilities** - Replace this subsection, except for the subsection number and title, with the following:

The Contractor shall perform the Contractor responsibilities described in the *Construction Surveying Manual for Contractors*, Chapter 1.6 (see Section 00305).

The Contractor shall perform slope staking including intersections and set stakes defining limits for clearing which approximate Right-of-Way and easements.

**00150.50(c) Contractor Responsibilities** – Replace the bullet that begins "Protect from damage or disturbance any Utility that remains…" with the following bullet:

- 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(3)(a). Coordinate re-establishment of the location marks with the associated Utility;

Replace the bullet that begins "Determine the exact location before excavating within …" with the following bullet:

- Determine the exact location before excavating within the tolerance zone according to OAR 952-001-0090(3)(c);

Replace the bullet that begins " In addition to the notification required in OAR 952-001-0090(5), notify the Engineer…" with the following bullet:

- In addition to the notification required in OAR 952-001-0090(6), 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

Add the following subsection:

**00150.50(f) Utility Information (No Anticipated Relocations)** - Within the Project limits, there are no anticipated relocations with the Utilities listed in Table 00150-1. The Contractor

shall contact those Utilities having buried facilities and request that they locate and mark them for their protection prior to construction.

**Table 00150-1**

| Utility | **Contact Person's Name,<br>Address,<br>Email,<br>and Phone Number** |
|---|---|
| Comcast Cable | Jason McDonald<br>Construction Specialist 2<br>1710 Salem Industrial Dr NE<br>Salem, OR 97301<br>Jason_McDonald3@comcast.com<br>503-924-9120 (mobile) |
| Ziply Fiber | Scott Binney<br>Sr. Network Designer, ATCO Communications<br>4155 SW Cedar Hills Blvd.<br>Beaverton, OR 97005<br>scott.binney@ziply.com<br>503-643-0371 (office) |
| PGE | Terry Neal<br>Service & Design Project Manager<br>4245 Kale St. N.E.<br>Salem, OR 97305<br>terry.neal@pgn.com<br>503-463-4322 (office) |
| OnLine NW | Phil Lopez<br>1305 NE Lafayette Ave<br>McMinnville, OR 97128<br>plopez@onlinenw.net<br>503-687-1009 (office)<br>503-435-7191 (mobile) |
| Astound | Jeff McConville<br>Construction Manager CPM<br>669 Glatt Circle<br>Woodburn, Oregon 97071<br>jeffrey.mcconville@astound.com<br>503-318-9804 (mobile) |

The Contractor shall notify, in writing, the Utilities listed above, with a copy to the Engineer, at least 14 Calendar Days before beginning Work on the Project.

Utility relocation plans are available upon request.

**PGE - Power Suppliers -** Energized power lines overhang portions of the Work with a minimum vertical clearance of 18 feet. The Contractor shall maintain at least 10 feet of safety clearance. Exceptions require written approval from the Power Supplier(s) and may require an on-site safety watcher, at no cost to the Contractor. The Contractor shall provide the Engineer a copy of the written approval of exception before beginning Work.

**Comcast Cable, Ziply Fiber, OnLine NW, and Astound - Telecommunication Utilities** - The Contractor shall obtain written approval from Telecommunication Utilities that have fiber optic communication cable facilities, for excavating within 10 feet of a buried fiber optic communications cable. Telecommunication Utilities may require an on-site safety representative at no cost to the Contractor for monitoring purposes. The Contractor shall provide the Engineer a copy of the written approval before beginning Work.

**(1) City of Dayton - "Sewer Facility":**

The Contractor shall notify the Sewer Facility in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the Sewer facilities.

The Contractor shall notify the Sewer Facility in writing, with a copy to the Engineer, 14 Calendar Days before the Contractor is scheduled to begin performing excavation for sewerline Work.

**(2) City of Dayton - "Water Utility":**

The Contractor shall notify the Water Utility in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the Water Utility facilities.

The Contractor shall notify the Water Utility in writing, with a copy to the Engineer, 14 Calendar Days before the Contractor is scheduled to begin performing excavation for waterline Work.

## SECTION 00180 - PROSECUTION AND PROGRESS

Comply with Section 00180 of the Standard Specifications modified as follows:

Add the following subsection:

**00180.40(c) Specific Limitations** - Limitations of operations specified in these Special Provisions include, but are not limited to, the following:

| Limitations | Subsection |
|---|---|
| Cooperation with Utilities | 00150.50 |
| Contract Time | 00180.50(h) |
| Regulated Work Areas | 00290.34(a) |
| Noise Control | 00290.32 |

**00180.41 Project Work Schedules** -

After the paragraph that begins "One of the following Type…" add the following paragraph:

In addition to the "look ahead" Project Work schedule, a Type B schedule as detailed in the Standard Specifications is required on this Contract.

**00180.50(h) Contract Time** - There are two Contract Times on this Project as follows:

**(1)** The Contractor shall complete all Work to be done under the Contract required to install and commission the permanent water and sanitary sewer systems, remove the temporary water and sewer systems and remove the temporary work bridge superstructure not later than November 30, 2023.

**(2)** The Contractor shall complete all Work to be done under the Contract, not later than September 17, 2024.

**00180.85(b)(2) Multiple Contract Times** - Add the following paragraph and bullet list to the end of this subsection:

The Agency determined percentages of the value of Work required to be complete by the Contract Times listed under 00180.50(h) are as follows:

- For Contract Time 00180.50(h)(1) the Agency determined percentage of Work is 67 percent.

  For Contract Time 00180.50(h)(2) the Agency determined percentage of Work is 100 percent.

## SECTION 00210 - MOBILIZATION

Comply with Section 00210 of the Standard Specifications.

## SECTION 00231 - TEMPORARY ACCESS ROAD

Section 00231, which is not a Standard Specification, is included in this Project by Special Provision.

### Description

**00231.00 Scope** - This Work consists of constructing, maintaining, and removing temporary, unpaved access roads for the use of Contractor and Agency Equipment and personnel as needed, shown, or directed.

### Materials

**00231.11 Geotextile** - Furnish subgrade geotextile, embankment geotextile, or riprap geotextile, at the Contractor's option. Geotextile shall meet the requirements of Section 02320, with documentation according to 02320.10(c).

**00231.12 Geogrid** - Subgrade reinforcement geogrid, if used, shall meet the requirements of Section 02320.

**00231.13 Road Material** - Furnish crushed Aggregate Base, stone embankment, or other suitable granular material capable of supporting the weight of Equipment intended to use the temporary access road.

### Construction

**00231.41 Clearing** - Clearing brush and vegetation for temporary access roads is allowed in the areas shown or where directed. Preserve and protect trees as shown or directed.

**00231.42 Temporary Access Road** - Construct temporary access roads to the width, grade, profile, and depth of base sufficient to support the weight of Equipment using the road. Install geotextile or geogrid prior to placement of road material.

**00231.43 Not for Public Traffic** - Do not direct or allow Public Traffic to use temporary access roads constructed according to this Section.

**00231.44 Verification of Subgrade** - In areas where permanent earthwork construction is required on ground that has been occupied by a temporary access road, rework or replace unstable Materials to avoid and correct, according to 00330.40(c), excessive stress or strain that could be detrimental to the subgrade.

### Maintenance

**00231.60 Surface Maintenance** - Maintain temporary access roads so that the road surfaces remain firm, smooth, free of ruts or standing water, and are graded to prevent concentrations of runoff water. Promptly remove accumulations of mud or debris.

### Finishing and Cleaning Up

**00231.70 General** - When a temporary access road is no longer needed, do the following:

- Remove all Materials.
- Restore areas occupied by the temporary access road to the original ground contours or as directed.
- Apply permanent seeding to the area occupied by the temporary access road according to Section 01030.
- Dispose of excess materials according to 00330.41(a)(5).

### Measurement

**00231.80 Measurement** - Except for permanent seeding, no measurement of quantities will be made for Work performed under this Section.

Permanent seeding will be measured according to 01030.80.

### Payment

**00231.90 Payment** - The accepted quantities of Work performed under this Section, except for permanent seeding work, will be paid for at the Contract Lump Sum amount for the item "Construct and Remove Temporary Access Road".

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for removing and disposing of temporary access road materials or for restoring the areas to original ground contours.

Permanent seeding Work will be paid for according to 01030.90.

## SECTION 00252 - TEMPORARY WORK BRIDGES

Section 00252, which is not a Standard Specification, is included in this Project by Special Provision.

## Description

**00252.00 Scope** - This Work consists of designing , constructing, maintaining, and removing temporary work bridges or trestles necessary to construct the new structure and temporarily relocate existing force main sanitary sewer and water main utilities.

## Materials

**00252.10 Material** - Provide materials for temporary work bridges or trestles meeting the requirements of the applicable Sections of Part 00500.

## Construction

**00252.40 Construction** - Provide stamped Working Drawings and calculations of the work bridges or trestles according to 00150.35.

Design work bridges or trestles according to AASHTO *Guide Design Specifications for Bridge Temporary Works* and the following:

- Bottom soffit of work bridge is not allowed to extend below the El. 90.0.
- Provides at least one clear span of 40 feet centered over the river channel.
- Accommodates the temporary relocation of the existing force main sanitary sewer and water main utilities as shown.

Construct work bridges or trestles at the locations shown and according to AASHTO *Construction Hand Book for Bridge Temporary Works*.

Construct the work bridges or trestles so they satisfy all the requirements of applicable permitting agencies.

## Maintenance

**00252.60 Maintenance** - Maintain work bridges or trestles in a safe and functional condition.

Provide and place suitable approved barriers on or near the work bridges or trestles to prevent public access.

## Finishing and Cleaning Up

**00252.70 Structure Removal** - When the temporary work bridges or trestles are no longer needed, remove them according to Section 00310.

Satisfy all requirements of applicable permitting agencies during work bridge or trestle removal. Temporary work bridge superstructure shall be removed from November 30 to June 1. See also 00180.50(h)(1).

The Contractor must, within 48 hour notice from the Coast Guard or Engineer, remove the temporary work bridge superstructure.

Restore all areas occupied by the work bridges or trestles to original condition.

## Measurement

**00252.80 Measurement** - No measurement of quantities will be made for Work performed under this Section.

## Payment

**00252.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Temporary Work Bridges".

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for designing, constructing, maintaining, or removing temporary work bridges.

# SECTION 00253 - TEMPORARY WORK ACCESS AND CONTAINMENT

Comply with Section 00253 of the Standard Specifications modified as follows:

**00253.00 Scope** - Replace this subsection, except for the subsection number and title, with the following:

This Work consists of designing, installing, maintaining, and removing work access and containment systems on the Dayton Utility Bridge, for the following:

- Installation and removal of the temporary work bridge over the Yamhill River
- Removal of the existing bridge span 3 over the Yamhill River, as shown
- Installation of new bridge span 3 over the Yamhill River, as shown

The existing Dayton Utility Bridge is currently closed to pedestrian use due to timber decay in structural members. The following files are available to the Contractor upon request:

**(a) Plans** - Plans of the existing structure.

**(b) Bridge Inspection Report** - The 2018 Bridge Inspection Report of the existing structure.

**(c) Bridge Load Rating Report** - The 2018 Bridge Load Rating Report of the existing structure.

**00253.01 General** - Replace this subsection, except for the subsection number and title, with the following:

Install all necessary work access and containment systems before beginning Work in any area that requires them. Do not remove work access and containment systems in an area until all Work in that area has been accepted by the Engineer.

Collect and dispose of accumulations of debris and waste before disassembling work containment systems.

**00253.03 Submittals** - Replace this subsection, except for the subsection number and title, with the following:

**(a) Work Access and Containment Submittals** - Submit all specified stamped drawings, specifications and design calculations for work access and containment systems according to 00150.35 at least 21 Calendar Days prior to the installation of work access and containment system(s).

Submit the following:

- Stamped design calculations assuring that the existing Bridge structural members can safely resist the combined effects of dead loads, live loads, and wind loads
  - Field verify existing condition of timber structural members and connections and document findings in the Stamped design calculation submittal
- Stamped Working Drawings clearly defining the following:
  - Work access and containment system dead load (in pounds and pounds per square foot)
  - Maximum allowable accumulations of collected debris or water (inches depth) allowed in conjunction with all personnel, construction vehicles, Equipment, Material, and other simultaneous loading
- Appropriate submittals for access system(s), barge, or other information critical to the function of the work access and containment system.
  - Maximum allowable personnel, construction vehicles, Equipment, Material, and other simultaneous loading
  - Required structural repairs or temporary supports
- Stamped work access and containment specifications and design calculations

**(b) Barge Submittals** - Submit all specified stamped drawings, specifications and design calculations for barges, floats, and rafts supporting work according to 00150.35 at least 21 Calendar Days prior to the use of Barge(s).

Submit the following:

- Stamped barge plans detailing:
  - Equipment layout,
  - operational limitations including: storm surge, water levels, and wind speeds,
  - spuds, anchorages and Equipment anchorages,
- Stamped calculations including:
  - barge load capacity,
  - balance and stability,
  - strength of spuds and anchorages, and
  - strength of Equipment anchorage

- Specifications describing how barges are kept within safe load and balance/stability limits, and
- Narrative detailing how the outfitting, operation, and maintenance of the barges comply with the following:
  - operational, safety and environmental requirements according to 00290.30
  - United States Coast Guard requirements

**00253.04 Design Services** - Delete the sentence beginning with "Provide heating and ventilating…"

**00253.05 Containment Requirements** - Replace this subsection, except for the subsection number and title, with the following:

Contain work debris generated from bridge removal and new bridge construction Work from entering the Yamhill River. Immediately address any visible emission from containment systems.

**00253.07 Work Bridge Structural Design Requirements** - Delete this subsection.

**00253.08 Work Platform and Scaffolding Design Requirements** - Replace this subsection with the following:

**00253.08 Work Access and Containment Design Requirements**

**(a) Contractor-Designed** - For Contractor-designed work access and containment systems, provide stamped Working Drawings and stamped calculations of the work access and containment systems according to 00150.35.

Include the following information:

- All general notes for the design and construction of the access or containment system.
- Material list including Incidental items.
- Show layout of work access in relation to the existing Structure, temporary work bridge, drainage system and utilities.
- Detail the anchoring system that will be used to connect the temporary access or containment system to the existing or new Structure.
- Show all structure and geometric details including, but not limited to:
  - Loading conditions.
  - Connecting devices.
  - Construction around utilities, drainage, footings, bents, or other Structures.

**(b) Pre-Engineered** - Pre-engineered assemblies may be utilized for all or for portions of work access or containment system. Submit manufacturer's literature indicating safe working loads. Working Drawings and calculations for pre-engineered assemblies are not required.

**00253.10 Material Requirements** – Replace the sentence that begins with “Provide work platforms…”, with the following:

Provide work access and containment systems constructed of durable materials capable of meeting all performance requirements throughout the Project.

**00253.40 General** - Replace the following subsection, except the subsection title and number, with the following:

The existing Dayton Utility Bridge is closed to pedestrian use due to timber decay. Do not park vehicles, Equipment, or store Materials on the Bridge.

Install work access and containment systems so they contain all rubble and debris. Do not allow rubble or debris to fall into waterways.

Install work access and containment systems so they satisfy all the requirements of applicable permitting agencies.

Work access and containment are not allowed to extend below the El. 90.0.

**00253.42 Safety Requirements** - Replace the following subsection, except the subsection title and number, with the following:

Comply with all applicable requirements of OSHA.

For concrete removal and repair work, comply with all applicable requirements of OSHA Standard Number 1926.1153, Respirable Crystalline Silica, including Table 1.

**00253.60 Work Bridges, Work Platforms, Barges, and Containment** - Replace the subsection with the following:

**00253.60 Work Access Barges, and Containment** - Maintain work access, barges and containment systems in a safe and functional condition.

Where work access is adjacent to Public Traffic, including pedestrian traffic, provide and place suitable approved barriers to prevent public access.

**00253.70 Work Bridge Removal** - Delete this subsection.

**00253.71 Work Platform and Containment Structure Removal** - Replace the subsection with the following:

**00253.71 Work Access and Containment System Removal** - When attachments for work access and containment systems are removed from the Bridge, restore points of attachment to original condition and perform touch up Project Work so that the points of attachment match the surrounding surfaces.

**00253.90 Payment** - Replace the following subsection, except the subsection title and number, with the following:

The accepted quantities of work access and containment, including barges, will be paid for at the Contract Lump Sum amount for the item “Temporary Work Access and Containment”.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for designing, installing, maintaining, and removing work access and containment systems, including barges, structural repairs, temporary supports, or restoring the existing structure.

No payment will be made for Materials on Hand.

Payment for Work under this Section will be limited to 90 percent of the lump sum amount until satisfactory removal of the temporary work access and containment Materials and Equipment is complete.

## SECTION 00255 - TEMPORARY BRIDGE JACKING

Section 00255, which is not a Standard Specification, is included in this Project by Special Provision.

### Description

**00255.00 Scope** - This Work consists of temporarily raising and shoring the existing Span 2 near bent 3 and Span 4 near Bent 4, with jacking system for the purpose of removal and reconstruction of Span 3 superstructure and Bents 3 and 4 substructure. Once the Work is completed, the span will be lowered back into place and the jacking system removed.

The term “jacking system” includes jacking equipment, temporary support seat, or falsework jacking bent.

**00255.02 Plans** - Plans for the existing structure are available from the Engineer. Prints of these plans are available upon request.

**00255.03 Submittals** - Submit a stamped and detailed Bridge jacking work plan according to 00150.35, to the Engineer for review four weeks prior to Bridge jacking work. Design the work plan according to with the current AASHTO *LRFD Bridge Design Specifications*. Design the temporary support to carry all structure dead loads, live loads if allowed and construction loads.

Include the following information in the submittal:

- The proposed method of the jacking, and shoring.
- Descriptions of equipment to be used
- Descriptions and values of all loads, including construction equipment loads
- Justification for allowable bearing stresses used to support the falsework bent.
- Complete details and calculations for jacking and supporting the existing structure

This review does not relieve the Contractor of the responsibility for the safety of the method or Equipment. Do not perform Work until the work plan has been approved by the Engineer and all comments are adequately addressed.

**00255.04 Methods and Monitoring System** - The Bridge jacking work plan includes, but is not limited to, the following:

- Detailed time schedule of the planned operations.
- Details to temporarily strengthen the existing Bridge members as required. Design temporary supports not to induce permanent forces into the completed structure.
- Contingency plans to address potential malfunctions or interruptions in the work plan.
- Details to ensure stability of the Bridge while the Bridge is being raised, during the removal of the existing bridge, construction of new bridge bents 3 & 4 substructure replacement , construction of new bridge span 3 replacement, installation of the new bearing and lowering of the Bridge.
- Details of how secondary supports, such as blocking and cribbing, will be installed after the Bridge has been raised.
- Lateral stability of the Bridge and jacking system.
- Equipment that ensures uniform lifting of the Bridge.
- Provide a redundant system of supports during the entire jacking operation for backup should any of the jacks fail. Include stacks of steel plates added as necessary to maintain the redundant supports at each jack location within 1/4 inch of the jacking sill or corbels.

