MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**WATER MAIN MATERIALS AND CONSTRUCTION, CITY OF MARQUETTE**

ISH:JSK 1 of 3 APPR:CJD:NJM:03-25-21

**a. Description.** This work consists of installing the following materials in the City of Marquette’s 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. Materials.** Provide the listed materials below in accordance with *AWWA* standards and the standard specifications except as modified herein.

1. Use Special Thickness Class 52 ductile iron (DI) pipe of the sizes shown on the plans. Ensure all DI pipe is centrifugally cast, cleaned, cement lined, coated, tested, and certified at a single manufacturing facility with all manufacturing units contiguous to each other. All DI pipe must meet *AWWA C150* and *C151*, *American National Standard Institute/National Sanitation Foundation (ANSI/NSF)* *61* and bear the certification seal on the pipe wall.

2. Provide mechanical joints (MJ) with joint restraint at all necessary glands (follower rings), rubber gaskets, bolts, nuts, and lubricant. For restrained joints using retainer glands, include all necessary retainer glands, bolts, nuts, and gaskets required for a proper installation. Ensure all joints and fittings are in accordance with *AWWA C110/C111*. Acceptable manufacturers include: US Pipe, MJ FIELD LOK; EBAA Iron, Inc., Megalug Series; similar items manufactured by Clow Corporation, Ford Meter Box Co., Inc. or approved equal.

3. Furnish rubber gaskets and lubricant as specified by the pipe manufacturer in sufficient quantity to complete all joints in the pipeline.

4. Gate Valves. Provide resilient seated gate valves in accordance with *AWWA C515* that are American Flow Control Series 2500, EJ Flow Master Series A, or approved equal. Ensure valves are manufactured with the following features:

A. Open right, or clockwise;

B. 2-inch square wrench nut operator;

C. Designed for 150 pounds per square inch (psi) for valves 16 inches and larger and 200 (psi) for valves sized 3 inch through 12 inch for cold water working pressure with zero leakage; and

D. *ANSI* *Type 304* Stainless steel bolts.

5. Ensure electrical conductivity connections are provided on all DI water main, fittings, valves, and hydrants. Ensure connections are external type cable or strap capable of carrying 600 amperes for an extended period. Mechanical joint connections at fittings will be considered as conductive. Ensure conductivity at valves is maintained utilizing cable or conductivity straps placed across the valve connection. Do not use conductive gaskets or “conductivity wedges” as a means of maintaining conductivity. Acceptable conductivity connections are U.S. Pipe and Foundry Company “Electrobond” Strips, Clow Corporation “Cable Bond/Conductor”, or approved equal.

6. Valve Boxes. Acceptable manufacturers include: Tyler Union 6860 series (manufactured in the United States), EJ 8560 series, Sigma, or approved equal. Ensure valve boxes have the following characteristics:

A. Three-piece assembly, including cap;

B. Screw together construction suitable for 6 foot - 6 inch bury depth; and

C. Covers are marked “WATER.”

7. Hydrants. Ensure fire hydrants are of the dry-barrel type and meet the requirements of *AWWA Standard C502-80*, and *Underwriters Laboratories Inc. (UL) 246*. Provide Waterous Pacer WB-67-DDP hydrants manufactured by American Flow Control, EJ BR-250, or approved equal including the following requirements:

A. Bury Depth. 7 feet - 0 inches (as measured from the ground surface to the bottom of the connecting pipe).

B. Outlet Details.

(1) Hose Bibs. 2 each, 2½-inch diameter, - 2½-inch National Standard Thread (NST).

(2) Steamer. 1 each, 4½-inch diameter, 4½-inch NST.

(3) Nozzle Elevation. 21 to 24 inches above grade line.

C. Main Valves. 5-inch minimum diameter.

D. Inlet Connection. 6-inch MJ (Restrained).

E. Direction to Open. Left (counter-clockwise).

F. Finish. Paint chrome yellow above grade line; asphalt varnish per *AWWA* below grade.

G. Shut-off. Closes with the pressure.

H. Drain Outlet. Plugged or eliminated.

I. Nozzle Cap. Rocker - Lug Type.

J. Operating Nut. 1½-inch National Standard Penta-Nut.

K. Stem Seal. "O"-ring.

L. Traffic Flange. Breakable.

8. Ensure bolts for flanged and MJ are domestic origin, high-strength, low-alloy, cor-blue steel.

9. Ensure fittings (Bends, Tees, Crosses, Sleeves, Plugs, Anchoring Couplings) are DI fittings, Class 54, with 350 psi working pressure.

**c. Construction.** Perform construction in accordance with *AWWA* *C600 Standard* and section 823 of the Standard Specifications for Construction. Install water transmission main at a minimum depth of 6 feet – 6 inches.

1. Connect to the water main on each end of the installation by using a flange connection with the use of flange adapters and lap joint flanges. Ensure connections are made at a minimum depth of 6 feet – 6 inches below finished grade.

2. Chlorine in tablet form is not an acceptable form of disinfection.

3. Water for Testing, Chlorination, and Flushing. Unless specifically authorized by the Engineer, do not take water from an unmetered connection for use in the course of this work. When water is to be drawn from the City fire hydrants, make application with the Department of Public Works for a permit and issuance of a hydrant meter. The Contractor will be billed for water used in accordance with the latest current billing schedule contained in Chapter 56 of the City of Marquette Ordinances.

4. Notify the City of Marquette Public Works Department 24 hours prior to scheduling a shutdown of all or part of the water main.

5. Gaskets with conductivity wedges are prohibited.

6. Install, test, and disinfect all new water main up to the point of connection, including all appurtenances in accordance with *AWWA C600* and *C651*, prior to connecting to the existing water main.

7. Verify that all valves installed or operated during the project are open at the completion of the project.

8. Abandon existing water mains underneath roadways and paved areas by completely filling pipes with non-structural flowable fill. Mix non-structural flowable fill in automated batch plan and deliver it to site in ready-mix trucks. Performance additives may be added at placement site if required by mix design. Use concrete or grout pumps capable of continuous delivery at planned placement rate. Secure all pipes and conduits within the backfill area to counteract the buoyant effect of non-structural flowable fill. Place the material evenly around manholes and in utility trenches to avoid dislocating pipes and conduits. Non-structural flowable fill will be paid for separately in accordance with the Special Provision for Non-Structural Flowable Fill.

**d. 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.