MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**POLYVINYL CHLORIDE SANITARY FORCE MAIN**

UTL:CJD 1 of 3 APPR:DMG:NJM:03-11-22

**a. Description.** This work consists of installing PVC force main of the nominal diameter and trench detail at the locations shown on the plans. This work includes trench excavation, sanitary waste handling and disposal, dewatering, if necessary, tracer wire, bedding, backfilling, compaction, hydrostatic testing of the force main, disposing of waste material, installation of all valves, fittings, and restraint of fittings, clean outs, pipe, valve boxes, corporation stops, service tees, connections to existing systems, maintaining sanitary service, providing as-built plans and all related work necessary to complete the force main installation.

**b. Materials.** Furnish materials certified by the manufacturer to meet this special provision.

Ensure pipe is suitable for use at maximum hydrostatic working pressure of 200 psi at 73 °F. Ensure the pipe and fittings are manufactured from PVC in accordance with *ASTM D2241* and have a SDR 21. Ensure all PVC pipe and fittings used throughout the project are of the same brand name and from the same manufacturer.

Ensure pipe markings are in accordance with *ASTM D2241*.

Furnish push-on joints and flexible elastomeric seals (gaskets) in accordance with *ASTM D3139*. Furnish joint lubricant as recommended by the pipe manufacturer for use with pressure systems. In no case will solvent joints be allowed in lieu of the push-on joint (slip joint) for field assembly.

Install copper tracer wire for locating the PVC force main directly above and fastened to the pipe. Ensure the tracer wire and installation method is approved by the Engineer prior to construction.

Furnish bedding and backfill materials in accordance with Standard Plan R-83 Series and the standard specifications.

**c. Construction.** Perform all work in accordance with sections 203, 206, 402, 403, and 825 of the Standard Specifications for Construction and *ASTM D2321*, as well as federal, state, and local requirements.

Use concrete collars (grade rings) or alternate materials to adjust manhole covers to grade. Ensure all materials are approved by the Engineer prior to construction.

Dispose of waste material in accordance with section 205 of the Standard Specifications for Construction, as applicable. Remove, transport, and dispose of sanitary waste by a sanitary waste hauler licensed by the State of Michigan in compliance with all federal, state, and local ordinances pertaining to the proper handling and disposal of sanitary waste.

Excavate the trench so that the top of the pipe is at least five feet below the finish grade and compact backfill in accordance with standard trench details. Blocking under the pipe is prohibited. Place bedding and lay the pipe in the trench in conformity with the line and grade shown on the plans. Recess the bedding to receive the bells so that each section of pipe has a firm bearing throughout its length.

Assemble the pipe in the trench by the following procedure:

Lift the bell end of the pipe out of the trench and support.

With the bell in this position to ensure that the bell interior and gasket are clean and free from any foreign material, push the spigot end of the next section of pipe completely “home” and make the joint.

Lower the joint into the trench while positioning the next bell into position for the next joint. Note that after lowering the last joint, ensure an inspection is made to ensure that the positioning marks remained in place.

Immediately after installing the pipe, backfill the trench with one foot minimum of backfill material above the pipe, placed in six inch lifts. Leave the joints exposed to allow examination during hydrostatic testing. Complete the initial backfill prior to proceeding to the next section of pipe.

Backfill and compact materials in accordance with the Standard Plan R-83 Series and the standard specifications.

The use of frozen backfill material is prohibited.

Furnish thrust blocks at all bends, reductions, and ends as required by the slip-joint system manufacturer before pressure is applied.

Perform hydrostatic testing for the force main as approved by the Engineer. Fill the section of main to be tested with water and maintain at a pressure of 1.5 times the working pressure or 150 psi, whichever is greater for a minimum of 1 hour while all joints are inspected for leaks. Ensure there is no leakage during the duration of the test. Furnish all necessary appurtenances including pumps, connections, gauges, meters, and water required to satisfactorily conduct the testing. Correct all leaks at no additional cost to the contract.

Furnish as-built plans of the sanitary force main to the Engineer. The cost of this is included in the cost of the sanitary force main. Acceptable as-built plans include (but are not limited to) pipe size, pipe locations, manholes, invert elevations, tees, tie-ins, fittings, valves, and cleanouts.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

**Pay Item** **Pay Unit**

Sanitary Force Main, PVC, \_\_ inch, Tr Det \_\_ Foot

**Sanitary Force Main, PVC, \_\_ inch, Tr Det \_\_** of the sizes and trench details specified, includes the installation of the force main, all fittings, valves and boxes, clean outs, excavation and backfill, sheeting, dewatering if necessary, draining, laying, tracer wire, jointing, bedding, testing, as-built plans, disposal of surplus excavated material, and final cleanup. All other work and materials related to the completion of the force main will not be paid for separately but is considered included in **Sanitary Force Main, PVC, \_\_ inch, Tr Det \_\_**.

Sanitary force main work will not be considered complete, and payment may be withheld until acceptable as-built plans have been provided to the Engineer.