

SPECIAL PROVISIONS

SECTION 02660

WATER DISTRIBUTION

This special provision modifies the corresponding Montana Public Works Standard Specifications, Seventh Edition – April 2021. All provisions that are not amended or supplemented remain in full force.

Part 1.4 – STANDARD DRAWINGS – delete subsection A of the standard in its entirety and replace with the following:

- A. Standard Drawings applicable to this section can be found in the City of Kalispell Standards for Design and Construction as follows:
 - 1. W.2 – Water Service Connection Detail
 - 2. W.3 – Standard Fire Hydrant Detail
 - 3. W.4 – Typical Gate Valve Section Detail
 - 4. W.5 – Water Main Lowering Detail
 - 5. W.6 – Thrust Blocking For Water Main Valves
 - 6. W.7 – Thrust Blocking For Water Main Fittings
 - 7. W.8 – Water Main and Sewer Main Separation
 - 8. W.9 – Service Line / Fire Service Line Detail
 - 9. W.10 – Water Main Tapping Saddle

Part 2.2 – PIPE MATERIALS – delete subsection B.3 of the standard in its entirety and replace with the following:

- 3. Fittings
 - a. Furnish fittings meeting the following:
 - 1. Mechanical Joint Class 350 fittings meeting AWWA C153, latest edition, Ductile Iron Fittings for Water.
 - 2. Provide Cor-Blue T-Bolts or equal as approved by Owner.

Part 2.2 – PIPE MATERIALS – delete subsection B.5 of the standard in its entirety and replace with the following:

- 5. Couplings
 - a. Use pipe couplings meeting one the following;
 - 1. Ductile iron, mechanical joint solid sleeves, with a minimum 12-inch length.
 - a. No restrained couplings shall be used for connections to cast iron pipe.
 - 2. Romac Macro may be used for connections to cast iron pipe.
 - 3. Romac Alpha may be used for connections to PVC.

Part 2.2 – PIPE MATERIALS – delete subsection C of the standard in its entirety and replace with the following:

C. Polyvinyl Chloride (PVC) Pressure Pipe

1. Furnish PVC water main pipe meeting AWWA C900 requirements, made to ductile iron O.D.'s for "Push-On" joints. Assure pipe joints are bell and spigot having an elastomeric gasket. Use DR 18 Class 235 pipe.

Part 2.2 – PIPE MATERIALS – delete subsection D of the standard in its entirety and replace with the following:

D. Water Service Pipe

1. Use polyethylene pipe in water service line construction as specified in the contract documents and meeting the following specifications.
 - a. Furnish service pipe of the size or sizes specified. If not specified, match the size of existing service lines being connected to or replaced.
 - 1) Furnish and install the service pipe from the main to the property line installing a curb stop, curb box, and meter pit or vault in the boulevard. Meet the water service installation requirements of W.2.
 - 2) Use pipe meeting AWWA Specification C901, "Polyethylene (PE) Pressure Pipe, Tubing and Fittings, 1/2 inch through 3 inch for Water" and ASTM PE3406-3408. PE pipe to be pressure tubing meeting Table 6 requirements of said specification. Use class 200 with a DR of 7 Polyethylene pipe.
 - 3) For all polyethylene service pipe, assure corporation stops, curb stops, couplings, and all other fittings have pressure connections designed specifically for polyethylene pipe as manufactured by Mueller (Insta-Tite Connection Series) or an approved equivalent.
 - 4) If larger than 1 inch and smaller than 4-inch, stainless steel inserts shall be used as recommended by the manufacturer.

Part 2.3 – TAPPING SLEEVES AND VALVES - delete subsection A and B of the standard in their entirety and replace with the following:

A. Use tapping sleeves meeting:

1. Split-body type with circular gasket forming a seal around the circumference of the outlet, being a Romac SST III, bolts shall be 304 Stainless Steel, or equal as approved by the City of Kalispell Public Works Department. Use anti-seize on bolts and nuts.

Part 2.4 – CORPORATION STOPS - delete subsection A of the standard in its entirety and replace with the following:

- A. Furnish brass corporation stops, Mueller 300 Series ball valves.