## Construction

**00255.50 Construction Sequence** – Do not temporarily jack existing spans until after the following construction activities have taken place:

- Temporary force main sanitary sewer and water main utilities have been constructed and commissioned.
- Existing force main sanitary sewer and water main utilities have been decommissioned and removed from the existing Bridge.
- Existing Bridge span 3 superstructure and suspension rod system have been removed

**00255.51 Jacking Operations:**

**(a) General** - Control and monitor the jacking operations to ensure that the jacking loads are applied simultaneously to prevent distortion and excessive stresses that would damage the structure. Jack the superstructure as necessary to maintain the total vertical displacements at control points to less than 1/4 inch from the elevations recorded prior to jacking or as modified by the Engineer.

Remove attachments from the existing structure and concrete surfaces to restore to original conditions, except where permanent alterations are shown on the plans.

**(b) Unanticipated Displacements** - If, during construction, unanticipated displacements, cracking or other damage occur, do the following:

- Discontinue the construction until corrective measures satisfactory to the Engineer are performed.
- Repair damage to the structure as a result of the Contractor's operations.

**Measurement**

**00255.80 Measurement** - No measurement of quantities will be made for Work performed under this Section.

**Payment**

**00255.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item “Bridge Jacking at Bent _____”.

The Bent number will be inserted in the blank.

Payment will be payment in full for furnishing the Bridge jacking work plan, furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for designing, constructing, maintaining, inspecting, or removing the temporary Bridge jacking.

## SECTION 00280 - EROSION AND SEDIMENT CONTROL

Comply with Section 00280 of the Standard Specifications modified as follows:

**00280.15(f)(1) Filter Sock Material** - Add the following sentence to the end of this subsection:

Furnish filter sock material with a diameter of 12 inches.

Add the following subsection:

**00280.17 Work Zone Fencing** - Use work zone fencing from the QPL.

**00280.46(a) Construction Entrances** - Add the following to the end of this subsection:

Construct the construction entrances as shown or directed.

Add the following subsection:

**00280.49 Work Zone Fencing** - Install work zone fencing as shown or as directed.

**00280.90 Payment** - In the paragraph that begins " No separate or additional…" add the following bullet to the end of the bullet list:

- Furnishing, installing, maintaining, moving, and removing work zone fencing.

## SECTION 00290 - ENVIRONMENTAL PROTECTION

Comply with Section 00290 of the Standard Specifications modified as follows:

Add the following subsection:

**00290.30(a)(7) Water Quality**:

- Do not discharge contaminated or sediment-laden water, including drilling fluids and waste, or water contained within a work area isolation, directly into any waters of the State or U.S. until it has been satisfactorily treated (using a best management practice such as a filter, settlement pond, bio-bag, dirt-bag, or pumping to a vegetated upland location).
- Do not use permanent stormwater quality treatment facilities to treat construction runoff unless prescribed by an ESCP approved under Section 00280.
- If construction discharge water is released using an outfall or diffuser port, do not exceed velocities more than 4 feet per second, and do not exceed an aperture size of 1 inch.
- Do not use explosives under water.
- Implement containment measures adequate to prevent pollutants or construction and demolition materials, such as waste spoils, fuel or petroleum products, concrete cure water, silt, welding slag and grindings, concrete saw cutting by-products and sandblasting abrasives, from entering waters of the State or U.S.
- Implement containment measures adequate to prevent flowing stream water from coming into contact with concrete or grout within the first 24 hours after placement.
- Cease Project operations under high flow conditions that may result in inundation of the Project area, except for efforts to avoid or minimize resource damage.
- The Engineer retains the authority to temporarily halt or modify the Work in case of excessive turbidity or damage to natural resources.
- If Work activities violate permit conditions or any requirement of this subsection, stop all in-water work activities and notify the Engineer.

Add the following subsection:

**00290.30(a)(8) Visual Turbidity Monitoring** - In addition to any turbidity monitoring required by 00280.62(c) to comply with NPDES 1200 series requirements, monitor turbidity visually during in-water work according to the following:

- Before beginning Work, make upcurrent and downcurrent in stream turbidity observations.

- Every four hours, make observations at an upcurrent location outside the influence of the Project, and at a downcurrent location that indicates any turbidity caused by the Project.
- Document all turbidity monitoring observations including date, time, and location on form 734-2755, “Turbidity Monitoring Form” or another form approved by the Agency. Submit reports to the Engineer weekly during in-water work and keep copies of the reports at the Project Site.
- If a downcurrent turbidity plume is observed, modify work procedures and repair or implement in-water best management practices (BMP). If a turbidity plume is still observed at the next four-hour observation, stop all in-water work and repair or implement additional BMP. Resume in-water work when there is no longer a visible turbidity plume.

**00290.32 Noise Control** - Add the following paragraphs to the end of this subsection:

Review Dayton Municipal Code section 2.08 which describes noise control regulations. Comply with the applicable noise control requirements for Project Work.

**00290.34 Protection of Fish and Fish Habitat** - Add the following paragraph:

Meet with the Agency Biologist, Resource Representative, Engineer, and inspector on site, before moving equipment on-site or beginning any work, to ensure that all parties understand the locations of sensitive biological sites and the measures that are required to be taken to protect them.

**00290.34(a) Regulated Work Areas** - Add the following to the end of this subsection:

The regulated work area is the area at or below the ordinary high water (OHW) elevation shown on the plans.

Perform work within the regulated work area only during the in-water work period. The in-water work period is from June 1 to October 15.

The total volume of material filled or discharged into waters of the State and waters of the U.S. shall not exceed 265 cubic yards.

The total volume of material excavated from the waters of the State and waters of the U.S. shall not exceed 265 cubic yards.

Submit a schedule to complete all work within the regulated work area within the in-water work period at least 10 days prior to the preconstruction conference.

**00290.34(b) Prohibited Operations** - Add the following to the end of this subsection:

- Allow entry within the regulated work area.
- Install steel piles greater than 24 inches in diameter or H-pile larger than designation HP 24 within the regulated work area.

Add the following subsection:

**00290.34(c) Aquatic Species Protection Measures Required by Environmental Permits:**

**(1) General Requirements:**

- Do not install fish ladders (for example: pool and weirs, vertical slots, fishways) or fish trapping systems.
- Do not apply surface fertilizer within 50 feet of any stream channel.

Use heavy equipment as follows:

- Choice of equipment must have the least adverse effects on the environment (for example: minimally sized, low ground pressure).
- Secure absorbent material around all stationary power equipment ( for example: generators, cranes, drilling equipment) operated within 150 feet of wetlands, waters of the State, waters of the U. S., drainage ditches, or water quality facilities to prevent leaks, unless suitable containment is provided to prevent spills from entering waters of the State or waters of the U.S.
- Do not cross directly through a stream for construction access, unless shown or approved. If shown or approved, cross perpendicular to the stream and do not block stream flow. When a crossing is no longer needed, completely remove the crossing and restore the soils and vegetation to the original condition.
- Store fuel and maintain all equipment in staging areas that are at least 150 feet away from any waters of the State, waters of the U.S., or storm inlet or on an impervious surface that is isolated from any waters of the State, waters of the U.S., or storm inlet.
- If temporary access roads are needed within 150 feet of any body of water, use existing routes unless new routes are shown or approved.
- Before beginning work on temporary access routes that are not shown, submit a proposal to the Engineer for approval.

**(2) Site Restoration** - Restore damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation unless precluded by pre-project conditions (for example: natural rock substrate):

- Replant all damaged streambanks before the first April 15 following construction.
- If use of large wood, native topsoil, or native channel material is required for the site restoration according to the roadside development plans, stockpile all large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction. Cut trees or large wood and trees into pieces of no less than 20 feet in length, or as shown on the roadside development plans or as directed. Stockpiled native wood and vegetation remain the property of the Agency.
- Stabilize all disturbed soils, including obliteration of temporary access roads, following any break in work unless construction will resume in 4 Calendar Days.

**(3) Hydro-Acoustic** - Unless otherwise shown or approved, steel piling may be installed below the ordinary high water as follows:

- Minimize the number and diameter of pilings, as feasible.
- Whenever feasible, use vibratory hammer for piling installation. Otherwise, use the smallest drop or impact hammer necessary to complete the job, and set the drop height to the minimum necessary to drive the piling.
- For all pile installed or removed, maintain a pile installation and removal log and submit the log when the related work is completed. Include types, sizes, locations, installation or removal methods, and dates in the log.
- When using an impact hammer to drive or proof steel piling within a body of water, or as directed, use one of the following sound attenuation devices to effectively dampen sound:

    - Completely isolate the pile from the waters of the State and waters of the U.S. by dewatering the area around the pile according to Section 00245.
    - If water velocity is 1.6 feet per second or less, surround the pile being driven with a bubble curtain that distributes small air bubbles around 100 percent of the piling perimeter for the full depth of the water column and is in accordance to the guidance in the Appendix of The ODOT-FHWA Federal Aid Highway Program Programmatic User's Guide titled *NMFS and USFWS Impact Pile Driving Sound Attenuation Specifications*. The FAHP User's Guide is available on the Agency's website at:

      https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Manuals.aspx

    - If water velocity is greater than 1.6 feet per second, surround the piling being driven by a confined bubble curtain (for example: a bubble ring surrounded by a fabric or metal sleeve) that will distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column and is in accordance to the guidance in the Appendix of The ODOT-FHWA FAHP User's Guide titled *NMFS and USFWS Impact Pile Driving Sound Attenuation Specifications*.

**(4) Treated Wood** - Treated wood includes any wood treated with any pesticide or wood preservatives. Do not use lumber, pilings, or other wood products that are treated or preserved with pesticidal compounds below the ordinary high water (OHW) or as part of an in-water or over-water structure, except as described below:

- Store treated wood shipped to the Project out of contact with standing water and wet soil, and protected from precipitation.
- Visually inspect each load and piece of treated wood. Reject for use in or above aquatic environments if visible residues, bleeding of preservative, preservative-saturated sawdust, contaminated soil, or other matter is present.
- Use pre-fabrication to the extent feasible. When field fabrication is necessary, all cutting and drilling of treated wood, and field preservative treatment of wood exposed by cutting and drilling, shall occur above the OHW. Use tarps, plastic tubs, or similar devices to contain the bulk of any fabrication debris, and wipe off any excess field preservative.

- All treated wood structures, including pilings, shall have design features to avoid or minimize impacts and abrasion by livestock, pedestrians, vehicles, vessels, and floats.
- Treated wood may be used to construct a bridge, over-water structure or an in-water structure, with the exception of the work containment system, provided that all surfaces exposed to leaching by precipitation, overtopping waves, or submersion are coated with a water-proof seal or barrier are maintained. Apply and contain coatings and paint-on field treatment to prevent contamination. Surfaces that are not exposed to precipitation or wave attack, such as parts of a timber bridge completely covered by the bridge deck, are exempt from this requirement.
- During demolition of treated wood, ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, remove it immediately.
- Store removed treated wood debris in appropriate dry storage areas, at least 150 feet away from the regulated work area.

**(5) Piling Removal** - Remove temporary or permanent piling according to the following:

- Dislodge the piling with a vibratory hammer, whenever feasible.
- Once loose, place the piling onto the construction barge or other appropriate dry storage site.

**a. Non-Treated Piling** - Use the following methods to remove non-creosote piling:

- If a pile in uncontaminated sediment cannot be removed or breaks, cut or push the pile or stump off at least 3 feet below the surface of the sediment and cover with a cap of clean, native substrates that match surrounding streambed materials.

**(6) Injured Fish Notification** - If a dead or injured fish is found in the project area, immediately notify the Agency. If the injured fish is in a location where further injury or stress may take place, attempt to move the fish to a safer location, if one is available, near the capture site while keeping the fish in the water and reducing its stress as much as possible. Do not disturb the fish after it has been moved. If the fish is dead or dies while being captured or moved, save the fish and any tags. The Agency will notify appropriate regulatory agencies about the injured or dead fish and provide additional direction to the Contractor.

**00290.41 Protection of Waters of the U.S. or State** - Add the following to the end of this subsection:

Permits have been obtained for this project from the US Army Corps of Engineers (Corps). Keep a copy of Corps permit at the project site during construction. Changes to the project that may increase the amount of fill placed or material removed in waters of the U.S. or State, or the acreage of waters impacted are not authorized. The following waters of the U.S. or State are present and have been determined to be unavoidable as indicated in Table 00290-2:

**Table 00290-2**

| Impact Waters of the US or State | Removal Volume (cu yds.) | Fill Volume (Cu yds) | Station | Duration of Impact (Temporary or Permanent) | Area of impact (Acres) |
|---|---|---|---|---|---|
| Yamhill River | 265 | 265 | Varies | Temporary | .005 |
| Wetland B | 36 | 36 | 12+50 | Permanent | .011 |

Add the following subsection:

**00290.42 Work Containment Plan** - A Work Containment Plan (WCP) is required on this Project for bridge removal and construction activities.

Develop and submit a WCP for approval at least 28 Calendar Days prior to mobilization for bridge removal and construction activities. Maintain a copy of the WCP on the Project Site at all times during construction, readily available to employees and inspectors. Ensure that all employees comply with the provisions of the WCP. Design the WCP to avoid or minimize disturbance to protected features (sensitive cultural or natural resources, regulated work areas, aquatic life or habitat in regulated work areas) related to Contractor operations.

Before developing the WCP, meet with Agency to review the Contractor's activities that require the WCP to ensure that all parties understand the locations of protected features to be avoided and the measures needed to avoid and protect them.

Notify the Engineer at least 10 Calendar Days before beginning work access or containment construction activities.

The Agency reserves the right to stop Work and require the Contractor to change the WCP methods and Equipment before any additional Contract Work, at no additional cost to the Agency, if and when, in the opinion of the Agency, such methods jeopardize sensitive cultural or natural resources, regulated work areas, or aquatic life or habitat in regulated work areas.

The WCP shall identify how the Contractor's construction operations will protect regulated features during mobilization, construction, maintenance, and demolition. Include a narrative describing compliance with Section 00290 as related to construction, operation, and demolition activities specified in Section 00253.

Design, construct, maintain, and remove temporary work access and containment systems according to Section 00253.

**00290.90 Payment** - Add the following paragraph(s) to the end of this subsection:

The work containment plan will be paid for at the Contract lump sum amount for the item "Work Containment Plan".

Payment will be payment in full for furnishing all Materials, Equipment, labor, and Incidentals necessary to complete the Work as specified. Payment includes providing and updating the Work Containment Plan.

The accepted quantities of turbidity monitoring will be paid for at the Contract lump sum amount for the item "Turbidity Monitoring".

Payment for turbidity monitoring will be payment in full for furnishing and placing all Materials and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

## SECTION 00305 - CONSTRUCTION SURVEY WORK

Comply with Section 00305 of the Standard Specifications modified as follows:

Delete the bullet that begins “A narrative outlining…”

## SECTION 00310 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Comply with Section 00310 of the Standard Specifications modified as follows:

**00310.90 Payment** - Add the following to the end of this subsection:

No separate or additional payment will be made for removal or disposal Work included in Section 00330 according to 00310.02.

## SECTION 00320 - CLEARING AND GRUBBING

Comply with Section 00320 of the Standard Specifications.

## SECTION 00330 - EARTHWORK

Comply with Section 00330 of the Standard Specifications modified as follows:

**00330.03 Basis of Performance** - Add the following paragraph to the end of this subsection:

Perform all earthwork under this Section on the excavation basis.

**00330.14 Selected Granular Backfill** - Delete the sentence that begins “Reclaimed glass meeting the requirements of Section 02695…”

**00330.15 Selected Stone Backfill** - Delete the sentence that begins “Reclaimed glass meeting the requirements of Section 02695…”

## SECTION 00350 - GEOSYNTHETIC INSTALLATION

Comply with Section 00350 of the Standard Specifications modified as follows:

**00350.01 Definitions** - Replace the sentence that begins "**Embankment Geotextile** - For installation…" with the following sentence:

**Embankment Geotextile** - Embankment geotextile is used as a reinforcement within embankments and as a separation and reinforcement under embankments.

Replace the bullet that begins "**Nonwoven Geotextile** - A textile…" with the following bullet:

- **Nonwoven Geotextile** - A textile produced by bonding or interlocking of fibers by mechanical, heat or chemical means.

Replace the sentence that begins "**Riprap Geotextile** - For installation…" with the following sentence:

**Riprap Geotextile** - Riprap geotextile is used as a filter and separator behind or beneath riprap, Buttresses, inlays, shear keys and erosion control applications.

Replace the sentence that begins "**Subgrade Geotextile** - For installation…" with the following sentence:

**Subgrade Geotextile** - Subgrade geotextile is used as a separator and reinforcement on Subgrades and in other material separation applications.

**00350.41(f)(5) Geotextile Placement** - Replace the paragraph that begins "Slit wrinkles or folds …" with the following paragraph:

Slit wrinkles or folds exceeding 1 inch and lay flat. Shingle-lap not more than 6 inches in the direction of the paving. Broom or squeegee to smooth the geotextile and pneumatic roll to maximize geotextile contact with the Pavement surface. Additional hand-placed sealant material may be required at laps as determined.

## SECTION 00390 - RIPRAP PROTECTION

Comply with Section 00390 of the Standard Specifications modified as follows:

Add the following subsection:

**00390.14 Riprap with Fines** - Furnish Rock for riprap with fines meeting the requirements of 00390.11 and furnish 3/4"-0 aggregate base rock to be mixed into the voids of the riprap.

**00390.41 Riprap Geotextile** - Replace this subsection, except for the subsection number and title, with the following:

Install riprap geotextile according to the requirements of Section 00350 and as shown or directed.

**00390.43 Riprap Backing** - Delete this subsection.

Add the following subsection:

**00390.44(f) Riprap with Fines** - Following the placement of riprap, place 3/4”-0 aggregate base rock into the voids of the Loose Riprap as shown or directed. The 3/4”-0 aggregate base rock may be placed onto the riprap voids by broadcast spreading the material across the riprap surface and washing the material into the voids with water. This process shall be repeated until the riprap voids are completely filled with riprap top dressing material. The riprap surface shall be uniform after placement of the 3/4¾”-0 aggregate base rock.

**00390.80(b) Riprap Backing** - Delete this subsection.

**00390.90 Payment** - Delete Pay Item (b) from the Pay Item list.

## SECTION 00405 - TRENCH EXCAVATION, BEDDING, AND BACKFILL

Comply with Section 00405 of the Standard Specifications modified as follows:

**00405.90 Payment** - Add the following paragraph to the end of this subsection:

When the Contract Schedule of Items does not indicate payment for Work performed under this Section, no separate or additional payment will be made. Payment will be included in payment made for the appropriate items under which this Work is required.

## SECTION 00415 - VIDEO PIPE INSPECTION

Comply with Section 00415 of the Standard Specifications modified as follows:

**00415.42(a) Remote Video Inspection with Laser Profiler** - Replace the paragraph that begins "Use video inspection equipment meeting…" with the following paragraph:

Use video inspection equipment meeting the requirements of 00415.22. Calibrate the laser profiler according to the manufacturer's specifications and ASTM F3080 Section 9.

