MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**WATER MAIN MATERIALS AND CONSTRUCTION**

UTL:JBM 1 of 3 APPR:NJM:CJD:06-24-21

**a. Description.** This work consists of installing the following materials as part of the City of Croswell water system. Unless otherwise noted below, ensure all work, materials, construction requirements, and methods of measurement and payment are in accordance with the standard specifications.

**b. Submittals**. Submit PDF product data consisting of shop drawings and manufacturer’s literature to the Engineer and the City of Croswell for approval at least 10 work days prior to construction.

Submit a general work plan outlining the procedure and schedule to be used for installation of the water main.

**c. Materials.** Furnish the listed materials below in accordance with current *AWWA, ANSI, or ASME* standards and the standard specifications. The specific items listed conform to City of Croswell water system requirements and no substitutions are permitted.

1. Pipe and Fittings. Provide Class 54 ductile iron (DI) pipe in accordance with *ANSI/AWWA C151/A21.51*. Ensure DI pipe is cement-lined and meets *ANSI/AWWA C104/A21.4*. Ensure fittings are mechanical joint or push-on type, DI, meet *ANSI/AWWA C111/A21.11, ANSI/AWWA C153/A21.53,* and are Class 350. Line fittings with cement in accordance with *ANSI/AWWA C104/A21.4*. Ensure rubber gasket joints meet *ANSI/AWWA C111/A21.11*. Drive two bronze wedges per joint into each rubber gasket to provide electrical conductivity between pipes.

2. Restrained Joints. Furnish restrained joints for DI pipe in accordance with *ANSI/AWWA C111/A21.11*. Furnish EBAA Iron, Inc. Megalug 1100 Series; Ford Meter Box Uni-Flange Series 1400-DA; Sigma One-Lok SLDE Series, or Engineer approved equal restrained mechanical joints. Ensure restraining glands are manufactured of high-strength DI, in accordance with the requirements of *ASTM A536*. Ensure all bolts are made of high-strength low-alloy steel in accordance with *ANSI/AWWA C111/A21.11*. Furnish McWane Ductile TR Flex Pipe; American Fast-Grip or Field Flex-Ring; US Pipe Field-Lok; or Engineer approved equal restrained push-on joint pipe.

3. Gate Valves. Furnish resilient wedge gate valves manufactured by Clow Valve Co.; Kennedy Valve; M & H Valve Company; or Engineer approved equal. Ensure resilient wedge gate valves have DI body and bonnet; fully stainless steel mounted; resilient wedge DI body; symmetrical and fully encapsulated with molded rubber; have no exposed iron; meet *AWWA C515*; and conform to the City of Croswell Water Department Specifications. Ensure resilient wedge gate valves contain a protective interior coating in accordance with *AWWA C550*. Resilient wedge gate valves must have a copper alloy or stainless steel non-rising stem (NRS) with a two-inch square nut. Resilient wedge gate valves must have a DI wedge fully encapsulated with ethylene propylene diene monomer (EDPM) rubber per *ASTM D429*. Ensure resilient wedge gate valve stems are sealed with three O-rings that are replaceable under full pressure. Ensure resilient wedge gate valves are made to open when turned to the right, or clockwise. Furnish resilient wedge gate valves with mechanical joint end valves in accordance with *ANSI/AWWA C111/A21.11.* Furnish resilient wedge gate valves with push-on ends in accordance with *ANSI/AWWA C111/A21.11.* Furnish resilient wedge gate valves with flanged ends in accordance with *ANSI/AWWA C110/A21.10; ASME B16.1, Class 125;* or *ANSI B16.1, Class 125*.

4. Valve Boxes. Provide valve boxes manufactured by Tyler Union; EJIW; Trumbull Manufacturing, Inc.; or Engineer approved equal. Ensure valve boxes and components comply with *ASTM A48/A48M*. Include top section, adjustable extension of length as required for the burial depth of the valve, and bottom section with base that fits over the valve with a barrel approximately five inches in diameter. Ensure valve box lids are marked “WATER.” Ensure overall length of valve boxes are sufficient to permit the top to be set flush with the final ground surface grade.