Part 2.5 – SERVICE CLAMPS – delete subsection A and B of the standard in their entirety and replace with the following:

- A. Furnish Mueller BR2 Series service clamps.

Part 2.6 – CURB STOPS - delete subsections A through C of the standard in their entirety and replace with the following:

- A. Furnish Mueller 300 Series ball valve curb stops.

Part 2.7 – CURB BOXES - delete subsections A and B of the standard in their entirety and replace with the following:

2.7 CURB BOXES

- A. Furnish extension type curb boxes having 6 ½ foot extended length and a range between the extended length and retracted length that allows for the curb box to be installed absolutely flush with the sidewalk or finished grade, with stationary rod & pentagon brass plug.
- B. Furnish one of the following:
 - 1. Mueller H-10306, AY McDonald Box 5604, or Ford EA2-65-50 for service lines ¾-inch to 1-inch.
 - 2. Mueller H-10310 for service lines, 1 ¼-inch, 1 ½-inch, or 2-inch.

Part 2.8 – VALVES – delete subsection A of the standard in its entirety and replace with the following:

- A. Gate Valves
 - 1. Unless designated otherwise, valves 12 inches (30 cm) in diameter or smaller will be gate valves. Furnish resilient seat gate valves with non-rising stems with design, construction, and pressure rating meeting AWWA C509 and the following requirements.
 - 2. Assure stem seals are double “O” ring seals capable of replacing the seal above the stem collar with the valve under pressure in full-open position.
 - 3. Furnish gate valves for underground installation equipped with a 2-inch (31 mm) square operating nut for key operation. All valves to open counterclockwise. Valves to be equipped with mechanical joints for pipe connections.
 - 4. Furnish resilient seat gate valves as manufactured by Mueller or equal as approved by Owner.

Part 2.8 – VALVES – delete subsection B.7 of the standard in its entirety and replace with the following:

- 7. Furnish butterfly valves as manufactured by Mueller (Lineseal Butterfly Valve) or equal as approved by Owner.

Part 2.9 – VALVE BOXES – delete subsection A of the standard in its entirety and replace with the following:

- A. Furnish cast iron, 5 ¼ inch diameter, adjustable valve boxes. Assure valve boxes are slip type and of the specified length for the pipe bury. Assure the valve box cast iron cover is stamped with the word “Water”.
- B. Use Tyler 6855 or 7126 series, Star VB-0007, or equal as approved by Owner.

Part 2.10 – FIRE HYDRANTS - delete subsection 2.10.B of the standard in its entirety and replace with the following:

- B. Furnish Red Mueller Super Centurion 250 fire hydrants with 5-inch Storz cap with 1.5-inch pentagon nut and two, 2.5-inch hose connections. Assure hose nozzle threads meet ASA Specification B26 for National Standard Fire Hose Coupling Screw Threads, 7 ½ threads per inch. Furnish National Standard operating nut. Furnish hydrants opening counterclockwise and having an arrow on the hydrant top designating the opening direction.

Part 2 – PRODUCTS – add the following immediately after subsection 2.16 :

2.17 METER PITS

- A. For services up to 1 – inch, furnish:
 - 1. Mueller Thermo-coil meter pit with side-locking composite lids and insulation pads (Part No. ###CS##72FS#SN).
 - 2. Ford Coil Pitsetter meter pit with plastic bottom plate, insulation pads, and side-locking composite lids (Part No. PFCBHH-###-##-72-FP-NL).
- B. Furnish Mueller EZ Vault or approved equal for 1.5-inch and 2-inch services, with dual check valve and composite side-locking lid. Meter shall be within 18-inches of the finished surface (Part No. ###VS##72FB#N).

2.18 TONER WIRE

- A. Furnish 12-gauge HDPE or HMWPE insulated solid core approved for direct bury.
- B. Splices shall be made with moisture displacement connectors.
- C. Toner wire used in boring or directional drilling applications shall be 8-gauge, hard-drawn, high-carbon 1055 grade steel core, extra high-strength copper clad conductor (EHS-CCS), and insulated with 45 mil, high-density polyethylene (HDPE). The wire shall have a conductivity rating greater than 21 percent and a break load of greater than 2,500 pounds.