## SECTION 00440 - COMMERCIAL GRADE CONCRETE

Comply with Section 00440 of the Standard Specifications modified as follows

**00440.12 Properties of Commercial Grade Concrete** - Replace the bullet that begins "**Slump** - 5 inches…" with the following bullets:

**Slump** - 5 inches or less
For concrete sidewalks, ramps, driveways, or other hand finished surface applications, and when using a high range water reducing admixture, provide a slump of 8 inches or less as approved by the Engineer.

**00440.13 Field-Mixed Concrete** - Replace the subsection, except for subsection number and title, with the following:

CGC Work items listed in 00440.14(a) may be field-mixed conventionally, or by volumetric/mobile mixers conforming to ASTM C685. When approved, concrete sidewalks, concrete curb ramps, concrete driveways, and other flat concrete surfaces may be field-mixed using volumetric/mobile mixers conforming to ASTM C685, request approval prior to placement. For all other CGC applications, submit written request to the Engineer for approval to use volumetric/mobile mixers conforming to ASTM C685 at least 21 Days prior to placement.

Pre-packaged dry blended concrete from the QPL may be used for Work items listed in 00440.14(a).

**00440.40(b) Placing** - Add the following bullet to the end of the bullet list:

When haul time or placement conditions warrant exceeding the time of discharge, submit a detailed breakdown of the estimated time needed from batching to discharge of a load along with the measures that will be taken to ensure slump, temperature and uniformity will be maintained. Submit in advance to establish a new time limit at the Engineer's discretion.

## SECTION 00445 - SANITARY, STORM, CULVERT, SIPHON, AND IRRIGATION PIPE

Comply with Section 00445 of the Standard Specifications.

## SECTION 00470 - MANHOLES, CATCH BASINS, AND INLETS

Comply with Section 00470 of the Standard Specifications modified as follows:

**00470.41(c) Grates, Frames, Covers and Fittings** - Replace this subsection, except for the subsection number and title, with the following:

Set metal frames for manholes on full non-shrink grout beds to prevent infiltration of surface water or groundwater between the frame and the concrete of the manhole section. If concrete is to be poured around the frames, coat the portion of the frame that will contact the concrete with hot asphalt before placing the concrete. Set frames, covers and grates true to the locations and grades established. Clean bearing surfaces and provide uniform contact. The use of a bolt adjustment system for frames from the QPL is allowed. Secure all fastenings. Construct all mortared, sanitary sewer manhole necks and all riser ring joints made with non-shrink grout using an approved commercial concrete bonding agent applied to all cured concrete surfaces being grouted.

**00470.42 Precast Concrete Catch Basins and Inlets** - Add the following sentence to the end of this subsection:

Grade adjustments using a bolt system from the QPL is allowed.

## SECTION 00490 - WORK ON EXISTING SEWERS AND STRUCTURES

Comply with Section 00490 of the Standard Specifications.

## SECTION 00495 - TRENCH RESURFACING

Comply with Section 00495 of the Standard Specifications modified as follows:

**00495.80 Measurement** – Replace this subsection, except for the subsection number and title, with the following:

The quantities of trench resurfacing will be measured on the area basis. The length will be measured horizontally along the centerline of the installed pipe from edge to edge of the surface replaced. The width will be the nominal inside diameter of the pipe plus 24 inches for all pipes.

## SECTION 00501 - BRIDGE REMOVAL

Comply with Section 00501 of the Standard Specifications modified as follows:

**00501.00 Scope** - Add the following paragraph to the end of this subsection:

Remove portions of the existing bridge over Yamhill River as shown.

Add the following subsection:

**00501.02 Plans** - Plans of the existing structure are available for viewing at the office of the Engineer. Prints of these plans are available upon request.

Add the following subsection:

**00501.03 Submittals** - Submit stamped bridge removal plans according to 00150.35 21 Calendar Days before beginning removal work.

Include the following information in the submittal:

- Removal sequence, including contractor staging and traffic staging.
- Detailed schedule of bridge removal work.
- Type of equipment that will be used, including size and capacity.
- Equipment location during removal operations.

Do not begin bridge removal work until the bridge removal plans have been approved.

Add the following subsection:

**00501.45 Salvage** - Salvage and reinstall the following items:

- Four (4) existing timber rail posts, bracing, and hardware assemblies

**00501.90 Payment** - Add the following to the end of this subsection:

Payment includes removing, salvaging, stockpiling, and reinstalling portions of the existing bridge as shown and specified.

## SECTION 00510 - STRUCTURE EXCAVATION AND BACKFILL

Comply with Section 00510 of the Standard Specifications modified as follows:

**00510.04(a) Defined Shoring Systems** - Add the following to the end of this subsection:

Construct shoring at the location(s) listed below:

| Beginning Station | Ending Station | Shoring System Type(s) Allowed |
|---|---|---|
| Station “UB” 12+52.80 Lt. | Station “UB” 12+68.80 Rt. | 5A & 5B |
| Station “UB” 14+72.80 Lt. | Station “UB” 14+88.80 Rt. | 5A & 5B |

**00510.80(b)(1) Lump Sum** - Add the following to the end of this subsection:

The estimated quantity of structure excavation is:

| Location | Structure Excavation (Cubic Yard) |
|---|---|
| Dayton Utility Bridge – Bent 3 | 174 |
| Dayton Utility Bridge – Bent 4 | 163 |

## SHORING DESIGN CHECKLIST

**Instructions** - This shoring design checklist was developed to facilitate the design, review, and erection of shoring to be used for ODOT construction projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The Checklist is to be completed by the shoring design engineer. Answer every question. Attach to the Checklist an explanation of any negative responses.

Submit this Shoring Design Checklist for each stage and phase of the project, along with the shoring design summary, Working Drawings and calculations according to 00510.04.

| | | YES | NO | N/A |
|---|---|---|---|---|
| **A.** | **General** | | | |
| 1. | Are the shoring Working Drawings and supporting calculations prepared, stamped, and signed by an engineer registered to practice in the state of Oregon? | ____ | ____ | ____ |
| 2. | Are the temporary shoring installation plans, construction sequence, and removal plan compatible with the project construction staging/phasing? | ____ | ____ | ____ |
| **B.** | **Design Standards** | | | |
| 1. | Does the shoring design comply with standards identified in ODOT GDM 15.3.26.3 and related sections? | ____ | ____ | ____ |
| 2. | Is the design standard and edition identified in the shoring design calculations? | ____ | ____ | ____ |
| **C.** | **Loading** | | | |
| 1. | Have the design loads, including special loading conditions (e.g. cranes, stockpiles, etc.), used for shoring design of all members been noted in the design calculations? | ____ | ____ | ____ |
| 2. | Have the appropriate load and resistance factors or factors of safety on the shoring system been identified, for all applicable load combinations or load cases? | ____ | ____ | ____ |
| 3. | If public traffic is near or directly above the shoring system, has a minimum traffic live load surcharge of 250 psf been applied? | ____ | ____ | ____ |
| 4. | Have the loads from actual construction equipment and not less than 250 psf been included in the shoring system design? | ____ | ____ | ____ |

5. Have the construction loads for different stages of construction been considered and included in the calculations? ____ ____ ____

6. Have the effects of any construction activities adjacent to the shoring system on the stability/performance of the shoring system been addressed in the shoring design (e.g., excavation or soil disturbance in front of the wall or slope, excavation dewatering, vibrations and soil loosening due to soil modification/construction activities)? ____ ____ ____

7. Have earth pressure diagrams been included? ____ ____ ____

8. Does the shoring design consider the effect of water saturated soil pressure acting on the full height of the shoring? ____ ____ ____

**D. Geotechnical and Structural Analysis**

1. Has internal stability been evaluated? ____ ____ ____

2. Has eccentricity/overturning stability been evaluated? ____ ____ ____

3. Has sliding been evaluated? ____ ____ ____

4. Has overall/global stability been evaluated? ____ ____ ____

5. Has bearing capacity been evaluated? ____ ____ ____

6. Have displacement constraints or other performance objectives of the shoring system been identified and evaluated? ____ ____ ____

7. Has each stage of the shoring system construction been evaluated to carry traffic and construction loads and ensure internal and external stability through the construction and loading sequence? ____ ____ ____

8. Are the allowable stress and the calculated stress listed in the summary for each different shoring member? ____ ____ ____

9. Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? ____ ____ ____

10. Have connections for all phases of construction and removal been designed for all interim loading? ____ ____ ____

11. Has buckling, bracing strength, and stiffness been evaluated for all compression members? ____ ____ ____

**E. Materials**

1. Are all soil, rock, and other material properties used for the design of the shoring system provided and consistent with GDM and the subsurface field and lab data? ____ ____ ____

2. Are timber grades noted on shoring drawings and in accompanying calculations? ____ ____ ____

3. Are the minimum lumber dimensions shown in the calculations and noted on the Working Drawings? ____ ____ ____

4. Are steel structural shapes, bolts, connections, and plates identified by ASTM number on the shoring Working Drawings and in the calculations? ____ ____ ____

**F. Shoring Working Drawings**

1. Is the field verified ground topography above and below the shoring wall shown? ____ ____ ____

2. Are all existing, adjusted or new utilities, structures, and “no work zones” in proximity to the proposed shoring shown on the shoring Working Drawings and is protection of these items addressed? ____ ____ ____

3. Are horizontal and vertical clearance requirements identified and shown on the shoring Working Drawings? ____ ____ ____

4. Are plan view, elevation and cross sections drawn to scale, with dimensions defining location and size of the temporary shoring, components, and excavation limits? ____ ____ ____

5. Are the magnitude and location of all loads, equipment and personnel that will be supported by the shoring shown or noted on the shoring Working Drawings? ____ ____ ____

6. Has a dewatering plan been shown? ____ ____ ____

7. Have all connections been detailed? ____ ____ ____

8. Has bracing been detailed? ____ ____ ____

**G. Testing and Monitoring**

1. If a “yes” response to No. D-6, is a monitoring plan provided to verify adequate performance of the shoring system throughout the design life of the system? ____ ____ ____

2. Has a load testing program been provided for soil nails, tiebacks, or other applicable elements of the shoring system ____ ____ ____

_____ _____

Design Engineer of Record Signature Date

## SECTION 00512 - DRILLED SHAFTS

Comply with Section 00512 of the Standard Specifications modified as follows:

**00512.80(d) Drilled Shaft Concrete** - Add the following at the end of this subsection:

The estimated quantity of drilled shaft concrete is:

| Structure | Quantity (Cubic Yard) |
|---|---|
| Dayton Utility Bridge | 308 |

**00512.80(e) Drilled Shaft Reinforcement** - Add the following at the end of the paragraph:

The estimated quantity of drilled shaft reinforcement is:

| Structure | Uncoated Reinforcement Quantity (Pound) | | |
|---|---|---|---|
| | Grade 60 | Grade 80 | Grade 100 |
| Dayton Utility Bridge | 81,500 | - | - |

## SECTION 00530 - STEEL REINFORCEMENT FOR CONCRETE

Comply with Section 00530 of the Standard Specifications modified as follows:

**00530.80(a) Lump Sum** - Add the following to the end of this subsection:

The estimated quantity of reinforcement is:

| Structure | Uncoated Reinforcement Quantity (Pound) | | |
|---|---|---|---|
| | Grade 60 | Grade 80 | Grade 100 |
| Dayton Utility Bridge | 60,750 | 48,750 | - |

| Structure | Coated Reinforcement Quantity (Pound) | | |
|---|---|---|---|
| | Grade 60 | Grade 80 | Grade 100 |
| Dayton Utility Bridge | 250 | - | - |

The weight of miscellaneous metal, based on weights listed in 00530.80(b) and Project quantities, is included in the estimated quantity of uncoated reinforcement.

SECTION 00535 - RESIN BONDED ANCHOR SYSTEMS

Replace Section 00535 of the Standard Specifications with the following Section 00535:

## SECTION 00535 - POST-INSTALLED ANCHOR SYSTEMS

### Description

**00535.00 Scope** - This Work consists of drilling and preparing holes in hardened concrete and providing and installing anchor bolts and/or reinforcement using a resin bonded anchor system or a mechanical anchor system as shown.

**00535.01 Required Submittals** - For resin bonded anchor installation horizontally or upwardly inclined submit personnel qualifications according to 00535.30 at least 21 Calendar Days before starting Work.

### Materials

**00535.10 Materials** - Provide the Engineer with:

- Certification, according to 00165.35, that the anchor system meets all requirements for the Project.
- Mill test certificates verifying the strengths of material used in the manufacture of the anchors.

**(a) Resin Bonded Anchor System** - Furnish anchor bolts meeting the requirements of 02560.30 and reinforcing steel meeting the requirements of Section 02510 as shown. High strength anchor bolts meeting the requirements of ASTM A193, Grade B7 may be substituted in place of these specified in 02560.30(b).

Furnish a polyester, vinyl ester, or epoxy resin bonding system from the QPL that sustains the minimum pullout force shown. Resin used for installation of the anchor system as shown shall be the same lot used for testing according to 00535.45(a)(1).

Unless shown otherwise, do not install anchors larger than 1 inch in diameter using a resin-bonded anchor system.

Unless shown otherwise, galvanize all anchors which have any portion of the anchor exposed. Galvanize according to AASHTO M 232 (ASTM A153) or AASHTO M 298 (ASTM B695), Class 50. When within 25 aerial miles of the Pacific Ocean, galvanize according to AASHTO M 232 (ASTM A153) only. Anchors that become completely encased in concrete will not require galvanizing.

Provide thread lengths as shown. If thread lengths are not shown and the anchor is not rebar, provide threads on the resin-bonded end of the anchor for at least 80 percent of the embedment depth shown.

**(b) Mechanical Anchor System** - Furnish a mechanical anchor system from the QPL that sustains the minimum pullout force and is not longer than the embedment depth shown. Anchors used for installation shall be the same lot used for testing according

to 00535.45(a)(2). Unless shown otherwise, provide galvanized mechanical anchors according to AASHTO M 232 (ASTM A153).

## Labor

**00535.30 Qualified Personnel** - Provide ACI/CRSI adhesive anchor certified personnel for installation of resin bonded anchors horizontally or upwardly inclined (including vertically overhead). Contact Oregon Chapter of ACI, (503) 753-3075, www.oregonaci.org

## Construction

**00535.40 Construction** - Install the anchor system according to the Manufacturer's Printed Installation Instructions (MPII) and to the embedment depths shown.

**(a) General** - Locate existing reinforcing bars. If existing reinforcement is encountered, adjust the hole location to avoid conflicts as shown or as directed. Avoid installing anchors in cracked concrete. Patch abandoned holes with a PCC repair material meeting the requirements of Section 02015 and according to the manufacturer’s recommendations.

Clean holes with a nonmetallic brush, compressed air, and water. Remove excess water from the hole. The cleaned hole may be damp, but shall be free of concrete dust, foreign matter, and standing water. Protect drilled and cleaned hole from contamination. If the drilled hole becomes contaminated, as determined by the Engineer, re-clean the hole.

Do not install anchors until concrete has cured for 21 Calendar Days.

Provide components connected to the installed anchors with the same metal type or provide electrical isolation when metal type of the components is dissimilar or unknown.

**(b) Resin Bonded Anchor System** - Unless stated otherwise in the manufacturer's instructions, use a drill bit diameter 1/8 inch larger than the nominal anchor diameter for AASHTO M 314 anchors and 5/64 inch larger than the out-to-out diameter for rebar.

Install horizontally inclined, upwardly inclined, or vertically overhead resin bonded anchors using a piston plug method.

Do not install resin bonded anchors when the concrete temperature is below 50 °F, unless otherwise advised by the resin manufacturer’s recommendations.

For anchors resisting sustained tension loads do not load or torque anchors until 24 hours after the manufacturer’s minimum full cure time.

For resin bonded anchor system with anchor bolts and nuts, after the resin is fully cured, mark the position of the nut with a felt tip pen or similar marker. Rotate the nut of each anchor bolt past snug-tight by no more than 1/6 turn, unless shown otherwise, to avoid unintended damage.

**00535.45 Testing** - Perform demonstration tests and production tests on anchors as specified in the anchor test summary at the frequency in the MFTP.

Perform demonstration tests before installing the anchor system and perform production tests during anchor installation Work at agreed upon locations.

Do not incorporate demonstration test anchors into the Work. Do not begin installing the anchor system until the installation process is approved. Test results with the average load meeting or exceeding the minimum pullout force will be acceptable. If any test anchor has a capacity less than 95 percent of the minimum pullout force, the anchor lot will be rejected.

**(a) Demonstration Tests** - Demonstrate the installation process for each lot of post-installed anchor system and each anchor type and size.

Install three test anchors using the same materials and methods that will be used for installing the anchor system. One demonstration test includes 3 test anchors.

**(1) Resin Bonded Anchor System** - Test the anchors according to ASTM E488 as confined tension tests up to the minimum pullout force shown. When the pullout force and embedment depth are not shown, install the anchors to the embedment depth and test the anchors using the minimum pullout force in Table 00535-1.

**Table 00535-1**

| **Minimum Pullout Force** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Anchor Bolts** | | | | **Rebar** | | |
| | **Grade 36** | **Grade 55** | **Grade 105** | | **Grade 60** | | |
| Dia. (inch) | Force (Pounds) | | | Embed Depth (inch)* | Size | Force (Pounds) | Embed. Depth (inch)* |
| 1/2 | 7,400 | 9,700 | 15,300 | 4.50 | 3 | 7,900 | 3.25 |
| 5/8 | 11,700 | 16,900 | 24,300 | 6.00 | 4 | 14,400 | 5.25 |
| 3/4 | 17,300 | 22,500 | 36,000 | 7.50 | 5 | 22,300 | 6.50 |
| 7/8 | 24,000 | 31,200 | 49,900 | 9.25 | 6 | 31,700 | 7.50 |
| 1 | 31,700 | 40,900 | 65,400 | 11.00 | 7 | 43,800 | 8.75 |
| | | | | | 8 | 56,700 | 10.25 |

*± 1/8 inch

**(2) Mechanical Anchor System** - Test the anchors according to ASTM E488 as unconfined tension tests up to the minimum pullout force shown.

**(b) Production Tests** - Use anchors from the same lot used for the demonstration tests. Perform production tests during installation of the anchor system, after the installation is finished, and for the Resin Bonded Anchor System the resin has cured according to the Manufacturer's recommendations. One production test includes 1 test anchor. Maintain the test load at the required load level for a minimum of 10 seconds. Test anchors shall not have measurable displacement. If the Engineer suspects improper installations, more testing may be required.

**(1) Resin Bonded Anchor System** - Test anchors according to ASTM E488 as confined tension tests to 50 percent of the minimum pullout force shown.

For bent rebar anchors (#5 or smaller), furnish and test a straight bar at the required location. After the Engineer accepts test results, cold bend the bar to dimensions as shown. For epoxy coated rebar, inspect for damage to coating and repair damaged coated areas according to 00530.45. For threaded rods and larger reinforcing bars, furnish and install a sacrificial straight test anchor at a minimum distance of 1.5 times embedment depth away from the required location.

**(2) Mechanical Anchor System** - Test anchors according to ASTM E488 as unconfined tension tests to 40 percent of the minimum pullout force shown.

**(c) Anchor Test Summary** - Demonstration and production testing will not be required for expansion joint cover plate and bridge illumination conduit post-installed anchor system installations.