5. Hydrants. Provide fire hydrants manufactured EJ WaterMaster Model 5BR250. Ensure fire hydrants are traffic-type that include a breakaway flange or lug system with a shaft coupling and meet the requirements of *ANSI/AWWA C502* and *UL 246.* Ensure fire hydrants are certified with the *NSF/ANSI 61* and *NSF/ANSI 372* mark. Ensure fire hydrants have a 5.25-inch main valve opening with a 6-inch mechanical joint inlet (6BR option). Ensure fire hydrants are equipped with two 4-inch *National Standard* pumper nozzles. Ensure operating nuts are 1½ inch pentagon and “right-opening.” Ensure fire hydrants are non-draining, provided with plugged drains, and are marked to pump after each use. Ensure fire hydrants are painted City of Croswell standard color red, and as per National Fire Protection Association (*NFPA*) *Standard 291*. Ensure all exterior surfaces of the fire hydrants below ground level are covered with two coats of asphaltic varnish or fusion bonded epoxy as per *AWWA C151* or *AWWA C116*, respectively. Ensure the stem seal on fire hydrants is an O-ring. Ensure fire hydrant nozzles are located 36-inches, or current City of Croswell standard height above the groundline. Ensure burial depth for fire hydrant lead is 6 feet minimum, or current City of Croswell standard.

6. Water Service Lines. Provide water service lines in accordance with the standard specifications and the City of Croswell water system requirements. Ensure service lines are replaced with the same size, except the minimum size will be 3/4 inch.

7. Provide brass-bodied compression type corporation stops, curb stops, and fittings as manufactured by Ford Meter, Mueller, or Engineer approved equal. Corporation stops, curb stops, and fittings must be in accordance with *ANSI/AWWA C800.*

8. Provide polyethylene encasement for all DI pipe in accordance with Section 923.09 of the Standard Specifications.

9. Skid Blocks/Casing Chocks. Furnish wooden skid blocks or casing chocks for pipe support within the steel casing pipe as shown on the plans. Furnish pressure-treated wood for skid blocks. Terminate pipe supports 12-inches from end of casing pipe to allow bulkhead of entire pipe circumference. Submit in writing the details of the appropriate pipe casing installation for review and approval by the Engineer prior to installation of the casings. Alternate methods of supporting and maintaining the position of the carrier pipe with respect to the casing pipe must have Engineer approval prior to implementation. Carrier pipe within casing pipe must have push-on restrained joints with locking gaskets*.* Furnish polyethylene encasement for the DI carrier pipe.

**d. Construction.** Ensure construction is in accordance with the current *AWWA* standards, the standard specifications, and as detailed on the plans. Construct water main with a minimum of 5.5 feet of cover.

Ensure all work for replacement of water service lines are done in accordance with current *AWWA* standards, section 823 of the Standard Specifications for Construction, EGLE standards, and the City of Croswell specifications as applicable. Ensure existing service lines, when exposed by the Contractor, are examined by the Engineer and City of Croswell for material verification. Ensure service lines are not taken out of service and replaced unless the Engineer and City of Croswell determine the material is Lead (Pb) free. Connection between any portion of a lead service and a new service is prohibited regardless of the duration.

If the water service line material has been determined to contain Lead (Pb) products, the water service line will be replaced from the water main up to and including the curb stop but final connection to the existing service line will not be allowed. Additional water service work from the curb stop to within the serviced building will be performed under a separate contract. Ensure temporary water service line materials and a plan is approved by the Engineer prior to installation, if required by the City of Croswell. The installation plan must have the temporary water service line in place and functional in advance of the construction activities. Maintenance of temporary water service lines is the Contractor’s responsibility. Take necessary precautions to prevent vandalism, joint blow offs, leaks, and damage to the temporary water service lines, as portions of the system will be above grade. Remove the temporary water service system upon completion of the water service line from the water main to the serviced building and reestablishment of service from the water main. The materials provided for the temporary water service line will remain the property of the Contractor following the completion of construction.

**e. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price in accordance with subsection 823.04 of the Standard Specifications for Construction.