MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**WATER MAIN MATERIALS AND CONSTRUCTION**

MAC:SNK 1 of 3 APPR:NJM:CJD:05-13-22

**a. Description.** This work consists of installing the following materials as part of the City of St. Clair Shores 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 and *AWWA*.

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

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

The Contractor must supply a 2 year maintenance and guarantee bond to the City of St. Clair Shores from a surety licensed in the State of Michigan, dated from the time of final acceptance by the City of St. Clair Shores Department of Public Services, for 100 percent of the construction costs.

**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 St. Clair Shores water system requirements and no substitutions are permitted.

1. Pipe and Fittings. Furnish Class 54 DI pipe with exterior asphaltic coating in accordance with *ANSI/AWWA C151/A21.51* specification for DI pipe centrifugally cast for water. Ensure DI pipe is double cement-lined with asphaltic material seal coating and meets *ANSI/AWWA C104/A21.4* for cement-mortar lining for DI pipe and fittings for water. Ensure push-on joints are in accordance with *ANSI/AWWA C111/A21.11* specifications for rubber-gasket joints for DI pressure pipe and fittings. Provide Tyton, Super Belltite joints or Engineer approved equal with serrated brass wedges. Six-inch through 12-inch pipe requires two wedges. Sixteen-inch and larger pipe requires four wedges per joint. Furnish all DI water main and appurtenances with polyethylene encasement in accordance with *ANSI/AWWA C105/A21.5* specification for polyethylene encasement DI pipe systems. Ensure encasement is low density polyethylene film with a minimum thickness of 8 mil and secured with duct tape every five feet.

2. Fittings. Furnsih Class 350 DI mechanical joint fittings with retainer glands in accordance with *ANSI/AWWA C153/A21.53* specification for DI compact fittings for water service. Split retainers are prohibited. Ensure fittings are frunsihed as cement-lined with asphaltic material seal coating in accordance with *ANSI/AWWA C104/A21.4* or epoxy coated meeting the requirements of *ANSI/AWWA C116/A21.16* for protective fusion-bonded epoxy coatings for the interior and exterior surfaces of DI and grey-iron fittings for water supply service. Mechanical joints and bolts for all fittings must meet the requirements of ANSI-AWWA C111-A21.11 specifications for rubber gasket joints for DI pressure pipes and fittings. Ensure retainer glands are American or EBAA Iron Megalug 1100 series, with manufacturer supplied bolts and torque limiting twist off nuts, or Engineer approved equal. Ensure all bolts, other than manufacturer supplied bolts and torque limiting nuts, are Cor-Ten blue with T-head and hex nuts. Thrust blocks are required at all bends, tees, caps, or plugs.

3. Gate Valves. Gate valves must be Mueller 2360 series resilient wedge gate valves, EJ Flowmaster series resilient seated gate valves, or Engineer approved equal. Valves must be cast with an iron body and bronze mounted with a bronze non-rising stem, double “O”-ring replaceable seals, and mechanical joints. Gate valves must meet the requirements of *ANSI/AWWA C509* for resilient-seated-gate valves for water supply servicesor *C515* specifications for reduced wall, resilient seated gate vales for water service. Furnish gate valves with a two-inch square operating nut and open right (clockwise).

4. Gate Wells. Furnish precast concrete gate wells for all gate valves and tapping valves. Precast bottom sections, riser sections, eccentric transition sections, and float slab coves in accordance with *ASTM C478/C478M*. House hydrant valves in a cast iron valve box. Ensure valve box is a three piece screw type box with a 5¼-inch shaft and enlarged base. Furnish East Jordan Iron Works No. 1040Z heavy duty frame with type AGS cover with words “ST. CLAIR SHORES WATER” in two-inch recessed flush letters and approved city logo. Ensure gate well steps are M.A. Industries P.S.I. polypropylene, MSU #360 ALU poly Manhole steps, or Engineer approved equal with foot recess and installed by the gate well manufacture at 16-inches center to center spacing. Furnish gate wells with exterior seals by Canusa WrapidSeal Encapsulation System installed per manufacturer’s specifications.

5. Blowoff Fire Hydrants. Furnish hydrants meeting the requirements of *ANSI/AWWA* specifications for Dry-Barrel fire hydrants. Ensure hydrants are EJ 5BR-250 Watermaster with pentagon operating nut measuring 1⅛-inch point to flat and breakaway flange. Contractor must plug any drain holes. Hydrants must open counter-clockwise. Prior to final acceptance by the municipality, ensure the hydrant is dewatered and painted.  Ensure the paint is EJ 5363 - safety blue. Ensure hydrants are of the “L” type connection unless otherwise specified or directed by the municipality. Hydrant pumper nozzles must face the road centerline in public right-of way.

A. Ensure City of Eastpointe fire hydrants are supplied with one 3-inch and one 3¾-inch pumper nozzle having Detroit standard thread and one 5-inch Storz nozzle. Hydrants must have a minimum five feet from finish grade to bottom of inlet invert with a ground clearance from center of pumper nozzle to finish grade of 21-inches and from center of base flange to finish grade of approximately 2½ inches.

B. Ensure City of St. Clair Shores fire hydrants are supplied with one 4-inch pumper nozzle having Detroit standard thread and one 4-inch integral Storz pumper nozzle connection as manufactured by Harrington Inc. Hydrants must have a minimum bury of 5½ feet from finish grade to bottom of inlet invert with a ground clearance from center of pumper nozzle to finish grade of 21-inches and from center of base flange to finish grade of at least 2½-inches.

6. Corporation Stops. Furnish and install 1-inch corporation stops for testing purposes in all stubs and points of connection to existing mains. Corporation stops must be Mueller H-15000 ground key corporation valve with *AWWA* taper (Mueller “CC”) thread and copper flare straight connection outlet.

7. Ensure all mechanical joints, fitting, glands, and bolts are encased with low density polyethylene film with a minimum thickness of 8 mil and secured with tape. Furnish polyethylene encasement meeting the requirements of *ANSI/AWWA C105/A21.5* specifications for polyethylene encasement for DI pipe systems and in accordance with subsection 923.09 of the Standard Specifications for Construction.

**d. Construction.** Ensure construction is in accordance with the *AWWA* standards, the standard specifications, and as shown on the plans. Construct water main with a minimum of 5½-feet of cover.

The City of St Clair Shores will operate all gate valves for any Contractor required shutdowns. The Contractor must coordinate with the city personnel.

The Contractor must supply and place a plug or cap over the end of the pipe at the end of each workday.

Before final acceptance is made, ensure a final inspection is made by the City of St. Clair Shores Department of Public Services and as-built plans submitted in a format acceptable to the City of St. Clair Shores Department of Public Services.

Pressure test the new main after installation of all corporation stops. Maximum permissible leakage during hydrostatic testing will not exceed 0.18 gallons-per-inch diameter of main per 1000 feet of pipe in 2 hours at a test pressure of 150 psi. The maximum test length is 3,000 feet. The Contractor is required to supply all testing equipment and perform the test. The City of St Clair Shores will witness the test. Remove corporation stops after testing and install plugs.

Ensure a double check valve assembly for flow backflow prevention is utilized on all temporary lines used to fill and flush the newly installed main. The double check valve must meet the requirements of *ANSI/AWA C510* specifications for double check valve backflow prevention assembly.

Conduct bacteriological testing in accordance with *ANSI/AWWA C651* specifications for disinfecting water mains. Bacteriological samples may be taken by the Contractor. Ensure the sampling and testing is witnessed by the City of St Clair Shores. Ensure water main connections are not completed until a notice to proceed is provided by the City of St Clair Shores once passing test results are received by the city.

**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.