**Measurement**

**00535.80 Measurement** - No measurement of quantities will be made for post-installed anchor systems.

**Payment**

**00535.90 Payment** - No separate or additional payment will be made for post-installed anchor systems. Payment will be included in payment made for the appropriate items under which this Work is required.

## SECTION 00540 - STRUCTURAL CONCRETE

Comply with Section 00540 of the Standard Specifications modified as follows:

**00540.41 Design of Falsework for Vertical Pressures** - Replace the title of this subsection with "**Design of Falsework"**

**00540.41(e) Additional Requirements at Railroad Traffic Openings** - Replace the bullet that begins "Design bracing so that the bent…" with the following bullet:

- Design bracing so that the bent will resist the required horizontal load or 5000 pounds, whichever is greater.

Add the following subsection:

**00540.41(f) Concrete Forms on Steel Structures** - Provide sufficient temporary bracing or temporary struts and ties to minimize lateral deflection and rotation of the exterior steel girder. Calculate exterior girder rotation according to the Oregon Bridge Design Manual section 1.38.4. Limit deck deflection at the edge of deck due to girder rotation to no more than 1/4 inch.

Support compression member or bottom connection of cantilever formwork support brackets either within 6 inches maximum vertically of the bottom flange or within 6 inches maximum horizontally of a vertical web stiffener.

If partial depth cantilever formwork support brackets are permitted, submit Working Drawings showing the additional formwork struts and ties used to brace the steel girder against web distortion.

**00540.80(a)(1) Lump Sum** - Add the following to the end of this subsection:

The estimated quantity of concrete is:

Dayton Utility Bridge

| Type and Class | Quantity (Cu. Yd.) |
|---|---|
| Foundation Concrete, Class 4000 | 171 |
| Deck Concrete, Class HPC4500 | 75 |
| General Structural Concrete, Class 4000 | 109 |

## FALSEWORK DESIGN CHECKLIST

**Instructions** - This checklist was developed to facilitate the design, review, and erection of falsework to be used for Oregon Department of Transportation bridge construction projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The Checklist is to be completed and signed by the Falsework Design Engineer. Answer every question. Attach to the Checklist an explanation of any negative responses.

Submit the Checklist according to 00540.41(a).

| | YES | NO | N/A |
|---|---|---|---|
| **A. Contract Plans, Specifications, Permits, Etc.** | | | |
| 1. Are the falsework plans prepared, stamped and signed by an engineer registered to practice in Oregon? | ____ | ____ | ____ |
| 2. Have three complete sets (five if railroad approval is required) of the design calculations been included with the falsework drawings submittal? | ____ | ____ | ____ |
| 3. Are falsework plans in compliance with the requirements of the construction plans general notes? | ____ | ____ | ____ |
| 4. Are falsework plans in compliance with contract plan structural details? | ____ | ____ | ____ |
| 5. Are falsework plans in compliance with the requirements of the Oregon Standard Specifications for Construction, subsection 00150.35? | ____ | ____ | ____ |
| 6. Are all existing, adjusted or new utilities in proximity with the proposed falsework shown on the falsework plans and is protection of these utilities addressed? | ____ | ____ | ____ |
| 7. Are clearance requirements satisfied and shown on the falsework plans? | ____ | ____ | ____ |
| 8. For construction in or over navigable waters have all requirements for construction of falsework that are called for in the Coast Guard Permit been incorporated in the falsework design? | ____ | ____ | ____ |
| 9. Has possible damage from traffic been considered in the falsework design? | ____ | ____ | ____ |

10. Has damage from stream drift been considered in the falsework design? ____ ____ ____

11. Is the concrete placing sequence shown and is it consistent with the contract plans? ____ ____ ____

**B. Foundation Requirements**

1. Are driven falsework piling provided as called for on the contract plans? ____ ____ ____

    a. Is a minimum pile tip elevation or penetration indicated on the drawings? ____ ____ ____

    b. If timber falsework piles are specified, are the recommended order lengths sufficient to virtually eliminate the possibility of pile splices? ____ ____ ____

    c. Is a detailed static pile capacity analysis included in the calculations? ____ ____ ____

    d. If lateral loads are applied to the piling by equipment, dead loads, flowing water, or drift, is a detailed lateral load analysis included in the calculations? ____ ____ ____

    e. When piling are in an active waterway, have the potential effects of scour on axial and lateral pile support been addressed in the calculations? ____ ____ ____

    f. Does the proposed falsework pile hammer meet the minimum field energy requirements as listed in 00520.20(d)(2)? ____ ____ ____

    g. Will a driving criteria graph [FHWA Gates Equation, in 00520.42(b)] plotting blow count versus stroke for an acceptable pile hammer be provided for the project inspector? ____ ____ ____

2. Is falsework supported on spread footings or mud sills? ____ ____ ____

    a. Are the spread footing elevations shown on the drawings? ____ ____ ____

    b. Has a rational method for determining the ultimate bearing capacity of the foundation materials been presented and described in the calculations? ____ ____ ____

c. Have the soil parameters used in calculating the ultimate bearing capacity been listed and confirmed by the designer? ____ ____ ____

d. Has an appropriate Factor of Safety been used for calculating the allowable bearing capacity of the foundation materials? ____ ____ ____

e. Are spread footing settlement estimates included in the calculations? ____ ____ ____

f. Have effective stresses been used in the calculations, when applicable? ____ ____ ____

g. When spread footings are founded near the top of a slope or in a slope, have the ultimate bearing capacity calculations been modified accordingly? ____ ____ ____

h. When spread footings may be subjected to flowing water, have the potential effects of scour on ultimate bearing capacity been addressed in the calculations? ____ ____ ____

**C. Loads**

1. Are the magnitude and location of all loads, equipment and personnel that will be supported by the falsework shown and noted on the falsework plans? ____ ____ ____

2. Has the mass of specific equipment units to be supported by the falsework been included in the calculations or on the falsework plans? ____ ____ ____

3. Is the deck finishing machine supported in a manner that will not impose load on concrete forms except deck overhang brackets? ____ ____ ____

4. Are design loads and material properties used to determine design stresses for each different falsework member shown on the falsework plans? ____ ____ ____

5. Is the worst loading and member property condition, rather than the average condition, used to obtain design loads? ____ ____ ____

6. Are deck forms for concrete box girders supported from the girder stem and not from the bottom slab? ____ ____ ____

7. Are diaphragm loads or other concentrated loads included in the analysis of supporting beams? ____ ____ ____

8. If sloping structural members exert horizontal forces on the falsework, is bracing or ties used to resist these loads? ____ ____ ____

## D. Allowable Stresses

1. Has the method used for falsework design of all members except for manufactured assemblies been noted in the design calculations? ____ ____ ____

2. Are manufactured assemblies identified as to manufacturer, model, rated working capacity and ultimate capacity? ____ ____ ____

3. Is the allowable stress and the calculated stress listed in the summary for each different falsework member, except for manufactured assemblies? ____ ____ ____

## E. Timber Falsework Construction

1. Are timber grades consistent with material to be delivered to the construction site, and noted on falsework drawings, and in accompanying calculations for all timber falsework material? ____ ____ ____

2. If "rough" lumber is specified for falsework by the falsework designer are the actual lumber dimensions used in calculations shown? ____ ____ ____

3. If plywood spans are governed by the strength of the plywood, are the allowable stress and the calculated stress shown on the submitted calculations? ____ ____ ____

4. If plywood spans are governed by the allowable spacing of supporting joists, are the allowable and the proposed spacing shown on the falsework plans? ____ ____ ____

5. Have timber stringers been checked for bending, shear, bearing stresses, and 1/240 of the span length deflection? ____ ____ ____

6. Are joists identified as being continuous over 3 or more spans when they are not analyzed as simple spans? ____ ____ ____

7. Have stringers and cap beams been checked for bearing stresses perpendicular to the grain as well as for bending and shear stresses? ____ ____ ____

8. Have posts been checked as columns as well as for compression parallel to the grain? ____ ____ ____

## F. Steel Falsework Construction

1. Are steel structural shapes and plates identified by ASTM number on the falsework plans and in the calculations? ____ ____ ____

2. Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? ____ ____ ____

3. Has horizontal plane bracing been shown where required to limit compression flange buckling? ____ ____ ____

## G. Deflections and Settlement

1. Is falsework deflection for concrete dead load shown on the plans for all falsework spans? ____ ____ ____

2. Is falsework deflection from concrete dead load limited to 1/240 of the span length for all falsework spans? ____ ____ ____

3. Do stringers supporting cast-in-place concrete compensate for estimated camber? ____ ____ ____

4. For beam spans with cantilevers, has the upward deflection of the cantilevers due to load placed on the main spans been investigated? ____ ____ ____

5. Are provisions shown for taking up falsework settlement? ____ ____ ____

## H. Compression Members, Connections and Bracing

1. Has general buckling been evaluated for all compression members? ____ ____ ____

2. Has bracing been provided at all points of assumed support for compression members? ____ ____ ____

3. Was bracing in each direction considered in establishing the effective length used to check post capacity? ____ ____ ____

4. Is bracing strength and stiffness sufficient for the intended purpose? ____ ____ ____

5. If temporary bracing is required during intermediate stages of falsework erection, is it shown on the falsework plans? ____ ____ ____

6. Have all connections been designed and detailed? ____ ____ ____

7. Are web stiffeners required on steel cap beams to resist eccentric loads? ____ ____ ____

8. Are wedges required between longitudinal beams and cap beams to accommodate longitudinal slope or to reduce eccentric loading? ____ ____ ____

9. Has the width to height ratio of wedge packs been verified to fall within the limits given in the special provisions? ____ ____ ____

10. If overhang brackets are attached to girder webs, has the need for temporary bracing to prevent longitudinal girder distortion been investigated? ____ ____ ____

11. Have beams and stringers with height/width ratios greater than 2.5:1 been checked for stability? ____ ____ ____

12. Have sloping falsework members that exert horizontal forces on the falsework been braced or tied to resist these loads? ____ ____ ____

13. If beams supporting cast-in-place concrete have cantilever spans, have the falsework plans been noted to require the main spans be loaded before loading the cantilever spans? ____ ____ ____

14. Have timber headers set on shoring towers been checked for eccentric loads, and for shear and bending stresses produced by the eccentricity? ____ ____ ____

**I. Highway and Railroad Traffic Openings (For falsework over or adjacent to highway or railroad traffic openings.)**

1. Do falsework plans satisfy construction clearances shown on the contract plans? ____ ____ ____

2. Are posts designed for 150% of the calculated vertical loading and increased or readjusted for loads caused by prestressing forces? ____ ____ ____

3. Are mechanical connections 2,000 pounds minimum capacity shown at the bottom of posts to footing connections? ____ ____ ____

4. Are mechanical connections 1,000 pounds minimum capacity shown at the top of the post to cap connections? ____ ____ ____

5. Are beam tie downs 500 pounds minimum capacity shown for all beams? ____ ____ ____

6, Are 5/8 inch or larger diameter bolts used at connections for timber bracing? ____ ____ ____

7. Are temporary erection and removal bracing shown? ____ ____ ____

## J. Additional Requirements for Railroad Traffic Openings

1. Do falsework plans show collision posts as shown on the contract plans? ____ ____ ____

2. Do posts adjacent to the openings have a minimum section modulus of?

   a. steel - 9.5 cubic inches ____ ____ ____
   b. timber - 250 cubic inches ____ ____ ____

3. Are soffit and deck overhang forming details shown? ____ ____ ____

4. Are falsework bents within 20 feet of centerline of the track sheathed solid between 3 feet and 17 feet above top of rail with 5/8 inch thick minimum plywood and properly blocked at the edges? ____ ____ ____

5. Is bracing on the bents within 20 feet of the centerline of the track adequate to resist the required assumed horizontal load or minimum 5,000 pounds, whichever is greater? ____ ____ ____

_____ _____
Designer's Signature Date

## SECTION 00560 - STRUCTURAL STEEL BRIDGES

Comply with Section 00560 of the Standard Specifications modified as follows:

**00560.80 Measurement** - Add the following to the end of this subsection:

The estimated quantity of structural steel is:

| Structure | Steel Type | Quantity (Pound) |
|---|---|---|
| Dayton Utility Bridge | Steel Rolled Beam | 2,430 |

**00560.90 Measurement** - Add the following to the end of this subsection:

Item (g) includes HP section to reconstruct timber approach span beam seats, including steel stiffeners, cast-in-place anchors, and hardware.

## SECTION 00561 - PREFABRICATED STEEL BRIDGES

Section 00561, which is not in the Standard Specifications, is included in this Project by Special Provision.

### Description

**00561.00 Scope** - This work consists of designing, fabricating and erecting steel pedestrian bridges including bridge pedestrian rail, stay-in-place deck forms, utility bracket assemblies, and bearing assemblies, as shown and according to these Specifications.

The following prefabricated steel bridge suppliers are pre-approved for use on this project:

CONTECH
9025 Centre Pointe Drive
West Chester, OH 45069
Ph: (800) 338-1122

U.S. Bridge
201 Wheeling Avenue
Cambridge, OH 43725
Ph: (888) 872-7434

Excel Bridge Manufacturing Co.
12001 Shoemaker Avenue
Santa Fe Springs, CA 90670
Ph: (562) 944-0701

Other manufacturers of prefabricated steel bridges having a minimum of five years continuous experience in the design and construction of prefabricated steel bridges may be accepted upon written approval by the Engineer.

## Materials

**00561.10 Structural Steel** - All structural steel shall be new material. Provide certified copies of mill test reports for all structural steel and bolts. All floor beams, stringers, and truss members (upper and lower chords, diagonals, end posts, and vertical posts) shall meet a longitudinal Charpy V-notch (CVN) value of 15 ft-lbs at 40 °F. Testing shall be in accordance with AASHTO T 243 (ASTM A 673). The H frequency of heat testing shall be used. Provide certified copies of all CVN rest reports.

Furnishing structural steel conforming to the following:

- ASTM A847 Grade 50W or ASTM A1065 Grade 50W for square and rectangular HSS tubing
- ASTM A588 Grade 50 for rolled structural steel shapes
- ASTM A709 Grade 50W or A588 Grade 50 for structural steel plates

**00561.11 Fasteners** - Furnish fasteners according to the following requirements:

**(a) High Strength Fasteners** - All structural field connections shall be bolted with noncoated weathering steel high-strength connections. High-strength bolts, heavy hex nuts and hardened washers shall conform to the following requirements, unless approved in writing by the Engineer:

Bolts ..... Type 3 ASTM A 325
Nuts..... Appropriate class of ASTM A 563
Washers ..... Type 3 ASTM F 436

**(b) Tie Rods, Hanger Rods, Anchor Bolts, and Anchor Rods** - Furnish tie rods, hanger rods, anchor bolts and anchor rods according to 02560.30.

All tie rods, hanger rods, anchor bolts and anchor rods shall be galvanized in accordance with 02560.40.

**(c) Shear Connectors** - Furnish shear connectors conforming to ASTM A 108 specifications.

**00561.12 Bearings** - Furnish elastomeric bearings and composite bearings according to Section 00582.

**00561.13 Stay-In-Place Deck Forms** - Furnish hot-dip galvanized stay-in-place deck forms conforming to ASTM A 653.

**00561.14 Utility Supports** – Furnish structural steel and fasteners for utility supports according to 00560.10 and 0056.11.

**00561.15 Bridge Rail** - Furnish steel bridge rail materials according to Section 00587.

## Construction

**00561.40 Design** - Design prefabricated steel bridges according to AASHTO LRFD Bridge Design Specifications (AASHTO LRFD Specification), Current edition. AASHTO "Guide Specifications for Design of Pedestrian Bridges", current edition, may be used when indicated.

The superstructure shall consist of an H-section through-truss, with at least one diagonal member per panel, and shall be substantially similar in appearance to the conceptual configuration shown in the plans. The truss shall be the primary load-carrying member of the bridge.

Fabricate the members of the truss (chords, vertical posts, and diagonals) from structural steel shapes or square and/or rectangular structural steel tubing.

Fabricate floor beams, lower cross bracing, and stringers (if used) from structural steel shapes or square and/or rectangular structural steel tubing.

The structure shall conform to the clear span, and width requirements shown.

Comply with the following:

- Calculate loads for appropriate limit states according to Section 3 of the AASHTO LRFD Specification and the following:
- Consider only DC, DW, LL, IM, PL, WS, and EQ loads
- Use the loads shown in the plans where provided.
- Use $\eta = 1.00$
- Use IM = 1.00
- Design and provide shear connectors on the floorbeams to make them fully composite with the deck.
- Design stay in place forms for cast-in-place deck construction.
- Design pedestrian bridge rail system according to AASHTO LRFD Section 13 and for the following:
    - Minimum 54 inch rail height
    - Clear opening between elements shall be such that a 6 inch diameter sphere shall not pass through
- Design utility bracket assemblies.
- Design bridge bearings devices and connections to substructure.
- Camber the steel truss to provide a positive camber to compensate for all the dead loads and the grade line as shown.
- Minimum thickness of all structural steel shall be 5/16 inch.

Submit stamped design calculations and shop fabrication details, according to 00150.35(b), for the bridge to be constructed.

**00561.42 Shop Fabrication** - Welding and fabrication shall conform to the current edition of the Bridge Welding Code ANSI/AWS D1.5 except that welding for tubular sections (HSS) shall conform to the requirements of the Structural Welding Code ANSI/AWS D1.1, current edition. All filler metals shall conform to the requirements of the Bridge Welding Code ANSI/AWS D1.5. Use forms in Annex III for submittals, as applicable.

Submit a Quality Control Plan furnished by the bridge manufacturer. Include requirements for personnel qualifications and certifications, and a written practice in accordance with ASNT SNT-TC-1A.

All Procedure Qualification Records and Welder Qualification Test Records shall be current within three years of the date of beginning fabrication.

Submit for approval a copy of all:

- Procedure Qualification Records
- Welder Qualification Test Records
- Visual and non-destructive test reports

Quality Control inspection is the responsibility of the Fabricator. Fabricator shall also include Quality Assurance inspection verification which must be performed by an independent 3rd party firm or individual approved by the Agency.

**00561.44 Concrete Deck** - Deck thickness shall be according to dimensions shown. Provide minimum clearance from nearest reinforcement as shown.

Connect the deck compositely to floor beams, using shear studs welded to the floor beams according to 00561.40.

**00561.46 Field Construction** - Construct the substructure, deck, joints, utility bracket assemblies, and rails as shown on the plans and shop drawings and according to the applicable Specifications. Coordinate substructure dimensions with the bridge fabricator's anchor bolt layout and utility bracket assembly layout, as needed to facilitate proper erection of the structure. Submit two copies of detail sheets delineating bearing assembly and anchor bolt requirements before beginning work on the substructure.

The Contractor is responsible for any damage to the structure during handling or placement, according to 00170.80.

Construct the truss according to the applicable Specifications and the recommendations of the prefabricated bridge engineer of record. The Engineer will resolve any conflicts between the Specifications and the recommendations of the prefabricated bridge engineer of record.

Construct steel bridge rails according to Section 00587.

Provided joints at each end of the bridge as shown and cover plates according to Section 00585.

## Measurement

**00561.80 Lump Sum Basis** - No measurement of quantities will be made for work performed under this Section.

## Payment

**00561.90 General** - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item “Prefabricated Steel Truss”.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for designing, fabrication, shop inspection, transportation to the site, and erection of the bridge.

