

**SECTION 01140 - POTABLE WATER PIPE AND FITTINGS**

*(Follow all instructions and make all edits with "Track Changes" turned on. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the Project. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)*

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

**01140.10 Materials** - Delete the paragraph that begins "High Density Polyethylene (HDPE) pipe shall..."

**01140.11 Handling Pipe and Fittings** - Replace the paragraph that begins "Handle pipe and fittings ..." with the following paragraph:

Handle pipe and fittings to prevent damage to or contamination of the pipe, fitting, lining, or coating. Load and unload pipe and fittings using hoists and slings so as to avoid shock or damage, and under no circumstances allow them to be dropped, skidded, or rolled against other pipe or fittings. If any part of the coating or lining is damaged, repair in a manner satisfactory to the Engineer. Damaged or contaminated pipe and fittings are rejected. Immediately separate all damaged or contaminated pipe and fittings and remove from the Project Site.

**01140.41(b)(1) Curves** - Replace this subsection, except for the subsection number and title, with the following:

Lay horizontal and vertical long radius curves with standard pipe by deflecting the joints. Use standard fittings and standard pipe lengths, unless otherwise shown. If shorter pipe lengths are required, the maximum allowable pipe lengths are shown. Do not exceed 80 percent of the manufacturer's recommendations for the amount of deflection at each pipe joint when pipe is laid on a horizontal or vertical curve. Where field conditions require deflection or curves not shown, the Engineer will determine the methods to be used.

**01140.41(d) Polyvinyl Chloride (PVC) Pipe** - Replace the paragraph that begins "Lay horizontal and vertical ..." with the following paragraph:

Lay horizontal and vertical curves in pipe, as shown, with standard pipe by deflecting the joints. Use standard fittings and standard pipe lengths unless otherwise shown. If shorter lengths of pipe are required, the maximum allowable pipe lengths are shown. Do not exceed 80 percent of the manufacturer's recommendations for the amount of deflection at each pipe joint when pipe is laid on a horizontal or vertical curve. Where field conditions require deflection or curves not shown, the Engineer will determine the methods to be used. Do not bend PVC pipe segments.

**01140.41(e) Water and Sanitary Sewer Separation** - Replace this subsection, except for the subsection number and title, with the following:

Comply with OAR 333-061 0050 governing horizontal and vertical separation between water and sanitary sewer facilities for installation of new water lines and appurtenances. Submit all proposals for variance in writing. Include in the proposal the reason for the variance, type of material and condition of the sewer line, and location of the water and sewer facilities, including horizontal and vertical skin-to-skin clearances. Proposals are reviewed by the Engineer and approved, approved as noted, or returned for correction. Each variance is addressed on a case-by-case basis.

**01140.42(b)(1) Joints and Fittings** - Replace this subsection, except for the subsection number and title, with the following:

Join pipes and fittings using the thermal butt fusion method according to ASTM D3261. Use HDPE fittings of the same class as the HDPE piping.

**01140.45(a) Installation** - Replace this subsection, except for the subsection number and title, with the following:

Install marking tape and wire over all nonmetallic water lines, including service connections. Place a continuous solid copper wire along the top of all water pipe, including service lines. Use cable ties to secure the copper wire to the top of the pipe at a maximum spacing of 10 feet. Tie all splices and make them electrically continuous and waterproof. Provide access to terminal ends of the wire at all valve boxes, meter boxes, hydrants, and vaults. Ensure a continuous wire circuit electrically isolated from ground. Place the marking tape approximately 1 foot above the top of the pipe for its full length.

**01140.45(c) Testing** - Replace this subsection, except for the subsection number and title, with the following:

Test for continuity and isolation from ground in the wire after all Work has been completed on the test section. Perform intermediate testing after backfilling operations and prior to surface restoration Work. Test continuity between access locations by use of a temporary wire connecting test points in-line with an ohmmeter. Measure resistance with an approved ohmmeter that has been properly calibrated. The continuity of a test section is accepted if the resistance of the test section does not exceed 5 ohms for each 500 feet of location wire being tested. Measure isolation from ground with an approved 1000-volt Megger, applied for 1 minute. The isolation of a test section is accepted if the isolation resistance of the test section is at least 10 megohms. Locate and repair all breaks or defects in the wire and re-test until specified results are obtained.

**01140.48 Maintaining Service** - Replace this subsection, except for the subsection number and title, with the following:

**(a) Service Transfer** - Where existing services are to be transferred from old to new mains, plan and coordinate the Work with that of the Utility so that service is resumed with the least possible inconvenience to the public.

**(b) Connections by Utility** - Allow the Utility to make connections into the new pipe at such locations as the Utility may elect to supply customers with water, after the affected

section of pipe has passed hydrostatic and bacteriological tests. Do not construe the installation of any such connections by the Utility as an acceptance by the Agency of any part of the Work required under the Contract.