Part 3.2.C – Laying of Pipe – delete subsection 6 and 9 of the Standard and replace with the following:

- 6. Long radius curves, either horizontal or vertical, are not permitted without an approved deviation to the City of Kalispell Standards for Design and Construction. All pipe deflections shall be completed via pipe fittings.
- 9. Construct reaction or thrust blocks at all tees, plugs, valves, reducers, caps and at bends deflecting 22-1/2 degrees or more. Construct thrust blocks at tapping sleeves where the outlet diameter exceeds one-half the diameter of the main being tapped. Limit using metal rods or straps for thrust restraint to those specified on the plans, or where the use of concrete thrust blocks would be impractical. Do not use metal rods or straps without the Engineer's approval. Construct reaction blocks from concrete having a minimum compressive strength of 2,000 pounds per square inch (14,000 kPa) at 28 days. Place blocking between undisturbed ground and the fitting to be anchored, as shown on City of Kalispell Standard Details W.6 and W.7. Place the blocking so that the pipe and fitting joints are accessible for repair.

Part 3.4.C – Disinfecting Water Mains – delete subsection 3 in its entirety and replace with the following:

3. Method of Chlorination
 - a. The continuous feed method gives a 24-hour chlorine residual of not less than 25 parts per million (25 mg/L) free chlorine.
 - i. Continuous Feed Method
 1. Before chlorinating, fill the main with water to eliminate air pockets and flush as specified above.
 2. Use water from the existing distribution system or other approved source of supply to flow at a constant, measured rate into the newly laid water main. At a point not more than 10 feet (3 m) downstream from the beginning of the new main, assure water entering the new main receives a dose of chlorine fed at a constant rate such that the water will have at least 50 parts per million (50 mg/L) free chlorine. To assure that this concentration is provided, measure the chlorine concentration at regular intervals.
 3. Appendix B provides information on the amounts of chlorine compound required for various pipe sizes.
 4. During chlorine application, position valves so that the chlorine solution in the main being treated does not flow into water mains in active service. Do not stop chlorine application until the entire main is filled with chlorinated water. Retain the chlorinated water in the main for at least 24 hours, operating all valves and hydrants in the section treated to disinfect the appurtenances. At the end of the 24-hour period, the treated water in all portions of the main must have a minimum free chlorine residual of 25 parts per million (25 mg/L).

Part 3.4.C.4 – Final Flushing – add the following immediately after subsection a:

- b. Heavily chlorinated water flushed from the mains shall not be placed in storm sewer or sanitary sewer and shall be disposed of per DEQ Standards.
 1. Flush main into a water truck with appropriate backflow prevention air gap and dispose of chlorinated water in environmentally friendly matter.

Part 3.4.D – Bacteriological Tests – delete subsection 1 of the standard in its entirety and replace it with the following:

1. After final flushing and before the water main is placed in service, test a sample, or samples, collected from the main(s) for turbidity and organisms. Collect at least one sample from the new main and one from each branch at a maximum of 500-foot intervals. Collect the samples and have the tests performed at an approved laboratory.
 - a. Two sets of tests shall be completed for every sample point:
 1. One sample set shall be collected directly following final flushing.
 - i. The Contractor shall provide all sample bottles and appurtenances necessary to take samples.

- ii. The Contractor shall collect sample(s) and mark the sample bottles.
 - iii. The City shall witness sample collection and deliver sample bottles to a certified testing laboratory of the Contractor's choice within Kalispell City Limits.
 - iv. The Contractor shall pay for all costs associated with sample tests, including City personnel costs for repeated tests due to test failure or City personnel costs for any tests performed outside normal working hours. Normal working hours are (Mon – Fri 8:00 am – 5:00 pm).
2. After passing results of the first test are received, but no sooner than 24 hours following final flushing, the contractor shall take a second sample from the same location(s) as the first sample set.
3. Sample procedure shall be the same as those in Section 3.4.D.1.a.1, above.
4. After passing results have been delivered to and approved by the Owner, the new water main may be placed in service.

Amend the standard by adding the following immediately after Part 3 of the standard:

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

- A. The method for measurement and payment shall be as defined in Section 01150.

END OF SECTION