Payment will not be made until all required reports, certifications, and forms have been submitted and approved.

# SECTION 00570 - TIMBER STRUCTURES

Comply with Section 00570 of the Standard Specifications modified as follows:

**00570.10 Materials** - Add the following to the end of this subsection:

Furnish timber and lumber meeting the following grading requirements:

- Timber sills shall be Douglas Fir Select Structural as graded under the WWPA or WCLIB grading rules.
- Timber sills shall be S4S dimension as called for on the Plans.

Preservative treatment of timber is required. The types of treatments that are allowed are:

- Category 48, except creosote is prohibited, as set forth in the American Wood Protection Association (AWPA)

Submit the following information to the Engineer for approval:

- Type of preservative treatment to be used
- Minimum retention in pounds per cubic foot

**00570.40 Treated Timber** - Add the following to the end of this subsection:

Field treat all existing timber, including timber girders, decking, and railing, that is field cut to accommodate new construction activities.

**00570.90 Payment** - Add the following to the end of this subsection:

No separate or additional payment will be made for timber girder bearing shims.

## SECTION 00582 - BRIDGE BEARINGS

Comply with Section 00582 of the Standard Specifications modified as follows:

**00582.80 Measurement** - Replace this subsection, except for the subsection number and title with the following:

No measurement of quantities will be made for Work performed under this Section.

**00582.90 Payment** – Replace this subsection, except for the subsection number and title, with the following:

No separate or additional payment will be made for bridge bearings. Payment will be included in payment made for the appropriate item under which this Work is required.

## SECTION 00583 - ELECTRICAL CONDUIT ON STRUCTURES

Comply with Section 00583 of the Standard Specifications.

## SECTION 00585 - EXPANSION JOINTS

Comply with Section 00585 of the Standard Specifications modified as follows:

**00585.10 Materials** - Add the following to the end of this this subsection:

Furnish hot-dip galvanized steel expansion joints cover plates conforming to ASTM A36 specifications with an all-weather non-slip surface.

Furnish resin bonded anchors according to Section 00535.

**00585.80 Measurement** - Add the following to the end of the subsection:

The estimated quantities of joints are:

| Structure | Joint Type | Quantity (Foot) |
|---|---|---|
| Dayton Utility Bridge | Steel Cover Plate | 18 |

**00585.90 Payment** - Add the following to the Pay Item list:

(g) Steel Cover Plate..... Lump Sum

Item (g) includes furnishing and installing resin bonded anchors.

## SECTION 00587 - BRIDGE RAILS

Comply with Section 00587 of the Standard Specifications modified as follows:

**00587.10 Materials** - Add the following to the end of the subsection:

Chain link fencing is not an acceptable material for metal rails.

**00587.43 Metal Rails** - Replace this subsection, except for the subsection number and title, with the following:

**(a) Construction** - Fabricate and erect metal rails according to Section 00560 and Section 00561. Adjust metal rails before fixing in place to ensure proper matching at abutting joints and correct alignment and Camber throughout their length.

**(b) Coating** - Galvanize steel portions of the railing after fabrication of the rail according to 02530.70.

**00587.80 Measurement** - Replace this subsection, except for the subsection number and title, with the following:

No measurement of quantities will be made for Work performed under this Section.

**00587.90 Payment** – Delete the sentence beginning with “The accepted quantities…” and replace with the following:

No separate or additional payment will be made for bridge rails. Payment will be included in payment made for the appropriate item under which this Work is required.

## SECTION 00589 - UTILITY ATTACHMENTS ON STRUCTURES

Section 00589, which is not a Standard Specification, is included in this Project by Special Provision.

### Description

**00589.00 Scope** - This Work consists of providing for attachment or installation of utilities on new Structures as shown or as directed.

## Materials

**00589.10 General** - Furnish utility attachment systems using Materials from the QPL and meeting the following requirements:

| | |
|---|---|
| Structural Steel | 02530 |
| Forgings, Shafting, Castings, and Nonferrous Materials | 02540 |
| Fasteners | 02560 |
| Reflective Sheeting | 02910.20(a) |

Furnish pipe roller assemblies constructed of stainless steel or hot-dip galvanized structural steel.

Hot-dip galvanize all structural steel, fasteners and hardware unless noted otherwise.

## Construction

**00589.40 General** - Provide sufficient space around utilities for maintenance activities.

Avoid drilling through reinforcing steel. If reinforcing steel is hit, move the anchor location and patch the hole with an approved patching material from the QPL.

Attach conduits or brackets to concrete Structures with resin bonded concrete anchors, unless otherwise shown or approved.

**00589.43 Water Line Attachment -** Install ductile iron pipe and fittings with restrained joints according to 01140.00 through 01140.52 as shown and specified.

**00589.44 Force Main Sanitary Sewer Line Attachment -** Install ductile iron pipe and fittings with restrained joints according to 01141.00 through 01141.51 as shown and specified.

**00589.48 Labeling** - Clearly label all piping or conduit systems according to the following APWA color code:

**Table 00589-1**

| Material | Marker Background Color |
|---|---|
| Potable Water | Blue |
| Sewers, and Drain Lines | Green |

Minimum length of label shall be as shown in Table 00589-2.

**Table 00589-2**

| Pipe O.D. Min. | Pipe O.D. Max. | Length of Label | Width of Label |
|---|---|---|---|
| 3/4" | 1 1/4" | 8" | 3/4" |
| 1 1/2" | 2" | 8" | 1" |
| 2 1/2" | 6" | 12" | 2" |
| 8" | 10" | 12" | 2" |
| 10" | — | 12" | 2" |

Place labels on each pipe or conduit, on each side of every bent, and at each entrance to a box girder.

Where piping is above or below normal line of sight, place pipe labels so that label may be seen from normal eye height.

## Measurement

**00589.80 Measurement** - No measurement of quantities will be made for Work performed under this Section.

## Payment

**00589.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Utility Attachment on Structures, ____".

The type of utility attachment on structures will be inserted in the blank.

Payment for furnishing, designing, and installing truss mounted utility brackets will be paid for according to 00561.90

Payment will payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will made for:

- Hanger rods
- Mounting hardware
- Pipe rollers
- Cast-in-place anchors
- HP steel risers
- Pipe Clamps

## SECTION 00640 - AGGREGATE BASE AND SHOULDERS

Comply with Section 00640 of the Standard Specifications.

## SECTION 00730 - EMULSIFIED ASPHALT TACK COAT

Comply with Section 00730 of the Standard Specifications modified as follows:

**00730.11 Emulsified Asphalt -** In the paragraph that begins "Obtain samples according to AASHTO T 40…" replace the words “AASHTO T 40” with the words “AASHTO R 66”.

**00730.90 Payment** - Replace this subsection, except for the subsection number and title, with the following:

No separate or additional payment will be made for Emulsified Asphalt tack coat. Approximately 0.01 Tons of Emulsified Asphalt in tack coat will be required on this Project.

## SECTION 00744 - ASPHALT CONCRETE PAVEMENT

Comply with Section 00744 of the Standard Specifications modified as follows:

**00744.11(a) Asphalt Cement** - Add the following to the end of this subsection:

Provide PG 64-22 grade asphalt cement for this Project.

## SECTION 00759 - MISCELLANEOUS PORTLAND CEMENT CONCRETE STRUCTURES

Comply with Section 00759 of the Standard Specifications modified as follows:

**00759.03 Required Submittals** - Replace this subsection, except for the subsection number and title, with the following:

Material ordered or Work done before the Engineer reviews and returns the documents shall be at the Contractor's risk.

Submit the following:

**(a) ADA Certification for Contractors** - For all supervisory personnel who directly supervise the curb ramp Work, submit the names, telephone numbers, and copies of the ODOT ADA Certification for Contractors at least 10 Calendar Days before the preplacement conference.

**(b) Curb Ramp Work Plan** - Do not begin any curb ramp Work before the plan for completing the Work has been approved. At least 21 Calendar Days before the curb ramp Work is scheduled to begin, submit a plan for accomplishing all phases of the curb ramp Work, including but not limited to the following (also see 00180.41):

- Surface preparation
- Compliance with Working Drawings and details submitted under 00759.03(c)
- Compliance with current Standard Drawings and Plans
- Waste handling and disposal

**(c) Working Drawings** - At least 10 Calendar Days before the construction of a grouping of one or more curb ramp location(s), not to exceed 32 ramps unless otherwise approved under 00180.41, submit unstamped Working Drawings according to 00150.35. Include field verification of each ramp site, and all dimensions, slopes and grades necessary to demonstrate compliance with the Standard Drawings and Plans. Marked up Supplemental Drawings, if field verified, may be submitted as Working Drawings. Notify the Engineer of any deficiencies or noncompliance with the Standard Drawings or Plans. The Engineer will provide additional or modified Plans as needed. Do not begin Work at a curb ramp until submittals for that curb ramp have been received, reviewed, and accepted in writing by the Engineer.

After submittal of the unstamped Working Drawings, according to 00150.35 a site visit may be requested by the Contractor or Engineer. The site visit will include a review of any field markings and discuss the submitted unstamped Working Drawings. The Engineer will provide additional or modified information, as needed.

Include the following in the Working Drawings:

- Verification of elevations, slopes, grades and dimensions necessary to demonstrate compliance with the Standard Drawings and Supplemental Drawings,
- Verification of potential utility conflicts or other street furnishings that may require relocation or adjustment.
- Identification of infeasibilities or constructability issues with the Standard Drawings and Supplemental drawings.

**(d) Corrective Action Plan** - Unless otherwise approved, notify the Engineer before performing corrective action. Include TPAR necessary to complete corrective action work.

At least 21 Calendar Days before concrete Structures Work is scheduled to begin, submit a corrective action plan. The corrective action plan shall address procedures to correct deficient Structures through minor corrective action or replacement according to 00759.55(a), and include:

- List of minor corrective actions that will be used to correct deficiencies, according to 00759.50 and 00759.55.
- Procedures for performing corrective action.
- Proposed concrete grinding Equipment and method of grinding.
- Proposed concrete repair Material used for resurfacing ground concrete surfaces according to Section 02015.
- Construction activities, Equipment and staging necessary to complete corrective action Work.

The Engineer will review the corrective action plan(s) and provide a response to the Contractor within 5 Days after receiving the plan. Do not begin concrete Structure Work until the corrective action plan is approved by the Engineer.

Add the following subsection:

**00759.23 Concrete Resurfacing Equipment** - Furnish power-operated scarifying Equipment capable of uniformly removing and preparing the existing surface to depths required. For concrete grinding operations, furnish 12 segment grinders, fine-toothed scarifying Equipment, or other approved grinding Equipment.

**00759.46 Concrete** - Replace this subsection, except for the subsection number and title, with the following:

Construct the Structures between suitable forms or by the extrusion method. Place concrete according to the Plans, Section 00440, and this Section.

**00759.50(a) General** - Add the following paragraphs to the end of this subsection:

Install truncated domes as shown. Place according to the manufacturer's recommendation. Install abutting truncated dome panels with no more than 1/4 inch spacing. Install anchors along cut edges of truncated dome panels according to manufacturer's recommendations.

In addition, finish concrete surfaces of Structures to be within the established Slopes and dimensions allowed by the Standard Drawings and Plans. Repair or remove and replace Structures not meeting the Standard Drawings and Plans at no additional cost to the Agency.

**00759.50(c) Driveways, Walks, and Surfacings** - Replace this subsection, except for the subsection number and title, with the following:

Prevent segregation of the concrete during placement. Strike-off the concrete to the grade shown, and float the surface smooth. After the water sheen disappears, edge the joints and remove edging tool marks prior to final finishing. Lightly cross-broom the surface to a uniform texture. Do not trowel joints or edges after brooming surface.

The 24 inch smart level will be used to measure driveway and sidewalk cross slopes on the Pedestrian Access Route.

Add the following subsection:

**00759.55 Correction of Deficient Structures** - Unless otherwise approved, notify the Engineer before performing corrective action. Correct deficiencies at no additional cost to the Agency. Perform corrective actions as directed, according to the approved corrective action plan, and according to the following:

**(a) Minor Corrective Action** - Submit Equipment and procedure for minor corrective action to the Engineer for approval. Minor corrective action can be performed to correct a deficiency up to 1 square foot per panel. Corrective action exceeding 1 square foot per panel requires removal and replacement according to 00150.25. Perform minor corrective action according to the following:

**(1) Concrete Grinding** - Grinding to correct high area deficiencies is limited to 3/16 inch. Use equipment meeting the requirements of 00759.23. Resurface all ground concrete surfaces according to 00759.55(a)(2).

**(2) Concrete Resurfacing** - Resurfacing to correct low area deficiencies is limited to 3/16 inch depth. Existing concrete is to be at least 7 Days old prior to resurfacing. Resurface repair areas according to the following:

a. **Keyway** - Sawcut a keyway at the boundaries of repair areas that are not already defined by panel control joints. Sawcut shall be 1/8 inch wide and 1/4 inch deeper than the edge of the repair area. Bevel inside edge of keyway at a 45 degree angle.

b. **Surface Preparation** - Prepare limits of repair area by grinding using Equipment from 00759.23. After grinding, sandblast the surface of the repair area. Clean the surface using a low pressure washer, less than 5,000 psi.

c. **Presoak** - Presoak the repair area for a minimum of 30 minutes to saturated surface dry. Prior to resurfacing, ensure there is no ponding water on the surface.

d. **Resurface** - Provide concrete resurfacer from the QPL according to 02015.60; refer to QPL remarks to select an appropriate material based on allowable installation depths. Furnish resurfacer in a color that closely matches the color of surrounding concrete surfaces. Mask boundaries of the repair area. Use hand tools to work resurfacer into keyways and match existing grade at boundaries. Apply a light broom-finish to achieve non-slip surface.

e. **Curing and Return to Traffic** - Wet cure for a minimum of 1 hour or per the manufacturer's recommendation, whichever is more restrictive. Follow manufacturer's recommendation for return to traffic time.

**(3) ACP Grinding** - Taper grind to match existing Pavement with a minimum grinding width of 1 foot for each 1/4 inch of ACP removed.

**(b) Acceptance of Structures** - Once the corrective work or replacement has been completed, acceptance will be based on the Engineer's inspection and approval of the Structure.

Replace the paragraph that begins "No separate or additional payment will be…" with the following paragraph and bullet list:

No separate or additional payment will be made for:

- curb ramp Working Drawings
- curb ramp plan
- preplacement conference
- concrete form verification
- any necessary repair or removal and replacement of Structures
- providing supervisory personnel who have an active ODOT ADA Certification for Contractors to directly supervise the curb ramp Work

- developing corrective action plans

## SECTION 00960 - COMMON PROVISIONS FOR ELECTRICAL SYSTEMS

Comply with Section 00960 of the Standard Specifications modified as follows:

**00960.30 Licensed Electricians** - Replace the paragraph that begins "According to the Oregon Administrative Rule …" with the following paragraph:

According to the Oregon Administrative Rule 918-282-0120(1), no person or entity shall allow any individual to perform electrical work for which the individual is not properly registered or licensed. Every person who installs electrical systems on the Project shall submit a copy of their electrical license or apprentice registration to the Engineer prior to performing any Work. They must be licensed as an S or a J under Oregon Administrative Rule 918-282.

Add the following subsection:

**00960.42(c) Metallic Conduit** – Paint the following with rust-preventative coating:

- Threads on all metal conduit.
- Areas where the coating has been damaged so underlying metal is exposed.
- Exposed, ungalvanized threads resulting from field cuts.

If corrosive Soil conditions exist, coat metallic conduit with a nonmetallic coating or wrap with corrosion protection tape at least 10 mils thick.

Add the following subsection:

**00960.42(f) Conduit on Structures** - Install conduit according to 00583.40.

**00960.46 Service Cabinet and Electrical Energy** - Replace this subsection, except for the subsection number and title, with the following:

Install service cabinet and associated equipment, then arrange for the Utility providing power to have the service cabinet inspected and make the electrical hook-up prior to field testing. Field test according to 00990.70(g) for traffic signals, or according to 00970.70 for illumination.

Table 00960-1 contains Utility contact information to arrange for the Utility to make electrical hookups:

**Table 00960-1**

| Location | Utility | Utility Contact Person's Name, Email and Phone Number | Utility Job Number |
|---|---|---|---|
| Dayton Utility Bridge | PGE | Terry Neal,<br>terry.neal@pgn.com,<br>503-463-4322 | M3244660 |

Furnish and install a meter base approved by the serving Utility (with cover by the Utility), where shown.

Electrical energy costs will be billed to the Agency for permanent installations.

## SECTION 00970 - HIGHWAY ILLUMINATION

Comply with Section 00970 of the Standard Specifications.

Add the following subsection:

**00970.17 LED Luminaires on Pedestrian Rail Lighting** - Furnish the following model or an approved equal:

- KLIK – LEDpod 50
- LP5040KA80-500mA

When higher light output is desired, higher wattage luminaires up to 250 watt within the same brand/model listed above, may be furnished.

When furnishing an LED luminaire model that is not specified as approved, the luminaire shall meet the requirements of 02926.54.

**00970.90 Payment** - Add the following to the Pay Item list:

(f) Pedestrian Bridge Rail Lighting..... Lump Sum

Add the following paragraph after the paragraph that begins "Item (e) includes all…" :
Item (f) includes necessary hardware (LED luminaires, power supplies, conduit, cabinets, wiring, junction boxes, and other items required to construct the lighting system) and labor for the installation of the Pedestrian Bridge Rail Lighting as shown.

Replace the paragraph that begins “No separate or additional…” with the following paragraph:

No separate or additional payment will be made for:

- submittal preparation Work
- excavation
- backfill
- junction box concrete aprons
- coordination with utility owner
- cleanup and restoration of existing landscape
- labeling the luminaires

## SECTION 01012 - STORMWATER CONTROL, WATER QUALITY BIOFILTRATION SWALE

Section 01012, which is not a Standard Specification, is included for this Project by Special Provision.

### Description

**01012.00 Scope** - This Work consists of furnishing and installing a water quality biofiltration swale as shown.

### Materials

**01012.10 Materials** - Furnish Material meeting the following requirements:

| | |
|---|---|
| Concrete | 00440 |
| Manholes, Catch Basins, and Inlets | 00470.11 |
| Slope and Channel Liner Matting | 00280.14(e) |
| Riprap | 00390 |
| Riprap Geotextile, Type 1 | 02320 |

**01012.12 Water Quality Mixture** - Furnish medium compost meeting the requirements of Section 03020. Furnish soil meeting the following gradation requirements:

| Sieve Size | Percent Passing (by Weight) |
|---|---|
| No. 4 | 100 |
| No 10 | 95 - 100 |
| No. 40 | 40 - 60 |
| No. 100 | 10 - 25 |
| No. 200 | 5 - 10 |

Sample soil according to AASHTO R 90. Determine sieve analysis according to AASHTO T 27 and AASHTO T 11.

Blend the medium compost and soil so that the mixture:

- Is composed of between 20 percent and 25 percent medium compost material and between 75 percent and 80 percent soil material.
- Has a pH between 5.5 and 8.0.
- Does not have clumps greater than 3 inches in any direction.