**01140.50(a) Flush and Disinfect** - Replace this subsection, except for the subsection number and title, with the following:

Flush sections of pipe to be tested and disinfect to remove any solids or contaminated material that may have become lodged in the pipe. The minimum flushing velocity is 3 feet per second. If no hydrant is installed at the end of the main, provide a tap large enough to develop a velocity of at least 3 feet per second in the main. Perform flushing and disinfection according to AWWA C651-14.

**01140.51(a) General** - Replace the paragraph that begins "Test all water mains and ..." with the following paragraph:

Test all water mains and appurtenances in sections of convenient length under a hydrostatic pressure equal to one and one-half times the working pressure, but at least 150 psi, measured at the highest point of the test section. Provide and operate all pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring Equipment necessary for performing the test. Provide certifications of accuracy for gauges used in the test from an approved laboratory.

**01140.51(a)(5) Loss Formula** - Replace the paragraph that begins "The quantity of water ..." with the following paragraph:

Do not exceed the number of gallons per hour determined by the formula for the allowable quantity of water lost from the main:

**01140.51(a)(6) Pressure Loss** - Replace this subsection, except for the subsection number and title, with the following:

No appreciable or abrupt loss in pressure during the test period is allowable.

**01140.51(a)(8) Use of Hydrant Valves** - Replace this subsection, except for the subsection number and title, with the following:

Make all tests with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After the pipe test has been completed, test each gate valve in turn by closing it and relieving the pressure beyond. This test of the gate valve is acceptable if there is no immediate loss of pressure on the gauge when the pressure beyond the valve is relieved. Verify that the pressure differential across the valve does not exceed the rated working pressure of the valve.

**01140.51(b)(1) Exceptions** - Replace this subsection, except for the subsection number and title, with the following:

When an existing water main is extended with new pipe to a new valve, and the distance from the existing pipe to the new valve is 18 feet or less, no hydrostatic test is required if the section of new pipe between the new valve and the end of the existing main is installed with pretested, prechlorinated pipe. When the required hydrostatic tests are conducted in the new

main section beyond the installed new valve in the closed position, the normal pressure of the existing main may be present against the other side of the new valve.

**01140.51(c) Testing Sections with Hydrants Installed** - Replace the paragraph that begins "<sup>1</sup> Test each hydrant ..." with the following paragraph:

<sup>1</sup> Test each hydrant to the required test pressure. When testing a hydrant singly, pressure in the supply main beyond the hydrant auxiliary gate valve is 25 psi.

**01140.52(a) General** - Replace the paragraph that begins "The initial chlorine ..." with the following paragraph:

Ensure the initial chlorine content of the water is not less than 25 ppm. Ensure a chlorine residual of not less than 10 ppm remain in the water after standing 24 hours in the pipe.

**01140.52(d) Rate of Application** - Replace this subsection, except for the subsection number and title, with the following:

Control water from the existing distribution system, or other source of supply, to flow very slowly into the newly laid pipeline during application of the chlorine. Provide a chlorine application rate in such proportion to the rate of water entering the newly laid pipe that the initial chlorine content of the water is at least 25 ppm.

**01140.52(f) Retention Period** - Replace this subsection, except for the subsection number and title, with the following:

Retain chlorinated water in the pipe at least 24 hours. After this period, ensure the residual chlorine at pipe extremities and at other representative points is at least 10 ppm

**01140.52(h)(3) Service Resumption** - Replace this subsection, except for the subsection number and title, with the following:

Do not place the lines into service before a satisfactory report is received from the local or State health department on samples collected from representative points in the new system. Samples are collected and bacteriological tests obtained by the Engineer.

**00140.90 Payment** - Replace the paragraph that begins "In items (a) and (b) ..." with the following paragraph:

In items (a) and (b), the nominal diameter of pipe, fittings and couplings is inserted in the first blank. The class of backfill is inserted in the second blank. The quantities include the pipe plus the allowance for the fittings and couplings.

Replace the paragraph that begins "In item (c) ..." with the following paragraph:

In item (c), the class of backfill is inserted in the blank.

Replace the paragraph that begins "In item (d) ..." with the following paragraph:

In item (d), the nominal diameter of assembly is inserted in the blank.

Replace the paragraph that begins "In item (e)..." with the following paragraph:

In item (e) the nominal diameter of pipe is inserted in the first blank and the nominal diameter of the main line is inserted in the second blank.

Replace the paragraph that begins "In item(s) (f) and (g) ..." with the following paragraph:

In item(s) (f) and (g), the nominal diameter of pipe is inserted in the first blank. The class of backfill is inserted in the second blank.

Replace the paragraph that begins "In item(s) (h), (i), (j), (k), (l), ..." with the following paragraph:

In item(s) (h), (i), (j), (k), (l), (m), and (n), the nominal diameter of the fittings or couplings is inserted in the blank.

Replace the paragraph that begins "Payment will be payment ..." with the following paragraph:

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

Replace the paragraph and bullets that begins "No separate ..." with the following paragraph and bullets:

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 disinfection, and water for testing
- Exposing and cleaning existing mains, cutting and removing existing pipe, draining existing mains, disinfecting existing mains, and refilling existing mains
- PVC fittings under 4 inch
- HDPE fittings
- Pipe reconnections