**01012.15 Slope and Channel Liner Matting** - Furnish channel liner matting meeting the requirements of 00280.14(e) for resistance to shear stresses calculated for a 10-year storm event.

## Construction

**01012.40 General** - Construct water quality biofiltration swale facility as shown. Perform excavation, fine grading, and placement work only when the facility area is dry and only from the top of the swale area. Do not stockpile excavated material in the facility area. Perform work in sequence as follows:

**(a) Scarify** - Scarify the subsoil area a minimum 12 inches deep.

**(b) Placement of Water Quality Mixture** - Place the water quality mixture in maximum 12 inch Lifts. Compact each Lift with a water filled landscape roller.

**(d) Seeding** - Seed according to 01030.13.

**(e) Slope and Channel Liner Matting** - After seeding install slope and channel liner matting as shown or directed.

## Maintenance

**01012.70 Cleaning** - If a stormwater control facility is used for erosion and sediment control, remove all accumulated sediment and debris before completing the facility.

**01012.71 Removal** - Remove temporary erosion and sediment control features according to 00280.70 only after water quality vegetation has met the establishment requirements of 01030.60.

## Measurement

**01012.80 Measurement** - No measurement of quantities will be made for Work performed under this Section. The estimated quantities of Materials are:

**Water Quality Swale 1 Quantities:**

| Item | Quantity |
|---|---|
| Excavation | 167 Cu. Yd. |
| Riprap Geotextile, Type 1 | 47 Sq. Yd. |
| Loose Riprap, Class 50 with fines | 27 Cu. Yd. |
| Water Quality Mixture | 56 Cu. Yd. |
| Matting, Type E | 111 Sq. Yd. |

## Payment

**01012.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Water Quality Swale, _____".

The drainage facility identification number will be inserted in the blank.

Excavation will be paid according to 00330.90.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

## SECTION 01030 – SEEDING

Comply with Section 01030 of the Standard Specifications modified as follows:

**01030.13(c) Pure Live Seed** - Replace this subsection, except subsection number and title, with the following subsection:

Use the PLS specified rate listed in 01030.13(f) for determining PLS application rates. Ensure the PLS application rate meets the PLS specified rate. Apply pre blended seed mixes, with multiple species, at a PLS application rate ensuring all species meet or exceed the PLS specified rate for each species in the seed mix.

PLS application rate for an individual seed species is determined as follows:

- PLS specified rate is listed in 01030.13(f)
- PLS factor is obtained by multiplying the seed label germination percentage times the seed label purity percentage. Use the purity and germination percentages from the label on actual bags of seed to be used on the Project.
- PLS application rate is obtained by dividing the PLS specified rate by the PLS factor.

For a seed mix, make this calculation for each seed species in the mix and then adjust as follows:

- Using the seed tag, determine the weight of each seed species in the bag and use this information to find the percentage, by weight, of each seed species is in 1 pound for the pre-blended mix.
- Divide the percentage by weight of each seed species, per pound, for the pre-blended mix, by the PLS application rate for that specific seed species.

Determine the highest application rate in the seed mix and apply the seed mix at that application rate.

**01030.13(f) Types of Seed Mixes** - Add the following to the end of this subsection:

Provide the following seed mix formulas:

- **Permanent Seeding:**

| **Botanical Name (Common Name)** | **PLS Specified Rate (lb/acre)** |
|---|---|
| Festuca arundinacea (Dwarf Tall Fescue) | 40 |
| Lolium perenne (Dwarf Perennial Rye) | 36 |

| | |
|---|---|
| Festuca rubra<br>(Creeping Red Fescue) | 30 |
| Agrostis capillaris<br>(Colonial Bentgrass) | 30 |

* Oregon Certified Seed

**01030.13(g) Availability** - Add the following sentence to the end of this subsection:

Submit the seed and seed mixes to be used on the project according to 00150.37.

**01030.40 General** - Add the following sentence after the sentence beginning “Notify the Agency…”:

Notify the Agency of the acreage to be seeded at least 7 Days before seeding begins.

Add the following subsection:

**01030.43(c) Seed Application Rates** - Determine the seeding application rate according to 01030.13(c). Apply seed mixes at the highest application rate calculated to provide not less than the specified application rate for each individual seed species in the mix.

## SECTION 01140 - POTABLE WATER PIPE AND FITTINGS

Comply with Section 01140 of the Standard Specifications modified as follows:

Add the following subsection:

**01140.01 Submittals** - Submit for review stamped working drawings according to 00150.35 at least 21 Calendar Days prior, showing the following:

Temporary bypass piping plans detailing:

- Pipeline routing,
- Pipeline supports,
- Testing provisions for filling, testing and draining,
- Connection sequence,
- Expansion and contraction provision,
- Thrust restraint provisions.

Permanent pipeline installation on new bridge detailing:

- pipeline layout,
- placement method,
- pipe bell to support offset distances
- fittings
- spool sections
- end treatments
- other specialty items

Add the following subsection:

**01140.52 Utility Coordination** – The organization listed in Table 001140-1 own water utilities within the limits of the Project that the Contractor will be performing Work on.

The Contractor shall notify the Water Utility in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the Water Utility facilities or performing excavation for waterline Work.

Table 01140-1 contains Utility contact information:

**Table 01140-1**

| Location | Utility | Contact Person's Name, Address, Email, and Phone Number |
|---|---|---|
| Dayton Utility Bridge | City of Dayton - Water | Denny Muchmore<br>City Engineer<br>3841 Fairview Industrial Dr SE, Ste 100<br>Salem, OR 97302<br>dmuchmore@westech-eng.com<br>503-585-2474 ext 104 (office)<br>503-931-8708 (mobile)<br><br>Steve Sagmiller<br>Public Works Director<br>416 Ferry Street<br>Dayton, Oregon 97114<br>SSagmiller@ci.dayton.or.us<br>503-864-2221 ext 309 (office)<br>503-437-0639 (mobile) |

## Payment

**01140.90 Payment** - Add the following Pay items to the Pay Item list:

(o) ____ Inch Ductile Iron Pipe with Restrained Joints on Structure..... Foot
(q) ____ Joint, ____ Inch .....Each
(r) Temporary Potable Water Bypass System .....Lump Sum
(s) Ductile Iron Filler Flange, ____ Inch ..... Foot

After the paragraph that begins “In Item(s) (h), (i)…” add the following paragraphs:

In items (o), the nominal diameter of the pipe will be inserted in the blank.

In item (q), the type of joint will be inserted in the first blank and the nominal diameter of the assembly will be inserted in the second blank.

Item (r) includes necessary excavation and backfill, water pipes, fittings, couplings, joints, additional valves as required and not shown, temporary thrust restraints, supports, connections to existing system, testing, disinfection, commissioning and decommissioning of the temporary potable water bypass system.

In items (s), the nominal diameter of the flange will be inserted in the blank.

In the paragraph that begins " No separate or additional…” add the following bullet to the end of the bullet list:

- Standby bypass plan and pumping
- Utility crossing

## SECTION 01141 – SEWER FORCE MAIN PIPE AND FITTINGS

Section 01141, which is not a Standard Specification, is included in this Project by special provision.

### Description

**01141.00 Scope** - This work consists of constructing force main sanitary sewer pipe and fitting 24 inches and smaller in diameter.

**01141.01 Submittals** - Submit for review stamped working drawings according to 00150.35, showing the following:

Temporary bypass piping plans detailing:

- Material data sheets for pipes and valves.
- Pipe Supports,
- Pump data sheet including performance curves and expected operating range,
- temporary pumping provisions, control scheme and alarm system,
- annotated pipeline layout,
- testing provisions for filling, testing and draining,
- connection approach, sequence, duration, and failure contingency plan,
- expansion and contraction provisions,
- thrust restraint provisions.

Permanent pipeline installation on new bridge detailing:

- Annotated pipeline layout,
- placement method,
- pipe bell to support offset distances
- fittings,
- spool sections,
- end treatments,
- other specialty items.

### Materials

**01141.10 Materials** - Furnish materials meeting the following requirements:

Bolted, Sleeve-Type Couplings for Plain End Pipe ..... 02476.60
Commercial Grade Concrete in Thrust Blocks..... 00440
Detectable Marking Tape and Wire ..... 02476.60
Ductile Iron Pipe Fittings..... 02476.20
Ductile Iron Pipe..... 02471.20
Polyethylene Encasement..... 02471.50
Polyvinyl Chloride (PVC) Pipe fittings - 4" and larger..... 02476.40
Polyvinyl Chloride (PVC) Pipe fittings - under 4"..... 02476.45
Polyvinyl Chloride (PVC) Pipe - 4" and larger..... 02471.40
Polyvinyl Chloride (PVC) Pipe - under 4"..... 02471.45
Reinforcement..... 00530
Restrained Joints..... 02476.50
High Density Polyethylene Pipe..... 02471.31
High Density Polyethylene Pipe Fittings ..... 02476.31

High Density Polyethylene (HDPE) pipe shall meet the requirements of ANSI/AWWA C906, Standard PE Code Designation PE 3408, minimum cell classification PE 334434C (ASTM D3350). Pipe may also be PE 4710 according to the pending revisions to ANSI/AWWA C906-07. Pipe shall be iron pipe size (IPS) outside diameter or ductile iron pipe size (DIPS) outside diameter. All HDPE pipe and fittings shall be of the dimension ratio (DR) as shown on the Plans.

Bypass piping shall be composed of new or used HDPE pipe as specified.

**01141.11 Handling Pipe and Fittings:** Comply with 01140.11

**01141.12 Cutting Pipe:** Comply with 01140.12

**01141.40 Trench Work:** Comply with 01140.40

**01141.41 Laying Pipe:** Comply with 01140.41

**01141.42 Jointing Pipe:** Comply with 01140.42

**01141.43 Polyethylene Encasement:** Comply with 01140.43

**01141.44 Thrust Restraint:** Comply with 01140.44

**01141.45 Marking Tape and Wire:** Comply with 01140.45

**01141.46 Blowoff Assemblies:** Comply with 01140.46

**01141.47 Connections to Existing Mains:** Comply with 01140.47

**01141.48 Maintaining Service:** Comply with 01140.18

**01141.49 Backfilling:** Comply with 01140.49

**Field Testing**

**01141.50 Filling and Flushing:** Comply with 01140.50. Disinfection is not required.

**01141.51 Hydrostatic Testing:** Comply with 01140.51

Add the following subsection:

**01141.52 Utility Coordination** – The organization listed in Table 001141-1 own sewer utilities within the limits of the Project that the Contractor will be performing Work on.

The Contractor shall notify the Sewer Utility in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the Sewer Utility facilities or performing excavation for sewer line Work.

Table 01141-1 contains Utility contact information:

**Table 01141-1**

| Location | Utility | Contact Person's Name, Address, Email, and Phone Number |
|---|---|---|
| Dayton Utility Bridge | City of Dayton - Sewer | Denny Muchmore<br>City Engineer<br>3841 Fairview Industrial Dr SE, Ste 100<br>Salem, OR 97302<br>dmuchmore@westech-eng.com<br>503-585-2474 ext 104 (office)<br>503-931-8708 (mobile)<br><br>Steve Sagmiller<br>Public Works Director<br>416 Ferry Street<br>Dayton, Oregon 97114<br>SSagmiller@ci.dayton.or.us<br>503-864-2221 ext 309 (office)<br>503-437-0639 (mobile) |

**a) Temporary Bypass Pumping and Piping** -

Above ground pipe shall have entirely restrained joints with thrust blocking to prevent pipe movement and joint pullout as result of hydraulic forces, thermal expansion and contraction of the pipe, or construction equipment and activities on site.

Contractor shall test the bypass piping and pumps, where applicable, in actual field conditions upon completing the installation, and each redundant pump and its ancillary equipment in the presence of the Engineer and Utility representative before commencing with any Pump Station decommissioning activities.

Bypass piping shall be pressure tested the same as the permanent force main prior to connecting the bypass piping to the existing sewer force main and placing into service.

**01141.60 Surface Restoration** - Comply with 01140.60

**01141.80 Measurement** - The quantities of sewer force main pipe and fittings will be determined as follows:

**b) Pipe, Fittings and Couplings** - The quantities of pipe of the various kinds, types, sizes and backfill classes will be measured on the length basis and will be horizontal measurement along the top of the finished trench, with no deduction for fittings, valves, and couplings.

For PVC fittings 4 inches or greater, in addition to measurement of the pipe, an allowance of 12 pipe diameters will be made for each factory-fabricated bend, sleeve, reducer or coupling, and an allowance of 18 pipe diameters of the larger diameter pipe will be made for each factory-fabricated tee or cross. The allowance will be added to the quantity for pipe of the same diameter.

Ductile iron pipe fittings will be measured on the unit basis.

**c) Connections to Existing Mains** - The quantities of connections to existing mains will be measured on the unit basis.

Trench resurfacing will be measured according to 00495.80.

## Payment

**01141.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

| Pay Item | Unit of Measurement |
|---|---|
| (a) ____ Inch Sewer Force Main Pipe, Fittings and Couplings with Restrained Joints and Class ____ Backfill | Foot |
| (b) ____ Inch Ductile Iron Pipe with Restrained Joints and Class ____ Backfill | Foot |
| (c) ____ Inch Ductile Iron Pipe with Restrained Joints on Structure | Foot |
| (d) ____ Inch Connection to Existing ____ Inch Main | Foot |
| (e) Ductile Iron Pipe Bend, ____ Inch | Foot |
| (f) Ductile Iron Pipe Cross, ____ Inch | Foot |
| (g) Ductile Iron Pipe Reducer, ____ Inch | Foot |
| (h) Ductile Iron Pipe Blind Flange, ____ Inch | Foot |
| (i) ____ Joint, ____ Inch | Each |
| (j) Temporary Force Main Bypass System | Lump Sum |

The Contract unit price for the appropriate Pay Items reflects plan requirements or the Contractor's choice from the applicable options listed on the Pipe Data Sheets if shown.

In item (a), the nominal diameter of the pipe, fitting and couplings will be inserted in the first blank. The class of backfill will be inserted in the second blanks. The quantities include the pipe plus the allowance for the fittings, couplings and joint restraints, where applicable.

In items (b), the nominal diameter of the pipe will be inserted in the first blank and the class of backfill will be inserted in the second blanks.

In item (c), the nominal diameter of the pipe will be inserted in the blank

In item (d), the nominal diameter of the pipe will be inserted in the first blank and the nominal diameter of the main line will be inserted in the second blank.

In items (e) through (h), the nominal diameter of the fittings or couplings will be inserted in the blank.

In item (i), the type of joint will be inserted in the first blank and the nominal diameter of the assembly will be inserted in the second blank.

Item (j) includes necessary pumps, power supplies, water pipes, fittings, couplings, joints, additional valves as required and not shown, temporary thrust restraints, supports, connections to existing system, testing, commissioning and decommissioning of the temporary potable water bypass system.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

Trench resurfacing will be paid for according to 00495.90.

No separate or additional payment will be made for:

- trench excavation
- bedding
- pipe zone material
- backfill Work
- polyethylene encasement
- concrete thrust blocks
- detectable marking tape and wire
- flushing, hydrostatic testing, and water for testing
- exposing and cleaning existing mains, cutting and removing existing pipe, draining existing mains, and refilling existing mains
- HDPE fittings
- draining, capturing, and properly disposing of sewage in existing mains
- bypass pumping plan and pumping

## SECTION 01150 - POTABLE WATER VALVES

Comply with Section 01150 of the Standard Specifications modified as follows:

**01150.10 Materials** - Delete “Ball Valves” from the list of materials.

**01150.90 Payment**

In item (f), Payment to include the saddle connection to the pipe, valve connecting pipe, isolation valve, hot box, pipe insulation and cladding, heat tracing, electrical receptacle and electrical wire from the electrical receptacle to the controller.

- Replace the paragraph that begins “No separate or additional…” with the following paragraph:

No separate or additional payment will be made for:

- earthwork not covered under other Pay Items
- jointing
- blocking of valves
- protective coatings

- valve boxes
- valve box extensions
- valve operator extensions
- valve reconnections
- hydrostatic testing

## SECTION 01151 – SEWER FORCE MAIN VALVES

Section 01151, which is not a Standard Specification, is included in this Project by special provision.

### Description

**01151.00 Scope** - This work consists of furnishing and installing valves in sanitary sewer force main systems at the locations shown or as directed.

### Materials

**01151.10 Materials** - Furnish Materials meeting the following requirements:

Eccentric Plug Valves ..... 02481.15
Combination Air Release/Air Vacuum Valves ..... 02481.60
Valve Boxes ..... 02481.25
Valve Extension ..... 02481.26

**01151.11 Handling** - Comply with 01150.11

**01151.12 Connecting Ends** - Comply with 01150.12

### Construction

**01151.40 General** - Comply with 01150.40

**01151.41 Combination Air Release/Air Vacuum Valves** - Install combination air release/air vacuum vales as shown. Slope all piping to permit escape of any entrapped air.

**01151.50 Field Testing** - Comply with 01150.50

**01151.51 Hydrostatic Testing** - Comply with 01150.51

### Measurement

**01151.80 Measurement** - The quantities of valves will be measured on the unit basis.

### Payment

**01151.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

| Pay Item | Unit of Measurement |
|---|---|
| (a) ____ Inch ____ Valve …… | Each |
| (b) ____ Inch Combination Air Release/Air Vacuum Valve Assembly …… | Each |

In item (a), the size of the valve will be inserted in the first blank and the type of valve will be inserted in the second blank.

In item (b), the size of the valve will be inserted in the blank. Payment to include the saddle connection to the pipe, valve connecting pipe, isolation valve, hot box, insulation and heat tracing, electrical receptacle and electrical wire from the receptacle to the controller.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for earthwork not covered under other Pay Items, jointing, blocking of valves, protective coatings, valve boxes, valve box extension, valve operator extensions or hydrostatic testing.

## SECTION 01160 - HYDRANTS AND APPURTENANCES

Comply with Section 01160 of the Standard Specifications.

## SECTION 01170 - POTABLE WATER SERVICE CONNECTIONS, 2 INCH AND SMALLER

Comply with Section 01170 of the Standard Specifications.

## SECTION 02001 - CONCRETE

Comply with Section 02001 of the Standard Specifications modified as follows:

**02001.02 Abbreviations and Definitions:**

Add the following definition:

**Lightweight Concrete** - Structural concrete having a specified density using lightweight Aggregates.

Replace the sentence that begins "**Pozzolans** - Fly ash, silica fume…" with the following sentence:

**Pozzolans** - Fly ash, natural Pozzolans, silica fume, and high-reactivity Pozzolans.

Replace the sentence that begins "**Supplementary Cementitious Materials** - Fly ash, silica fume…" with the following sentence:

**Supplementary Cementitious Materials** - Pozzolans and ground granulated blast furnace slag.

**02001.15(a) Current Mix Designs** - Replace this subsection, except for the subsection number and title, with the following:

Mix designs that meet the requirements for the specified class of concrete and are currently being used or have been used within the past 24 months on any project, public or private, may be submitted for review. Provide individual test results that comprise the average if more than one data point exists. For paving designs the flexural strength testing must be from within the last two years. For HPC designs the length change and permeability tests must be from within the last two years.

**02001.15(b)(1) Trial Batch Plastic Properties** - Replace this subsection, except for the subsection number and title, with the following:

For each trial batch, test according to the following test methods:

| Test | Test Method |
|---|---|
| Sampling Fresh Concrete | WAQTC TM 2 |
| Concrete Temperature | AASHTO T 309 |
| Slump | AASHTO T 119 [1] |
| Air Content | AASHTO T 152 or T 196 [2] |
| Density | AASHTO T 121 |
| Yield | AASHTO T 121 |
| Molding Concrete Specimens | AASHTO T 23 or R 39 [3] |
| Water Cement Ratio | [4] |

[1] For drilled shaft concrete test the slump retention by subsequent tests at half-hour intervals for the duration of the estimated drilled shaft placement, including temporary casing extraction. Report in table or graphical format.
[2] Use AASHTO T 196 for lightweight concrete.
[3] Cast cylinders in single use plastic molds.
[4] Use ODOT's Field Operating Procedure for AASHTO T 121 in the MFTP.

**02001.15(c)(12) Documentation of Average Compressive Strength** - Replace this subsection, except for the subsection number and title, with the following:

Provide an analysis, showing applicable data and calculations for documentation of average compressive strength according to ACI 301.

**02001.20(a) Strength** - Replace Table 2001-1 with the following Table 2001-1:

**Table 02001-1**

| **Concrete Strength and Water/Cementitious Material (w/cm) Ratio** | | |
|---|---|---|
| **Type of Concrete** | **Strength $f'_c$ (psi)** | **Maximum w/cm Ratio** |
| Structural | 3300 | 0.50 |
| | 3300 (Seal) | 0.45 |
| | 4000 | 0.48 |
| | 4000 (Drilled Shaft) | |
| | HPC4500 | 0.40 |
| | HPC(IC)4500 | |
| | 5000 + | |
| Paving | 4000 | 0.44 |
| **PPCM's** (with cast-in-place decks and no entrained air) | 5000 | 0.48 |
| | 5500 | 0.44 |
| | 6000 + | 0.42 |

**02001.20(a)(1) Required Average Compressive Strength ($f'_{cr}$)** - Replace this subsection, except for the subsection number and title, with the following:

Except for PPCM designs, provide the required average compressive strength according to ACI 301 for mix design approval.

**02001.30(e)(1) HPC Coarse Aggregate Content** - Delete the paragraph that begins "Two or more Aggregate products or sources…"

## SECTION 02030 – SUPPLEMENTARY CEMENTITIOUS MATERIALS

Comply with Section 02030, of the Standard Specifications modified as follows:

**02030.00 Scope** - Replace this subsection, except for the subsection number and title, with the following:

This Section includes the requirements for fly ash, natural pozzolans, silica fume, ground granulated blast furnace slag and high reactivity pozzolans used in portland cement concrete.

**02030.10 Fly Ash** - Replace this subsection, except for the subsection number and title, with the following:

Furnish Class C and Class F fly ash from the QPL and conforming to AASHTO M 295 (ASTM C618).

Add the following subsection:

**02030.15 Natural Pozzolans** - Furnish Class N natural pozzolans from the QPL and conforming to AASHTO M 295 (ASTM C618).

**02030.50 Metakaolin** - Replace this subsection with the following:

**02030.50 High Reactivity Pozzolans** - Furnish high-reactivity pozzolans from the QPL and conforming to AASHTO M 321.

## SECTION 02050 - CURING MATERIALS

Comply with Section 02050 of the Standard Specifications modified as follows:

**02050.10 Liquid Compounds** - Replace the paragraph that begins “Furnish liquid membrane-forming curing…“ with the following paragraph:

Furnish liquid membrane-forming curing compounds from the QPL and meeting the requirements of ASTM C309. Before use, submit a one quart sample from each lot for testing. Samples will be tested according to ODOT TM 721. Samples are not required for curing compounds used on Commercial Grade Concrete.

## SECTION 02415 - PLASTIC PIPE

Comply with Section 02415 of the Standard Specifications modified as follows:

**02415.40 Polypropylene Pipe** - Replace the sentence that begins "Dual wall polypropylene pipe …" with the following sentence:

Dual wall polypropylene pipe and fittings ..... ASTM F2764

## SECTION 02470 – POTABLE WATER PIPE MATERIALS

Comply with Section 02470 of the Standard Specifications modified as follows:

**02470.20(a) General** - Add the following to the end of this subsection:

Where ductile iron pipe is used for water distribution, pipe shall be Class 52 ductile iron pipe with push-on joints conforming to AWWA C-151. All ductile iron pipe within a single project shall be of the same manufacturer.

Add the following subsection:

**02470.20(c) On Bridge Installations** - Furnish restrained joint ductile iron pipe from one of the following manufacturers:

- U.S. Pipe, phone #: (925) 329-0327, TR-Flex Restrained Joint Ductile Iron Pipe and Fittings
- American Ductile Iron Pipe Company, phone #: (503) 577-4194, Flex-Ring Restrained Joint Pipe and Fittings

**02470.31 High Density Polyethylene (HDPE) Pipe** - Replace the sentence that begins "Furnish all pipe with…" with the following sentence:

Furnish all pipe with a minimum dimension radio (DR) of 11.

**02470.40 Polyvinyl Chloride (PVC) Pipe 4 Inches and Larger** - Replace this subsection, except for number and title, with the following:

**a) PVC Pipe** - PVC pipe 4 inches to 60 inches in diameter shall meet the requirements for AWWA C900, have the same outside dimensions as ductile iron pipe and have a minimum dimension ratio (DR) of 18 or as specified or indicated.

**b) Joints** - Joints shall meet the requirements of ASTM D3139 using a restrained rubber gasket conforming to ASTM F477. Solvent-welded pipe joints are not allowed.

Add the following subsection:

**02470.48 Gaskets** - Rubber-ring gaskets for push-on joints shall be furnished by the pipe manufacturer to ensure compatibility with the gasket groove in the push-on bell end. Gaskets shall be suitable for the specified pipe sizes and pressure.

**02470.60(a) Marking Tape** - Replace this subsection, except for number and title, with the following:

Underground warning tape shall be detectable or non-detectable acid and alkali resistant

safety warning tape. The tape shall consist of a minimum 4.0 mil (0.004") thick, virgin low density polyethylene plastic film formulated for extended use underground. The tape shall be in accordance with the APWA national color code and shall be permanently imprinted in lead free black pigments suitable for direct burial. The tape shall be safety blue and shall be provided with the legend "CAUTION BURIED WATER LINE BELOW" or approved equivalent printed continuously down the length of the tape.

## SECTION 02471 – SEWER FORCE MAIN PIPE MATERIALS

Section 02471, which is not a Standard Specification, is included in this Project by special provision.

### Description

**02471.00 Scope** - This Section includes the requirements for sanitary sewer force main pipeline systems.

### Materials

**02471.10 General** - Comply with 02470.10.

**02471.20 Ductile Iron Pipe** - Comply with 02470.20.

**02471.31 High Density Polyethylene (HDPE) Pipe** - Comply with 02470.31.

**02471.40 Polyvinyl Chloride (PVC) Pipe 4 Inches and Larger** - Comply with 02470.40.

**02471.48 Gaskets** - Comply with 02470.31.

**02471.60 Marking Tape and Wire:**

a) **Marking Tape** - Underground warning tape shall be detectable or non-detectable acid and alkali resistant safety warning tape. The tape shall consist of a minimum 4.0 mil (0.004") thick, virgin low density polyethylene plastic film formulated for extended use underground. The tape shall be in accordance with the APWA national color code and shall be permanently imprinted in lead free black pigments suitable for direct burial. The tape shall be green and shall be provided with the legend "CAUTION BURIED SEWER LINE BELOW" or approved equivalent printed continuously down the length of the tape.

b) **Detectable Marking Wire** - Furnish detectable marking wire with blue colored insulation and according to 00445.11. Furnish splice kits according to 00445.48.

## SECTION 02475 – POTABLE WATER FITTING MATERIALS

Comply with Section 02475 of the Standard Specifications modified as follows:

**02475.20 Ductile Iron Pipe Fittings** - Add the following to the end of this subsection:

- All MJ tees, crosses, elbows, reducers, adapters, combinations thereof, and other miscellaneous fittings 4-inches through 24-inches in diameter shall be ductile iron compact fittings in conformance with AWWA C- 153.

- MJ joints shall be provided with corten tee-head bolts and nuts (ASTM A242, high strength, low alloy steel conforming with AWWA C-111).

- Retainer gland casting bodies shall have all surfaces fusion bond powder coated (polyester or nylon based) after pretreatment with a phosphate wash, rinse & sealer coating (Mega-Bond or approved equal).

- Retainer gland set wedge bolts and set wedge assemblies shall have all surfaces coated with a minimum of two coats of fluoropolymer coating or approved equal coating to control thread friction torque during tightening of set wedges).

- Retainer glands for use on MJ joints shall be "Mega-Lug" as manufactured by EBAA Iron Inc., color coded based on the type of compatible pipe, or approved equal.

- Flanged Joints: As a minimum, all nuts and bolts used for flanged joints shall conform to the requirements of ASME/ANSI B18.2.1 and shall be high strength, low carbon steel conforming to the requirements of ASTM A-307 Grade B, zinc plated steel conforming with AWWA C-111.

- Areas with Corrosion Concerns: For any areas where required by Public Works Director, MJ and flanged joints shall be provided with bolts and nuts how alloy steel conforming with AWWA C-111) coated with a zinc base coat and a Xylan fluoropolymer top coating (or approved equal) for corrosion control and to control thread friction torque during tightening (Romac R-Blue, TriPac 2000 Blue or approved equal).

Add the following subsections:

**02475.52 Mid Span Pipe Restraints** - Provide 1100SDB MEGALUG Mid Span Pipe Restraint by EBAA Iron or approved equal.

**02475.55 Flexible Expansion Joints:**

**a) Single or Double Ball Expansion Joints** – Double ball expansion joints shall be EBAA Iron “FLEX-TEND Flexible Expansion Joint”, or approved equal. Flexible expansion joints shall be installed in the locations indicated on the drawings and shall be manufactured of ductile iron conforming to the material requirements of ASTM A536and ANSI/AWWA C153/A21.53. Foundry certification of material shall be readily available upon request. Each flexible expansion joint shall be pressure tested prior to shipment against its own restraint to the following minimum pressure:

Joint Diameter: Minimum Pressure
2 inch: 250 psi

- 2 inch through < 30 inch: 350 psi

30 inch or larger: 250 psi

A minimum 2:1 safety factor, determined from the published pressure rating, shall apply.

Factory Mutual Approval for the 3 inch through 12 inch sizes is required. Each flexible expansion joint shall consist of an expansion joint designed and cast as an integral part of a ball and socket type flexible joint, having a minimum per ball deflection of 20º for 2 inch through 12 inch sizes; 15º for 14 Inch.

Provide ball expansion fittings with the following expansion and offset allowances;

Double Ball: 12-inch; 12-inch Expansion; 23-inch offset
Double Ball: 14-inch; 16-inch Expansion; 19-inch offset

Single Ball: 12-inch; 12-inch Expansion
Single Ball: 14-inch; 24-inch Expansion

Double ball expansion fittings (force balanced) shall not expand or exert an axial imparting thrust under internal water pressure. The flexible expansion fitting shall not increase or decrease the internal water volume as the unit expands or contracts.

As required in the drawings, provide flanged joint end connections conforming to AWWA C110, or mechanical joint end connections conforming to AWWA C11/C153. MEGALUG joint restraint shall be provided with each mechanical joint connection. All internal surfaces (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. The coating shall meet ANSI/NSF-61. Exterior surfaces shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16. Manufacturer's certification of compliance to the above standards and requirements shall be readily available upon request. The purchaser (or owner) shall reserve the right to inspect the manufacturer's facility for compliance. Sealing gaskets shall be constructed of EPDM. Appropriately sized polyethylene sleeves, meeting ANSI/AWWA C105/A21.5, shall be included for direct buried applications.

**b) Expansion Joints** - Expansion joints shall be installed in the locations indicated on the drawings and shall be manufactured of ductile iron conforming to the material properties of ANSI/AWWA C153/A21.53. All expansion joints shall be capable of expanding or contracting to the amounts shown on the drawings, or indicated in the specifications, but in no case shall there be less than 4" total axial movement. Separation beyond the maximum extension of the expansion joint shall be prevented without the use of external tie rods. Each expansion joint shall be pressure tested against its own restraint to a minimum of 350 psi (250 psi 24 inch and greater). Provide end connections as identified in the drawings. MEGALUG joint restraint shall be provided with each mechanical joint connection. All pressure containing parts shall be lined with a minimum of 15 mils

of fusion bonded epoxy, conforming to the applicable requirements of ANSI/AWWA C213, and shall be tested with a 1500 volt spark test conforming to stated specification. All expansion joints shall be EX-TEND 200, as manufactured by EBAA Iron, Inc., or approved equal.

Provide expansion fittings with the following expansion and offset allowances;

12-inch; 12-inch Expansion

c) **Flexible Ball Joints** - Flexible ball joints shall be installed in the locations indicated on the drawings and shall be manufactured of ductile iron conforming to the material properties of ANSI/AWWA C153/ A21.53. Flexible joints shall consist of a ball and socket type joint capable of 12° - 15° minimum deflection. Each flexible ball joint shall be pressure tested against its own restraint to 350 PSI for sizes 3 inch through 24 inch and 250 PSI for sizes 30 inch to 48 inch and 200 PSI on 72 inch. Provide end connections as identified in the drawings. MEGALUG® joint restraint shall be provided with each mechanical joint connection. All internal surfaces (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. Sealing gaskets shall be constructed of EPDM. The coating shall meet ANSI/NSF-61. Exterior surfaces shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16. All flexible ball joints shall be FLEX-900 as manufactured by EBAA Iron, Inc. or approved equal.

**02475.60 Bolted, Sleeve-Type Couplings for Plain-End Pipe** - Add the following to the end of this subsection:

**(a) Unrestrained Couplings** - Unrestrained mechanical joint sleeve couplings and adapters shall be long-style solid sleeve type couplings consisting of a fusion bond epoxy coated ductile iron sleeve, ductile iron follower rings, rubber gaskets, and corrosion-resistant bolts and hex nuts (zinc plated). Unrestrained long sleeve couplings shall be Tyler Pipe, UFCO, Star, Sigma or approved equal. Hymax Wide Range Couplings are allowed as an alternative to unrestrained MJ sleeve couplings.

**(b) Restrained Couplings** - Unless otherwise specifically specified or noted on the drawings, restrained sleeve couplings up to 12-inch diameter shall be Krausz Hymax Grip Coupling, or approved equal (Romac Alpha Coupling), consisting of a fusion bond epoxy coated two bolt coupling with all cast components (end rings, center ring, bolt guides, gripper teeth) of ductile iron, NBR gaskets, stainless steel hardware, stainless steel bolts & anti-gall e-coated nuts.

**(c) Dresser Type Couplings** – Dresser type couplings are not an approved option unless specifically approved by the Public Works Director. Applications shall be limited to transitions between pipe types for which mechanical joint couplings are not available.

**(d) Push-on Joint Restraints (Ductile Iron Pipe, 3" – 54")-** Ductile iron pipe bell restraint shall consist of a wedge action restraint ring on the spigot joined to a split ductile iron ring behind the bell. The restraint ring shall have individually actuated wedges that increase their resistance to pull-out as pressure or external forces increase. The restraint ring and its wedging components shall be made of minimum

grade 65-45-12 ductile iron conforming to ASTM A536. The wedges shall be heat treated to a minimum hardness of 370 BHN. Torque limiting twist off nuts shall be used to insure proper actuation of the restraining wedges. The split ring shall be made of a minimum grade of 65-45-12 ductile iron conforming to ASTM A536. The restraint devices shall be coated using MEGA-BOND. The connecting tie rods that join the two rings shall be made of low alloy steel that conforms to ANSI/AWWA C111/A21.11. Side clamp bolts shall be of SAE J429 Grade 5 material. The assembly shall have a rated pressure with a minimum two to one safety factor of 350 PSI in the sixteen inch size and below. The product shall be the Series 1700 Megalug® restraint harness, manufactured by EBAA Iron, Inc., or approved equal.

**(e)** **Push-on Joint Restraints (PVC Pipe, 4" – 12")** - Restraint for PVC pipe bell (AWWA C900) shall consist of the following: The restraint shall be manufactured of ductile iron conforming to ASTM A536. The restraint devices shall be coated with MEGA-BOND. Side clamp bolts shall be of SAE J429 Grade 5 material. A split serrated ring shall be used behind the pipe bell. A split serrated ring shall also be used to grip the pipe, and a sufficient number of bolts shall be used to connect the bell ring and the gripping ring. The combination shall have a pressure rating as shown in the adjacent table. The restraint shall be the Series 1500, as manufactured by EBAA Iron, Inc., or approved equal.

**(f)** **Push-on Joint Restraints (PVC Pipe, 14" – 54") -** Restraint for PVC pipe (AWWA C905 CI O.D.) at the bell shall consist of the following: The restraint shall be manufactured of ductile iron conforming to ASTM A536. A backup ring shall be used behind the PVC bell. A restraint ring, incorporating a plurality of individually-actuating gripping surfaces, shall be used to grip the pipe, and a sufficient number of bolts shall be used to connect the bell ring and the gripping ring. The restraint devices shall be coated with MEGA-BOND. The restraint shall be the Series 2800, as manufactured by EBAA Iron, Inc., or approved equal.

## SECTION 02476 – SEWER FORCE MAIN FITTING MATERIALS

Section 02476, which is not a Standard Specification, is included in this Project by special provision.

### Description

**02476.00 Scope** - This Section includes the requirements for fittings, restrained joints, and couplings for ductile iron pipe, high density polyethylene (HDPE) pipe and polyvinyl chlorine (PVC) pipe for sanitary sewer force main systems. Comply with Section 02475.

## SECTION 02480 – POTABLE WATER VALVE MATERIALS

Comply with Section 02480 of the Standard Specifications modified as follows:

**02480.20(c) Valves** - Replace subsection, except for subsection number and title, with the following:

Provide gate valves that are epoxy coated iron-body, resilient wedge non-rising stem gate valves. The wedge shall be cast iron completely encapsulated in a elastomer covering with polymer guide bearing caps on each side. The valves shall have a full diameter waterway with no grooves or recesses at the valve seat location. Flanges, where required, shall be 125 pound, full faced, drilled per ANSI B16.1.

Gate valves shall be Mueller A-2360, Waterous Series 500 or approved equivalent.

**02480.22(b) Valve Operators** - Add the following to the end of this subsection:

Butterfly valves shall be provided with standard gearing to match the same number of turns as a gate valve of the same size (3 x diameter plus 1 turn to open or closed).

**02480.22(c) Valves** - Add the following to the end of this subsection:

Butterfly valves shall be Pratt Groundhog series, or approved equivalent.

**02480.25 Valve Boxes** - Add the following to the end of this subsection:

- Provide buried valves with new valve boxes, including new valves installed by the Contractor, or existing valves which are excavated around as part of the work, and existing valves which are located within newly paved, newly concreted or newly graveled surfaces. Valve boxes shall conform to Standard Details (reuse of existing valve boxes will only be allowed is they fully conform with current standard details, are accurately centered on the valve nut, are clean of excess rock or debris around the valve nut, and are approved in writing by the City).

- All valve boxes noted above shall be provided with VC212 self centering valve box bases with integral rubber fingers to exclude rock from around the valve nut, as manufactured by 3 Dimensional Contracting, or approved equivalent.

**02480.26 Valve Extensions** - Replace this subsection, expect for number and title, with the following:

Extension stems shall be provided for buried valves when the operating nut is four (4) feet or more below finished grade. Extension stem shall extend to within twelve (12) inches (minimum of the finished ground surface and shall be provided with spacers which will center the stem in the valve box.

**02480.60 Combination Air Release/Air Vacuum Valves** - Replace this subsection, except for number and title, with the following:

Combination air valves for water mains shall be A.R.I. Model D-040-C, or approved equal.

Use stainless steel body, cover, drain ball valve, float, and stem components, BUNA-N o-rings and polypropylene discharge outlet. Provide working pressure of 230 psi (16 bar).

Pipe connection saddles to be ductile iron service saddles with stainless steel bolts and

double strap clamps. Saddles shall be furnished with a fusion bonded epoxy or nylon coating conforming to the requirements of AWWA C-550, Romac 202NS, Ford FC202 or approved equal.

Isolation ball valves shall be bronze body valves, blow out proof stems, PTFE seats, chromium plated ball, 400 psi CWP with lever and vinyl grip.
Heated/insulated weather protection enclosure shall be corrosion resistant reinforced fiberglass (beige color) with overlapping, lockable and hinged lid, drain openings and steel anchors for mounting, Provide Hubbell HotBox enclosures sized as indicated in the drawings.
Pipe Insulation -: Provide 2-inch thick closed-cell polystyrene pipe insulation meeting the following requirements

FOAMULAR XPS manufactured by Owens Corning Infrastructure Solutions, 210 N. 13th Street, Seward, NE 68434, ph: 1-800-869-0359
Provide 1" thickness, closed-cell polystyrene pipe insulation.

Acceptable products:
Owens Corning; FOAMULAR XPS
Approved equal.

Pipe Insulation Jacket - : Provide 30 mil PVC pipe and fitting jacketing with manufacturer's recommended joint and seam sealant materials and procedures.

Pipe Cladding -: Provide 16-gauge, smooth, aluminum jacket with interior 3-mil polyfilm moisture barrier and stainless steel bands fastening bands.

Self-regulating Heat Tape Kit: Provide 12 feet of self-regulating heat tape preassembled with end plug for standard, grounded, 12V receptacle. Provide outer jacket of moisture-resistant, flame-resistant thermoplastic elastomer. Heat tape shall provide 5W/foot at 50 deg F. Intertek, Chromalox, or equal.

## SECTION 02481 – SEWER FORCE MAIN VALVES

Section 02481, which is not a Standard Specification, is included in this Project by special provision.

### Description

**02481.00 Scope** - This section includes the requirements for plug valves, valve boxes, and combination air release/air vacuum valves for sanitary sewer force main systems.

### Materials

**02481.10 General** - Provide valves with operating nuts or hand wheels as specified or shown and furnish a 2-inch operating nut. When indicated, coat all interior and exterior ferrous surfaces with a protective epoxy coating meeting the requirements of AWWA C550.

**02481.15 Eccentric Plug Valves** -

Eccentric Plug Valves shall be of the tight closing, full 100% port, resilient faced, non-lubricating variety and shall be of eccentric design such that the valves pressure member (plug) rises off the body seat contact area immediately upon shaft rotation during the opening movement. Valves shall be drop-tight at the rated pressure (175 psi through 12"), and shall be satisfactory for applications involving infrequent on-off service and pipeline pigging. The valve closing member should rotate approximately 90 degrees from the full-open to full-close position and vice-versa.

The valve body shall be constructed of cast iron (semi-steel) conforming to ASTM A126, Class B. Body ends shall be:

Flanged with dimensions, facing, and drilling in full conformance with A-ANSI B16.1, Class 125. Mechanical Joint to meet the requirements of AWWA C111/ANSI A21.11 Grooved ends to meet the requirements of AWWA C606.

The plug valve body shall be cast iron ASTM A126 Class B with welded-in overlay of 90% nickel alloy content on all surfaces contacting the face of the plug. Sprayed, plated, nickel welded rings or seats screwed into the body are not acceptable.

Plugs shall be of ASTM A-536-Grade 65-45-12 ductile iron with Buna N resilient seating surface to mate with the body seat. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Shaft bearings, upper and lower, shall be sleeve type metal bearings, sintered, oil impregnated, and permanently lubricated type 316 stainless steel conforming to ASTM A Grand C-8M. Thrust bearings shall be Nylatron.

Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517-09 Section 4.4.7. Seals shall be self-adjusting and repackable without removing the bonnet from the valve.

Each valve shall be given a test against the seat at the full rated working pressure and a hydrostatic shell test at twice the rated working pressure. Certified copies of individual tests shall be submitted when requested. Certified copies of proof-of-design tests shall be submitted upon request.

Manual valves shall have worm gear type actuators with either 2" square nuts for buried service, or handwheel for interior applications.

All eccentric plug valves shall be Henry Pratt, Val-Matic, or approved equal.

Unless otherwise necessary for proper operation or permitted by the ENGINEER, all eccentric plug valves shall be installed with the shaft horizontal and the plug in the upper half of the valve body. Valves in sewage or sludge lines shall be installed with the seat on the upstream end.

**02481.25 Valve Boxes** -

- All buried valves shall be provided with new valve boxes, including new valves installed by the Contractor, or existing valves which are excavated around as part of the work, and existing valves which are located within newly paved, newly concreted or newly graveled surfaces. Valve boxes shall conform to Standard Details (reuse of existing valve boxes will only be allowed is they fully conform with current standard details, are accurately centered on the valve nut, are clean of excess rock or debris around the valve nut and are approved in writing by the City).

- All valve boxes noted above (new and reused existing valves) shall be provided with VC212 self-centering valve box bases with integral rubber fingers to exclude rock from around the valve nut, as manufactured by 3 Dimensional Contracting, or approved equivalent.

**02481.26 Valve Extensions** - Extension stems shall be provided for buried valves when the operating nut is four (4) feet or more below finished grade. Extension stem shall extend to within twelve (12) inches (minimum of the finished ground surface and shall be provided with spacers which will center the stem in the valve box.

**02481.60 Combination Air Release/Air Vacuum Valves** -

Combination air valves for sewer force mains shall Vent-O-Mat, Series RGXII valves. The double-acting, Sewage Air Release & Vacuum Break Valve shall consist of an all stainless steel fabricated body, stainless steel direct acting float and solid large orifice float and “anti-surge” float in H.D.P.E. - stainless steel nozzle and woven dirt inhibitor screen, EPDM rubber seals and seat. The valve shall have an integral "Anti-Surge" Orifice mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure to less than 1.5 x valve rated working pressure. The intake orifice area shall be equal to the nominal size of the valve i.e., a 150mm (6") valve shall have a 150mm (6") intake orifice. Large orifice sealing shall be affected by the flat face of the control float seating against a EPDM rubber 'O' ring housed in a dovetail groove circumferentially surrounding the orifice. Discharge of pressurized air shall be controlled by the seating & unseating of a small orifice nozzle on a E.P.D.M. rubber seal affixed into the control float. The nozzle shall have a flat seating land surrounding the orifice so that damage to the rubber seal is prevented.
Pipe connection saddles to be ductile iron service saddles with stainless steel bolts and double strap clamps. Saddles shall be furnished with a fusion bonded epoxy or nylon coating conforming to the requirements of AWWA C-550, Romac 202NS, Ford FC202 or approved equal.

Isolation ball valves shall be bronze body valves, blow out proof stems, PTFE seats, chromium plated ball, 400 psi CWP with lever and vinyl grip.

Heated/insulated weather protection enclosure shall be corrosion resistant reinforced fiberglass (beige color) with overlapping, lockable and hinged lid, drain openings and steel anchors for mounting, Provide Hubbell HotBox enclosures sized as indicated in the drawings.
Pipe Insulation -: Provide 2-inch thick closed-cell polystyrene pipe insulation meeting the following requirements

FOAMULAR XPS manufactured by Owens Corning Infrastructure Solutions, 210 N. 13th Street, Seward, NE 68434, ph: 1-800-869-0359
Provide 1” thickness, closed-cell polystyrene pipe insulation.

Acceptable products:
Owens Corning; FOAMULAR XPS
Approved equal.

Pipe Insulation Jacket - : Provide 30 mil PVC pipe and fitting jacketing with manufacturer's recommended joint and seam sealant materials and procedures.

Pipe Cladding -: Provide 16-gauge, smooth, aluminum jacket with interior 3-mil polyfilm moisture barrier and stainless steel bands fastening bands.

Self-regulating Heat Tape Kit: Provide 12 feet of self-regulating heat tape preassembled with end plug for standard, grounded, 12V receptacle. Provide outer jacket of moisture-resistant, flame-resistant thermoplastic elastomer. Heat tape shall provide 5W/foot at 50 deg F. Intertek, Chromalox, or equal.

**02481.80 Acceptance** - Valves and appurtenances will be accepted according to 00165.35 and this Section.

## SECTION 02485 – HYDRANT AND APPURTENANCE MATERIALS

Comply with Section 02485 of the Standard Specifications modified as follows:

**02485.10 Hydrants** - Add the following to the end of this subsection:

Unless otherwise required by the Dayton Fire District, all fire hydrants shall conform to the following:

- Improved, dry barrel, 5 1/4-inch compression type valve, traffic model.
- Equipped with two 2-1/2-inch hose ports (NST), one 4-inch pumper port (NST) with Storz adapter as specified, 1-1/2-inch pentagon nut, and barrel drains.
- Oriented so as to optimize access to ports, or as directed by the City Engineer or Fire Code Official.
- Kennedy Guardian K81D and factory coated yellow with powder coat epoxy.

## SECTION 02490 – POTABLE WATER SERVICE CONNECTION MATERIALS, 2 INCH AND SMALLER

Comply with Section 02490 of the Standard Specifications modified as follows:

**02490.20 Saddles** - Replace this subsection, except for the subsection number and title, with the following:

Service saddles shall be ductile iron with stainless steel bolts and double strap clamps. Furnish with a fusion bonded epoxy or nylon coating conforming to the requirements of AWWA C-550, Romac 202NS, Ford FC202 or approved equal.

Unless otherwise required by the City Engineer or the Public Works Director, single residential service pipe shall be a minimum of 1-inch diameter.

**02490.30 Service Connection Valves** - Replace this subsection, except for the subsection number and title, with the following:

**(a) Corporation Stops** - All corporation stops shall be brass ball valve corporation stops rated to 300 psi with iron pipe thread inlet and compression outlet to adapt to HDPE copper tube size (CTS) pipe. Corporation stops shall be Ford FB- 1100-4Q or approved equivalent.

**(b)** Each individual water service line shall be equipped with a full size locking ball valve meter stop assembly at the inlet to the meter. All meter stop assemblies shall be brass with copper pipe connector as appropriate and outlet for meter coupling.

**(c)** Meter stops for 3/4-inch and 1-inch meters shall be 1-inch locking angle ball valves with compression inlet. 1-inch meter stops shall be Ford BA43-444WQ, or approved equivalent. Provide all services with a 1” x 3/4” adapter on the meter stop for each 1” service.

**02490.40(b) Polyethylene Tubing Service Pipe** - Replace this subsection, except for number and title, with the following:

Unless otherwise specified herein, water service lines shall be blue HDPE tubing (CTS, SDR 9, 200 psi rated) conforming to AWWA C901 (ASTM D2239 & D2737), with long style compression inserts and Q style compression fittings (Cencore or approved equal). All water services shall be continuous HDPE without splices

**02490.40(c) Service Fittings** - Replace this subsection, except for number and title, with the following:

Compression Inserts. All service connections to HDPE service pipe shall be compression fittings, with 2-3/8” long inserts provided for all HDPE connections per manufacturer’s recommendations (AY McDonald 6133T CTS insert stiffener or equal). All service connections to copper pipe shall be compression fittings.

- No-Lead Service Brass. All service brass shall be manufactured from no-lead alloy conforming with UNS/CDA C89833 and shall have the letters “NL” cast into the body for proper identification.

- Where permitted, service line couplings shall be compression style couplings. Couplings (where approved by Public Works Director) shall be Ford C44-44Q coupling or approved equivalent, with long style compression inserts as specified above.

**02490.70 Meter Boxes** - Replace this subsection, except for number and title, with the following:

Unless otherwise approved by the Public Works Director, all meter boxes must be as shown below:

| Service Line Size | All Areas | Inside Dimensions |
|---|---|---|
| 1-inch | Box– DFW1324C4-12-BODY<br>Lid – DFW132C-4T-LID | 13” x 24” |

Meter boxes shall be H20 rated polymer boxes with covers configured for top mount touch - read AMR sensors and containing an embedded locator magnet.

## SECTION 02510 - REINFORCEMENT

Comply with Section 02510 of the Standard Specifications modified as follows:

**02510.11(c) Coated Reinforcement Ties and Supports** - Replace this subsection, except for the subsection number and title, with the following:

Ties and supports for coated reinforcement, including ties for coated to uncoated reinforcement connections, shall be nonmetallic coated.

## SECTION 02530 - STRUCTURAL STEEL

Comply with Section 02530 of the Standard Specifications modified as follows:

**002530.10 Structural Steel for Bridges** - Replace this subsection, except for the subsection number and title, with the following:

Structural steel for Bridges shall conform to the following, as shown or specified:

- AASHTO M 270, Grade 36 (ASTM A709, Grade 36)
- AASHTO M 270, Grade 50 (ASTM A709, Grade 50)
- AASHTO M 270, Grade 50W (ASTM A709, Grade 50W)
- AASHTO M 270, Grade HPS 70 (ASTM A709 Grade HPS 70)
- AASHTO M 270, Grade HPS 70W (ASTM A709 Grade HPS 70W)

Impact test requirements, for both non-fracture-critical tension components (T), and fracture-critical tension components (F), are to be according to Zone 2 requirements of AASHTO M 270 Tables 11 and 12, respectively.

## SECTION 02560 - FASTENERS

Comply with Section 02560 of the Standard Specifications modified as follows:

**02560.30(b) High Strength Tie Rods, Anchor Bolts and Anchor Rods** - Add the following paragraph to the end of this subsection:

End stamp all ASTM F1554, Grade 105 according to ASTM F1554 Supplementary Requirements S2 and S3. If the end of the bolt is to be embedded in concrete, the projecting end from the concrete shall be the marked end.

## SECTION 02690 - PCC AGGREGATES

Comply with Section 02690 of the Standard Specifications modified as follows:

**02690.20(e) Grading and Separation by Sizes for Prestressed Concrete** - Replace this subsection with the following subsection:

**02690.20(e) Grading and Separation by Sizes -** Sampling shall be according to AASHTO R 90. Sieve analysis shall be according to AASHTO T 27 and AASHTO T 11. Provide aggregates meeting the gradation requirements of Table 02690-1 for structural concrete. Provide a CAgT to perform sampling and testing when required.

**Table 02690-1**
Gradation of Coarse Aggregates
Percent passing (by Weight)

| | | Sieve Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size Number | Nominal Size Square Openings | (2½ in.) | (2 in.) | (1½ in.) | (1 in.) | (¾ in.) | (½ in.) | (⅜ in.) | (No. 4) | (No. 8) | (No. 16) | (No. 50) | (No. 200) |
| 3 | (2 to 1 in.) | 100 | 90 to 100 | 35 to 70 | 0 to 15 | — | 0 to 5 | — | — | — | — | — | ** |
| 357* | (2 in. to No. 4) | 100 | 95 to 100 | — | 35 to 70 | — | 10 to 30 | — | 0 to 5 | — | — | — | ** |
| 4 | (1½ to ¾ in.) | — | 100 | 90 to 100 | 20 to 55 | 0 to 15 | — | 0 to 5 | — | — | — | — | ** |
| 467* | (1½ to No. 4) | — | 100 | 95 to 100 | — | 35 to 70 | — | 10 to 30 | 0 to 5 | — | — | — | ** |
| 5 | (1 to ½ in.) | — | — | 100 | 90 to 100 | 20 to 55 | 0 to 10 | 0 to 5 | — | — | — | — | ** |
| 56 | (1 to ⅜ in.) | — | — | 100 | 90 to 100 | 40 to 85 | 10 to 40 | 0 to 15 | 0 to 5 | — | — | — | ** |
| 57 | (1 to No. 4) | — | — | 100 | 95 to 100 | — | 25 to 60 | — | 0 to 10 | 0 to 5 | — | — | ** |
| 6 | (¾ to ⅜ in.) | — | — | — | 100 | 90 to 100 | 20 to 55 | 0 to 15 | 0 to 5 | — | — | — | ** |
| 67 | (¾ to No. 4) | — | — | — | 100 | 90 to 100 | — | 20 to 55 | 0 to 10 | 0 to 5 | — | — | ** |
| 68 | (¾ to No. 8) | — | — | — | 100 | 90 to 100 | — | 30 to 65 | 5 to 25 | 0 to 10 | 0 to 5 | — | ** |
| 7 | (½ to No. 4) | — | — | — | — | 100 | 90 to 100 | 40 to 70 | 0 to 15 | 0 to 5 | — | — | ** |
| 78 | (½ to No. 8) | — | — | — | — | 100 | 90 to 100 | 40 to 75 | 5 to 25 | 0 to 10 | 0 to 5 | — | ** |
| 8 | (⅜ to No. 8) | — | — | — | — | — | 100 | 85 to 100 | 10 to 30 | 0 to 10 | 0 to 5 | — | ** |
| 89 | (⅜ to No. 16) | — | — | — | — | — | 100 | 90 to 100 | 20 to 55 | 5 to 30 | 0 to 10 | 0 to 5 | ** |

* Use two or more seperated sizes which when combined meet these gradation limits.

** See 02690.20(a). Do Not evaluate material passing the No. 200 sieve according to 00165.40.

**02690.20(f) Grading and Separation by Sizes for Other Concrete** - Delete this subsection.

**02690.30(g) Grading** - In the paragraph that begins “Sampling shall be according to…”, replace the words “AASHTO T 2” with the words “AASHTO R 90”.

## SECTION 02926 - HIGHWAY ILLUMINATION MATERIALS

Comply with Section 02926 of the Standard Specifications modified as follows:

Add following subsection:

**02926.41(f) Electrical Splice Materials** - Furnish electrical splice materials meeting the following requirements:

- **Split bolt** - Made of silicon bronze to securely join the wires both mechanically and electrically.
- **Heat-shrink tubing** - Split-resistant and adhesive-lined tube made of polyolefin complying with UL 224 or UL 486D, temperature range -67 °F to 230 °F, with 600 V rated inner melting wall or liner to provide void-free encapsulated insulation.
- **Insulating rubber tape** - Electrical grade, nondrying, rubber based, elastic type complying with ASTM D4388.
- **Insulating vinyl plastic tape** - Low temperature (0 °F) resistant, vinyl chloride plastic, electrical insulating tape with pressure-sensitive adhesive. Comply with ASTM D3005.