

SECTION 02630 – STORM DRAINAGE

All work and materials shall conform to the Drawings and MDOT SECTION 603 – PIPE CULVERTS AND STORM DRAINS, SECTION 604 – MANHOLES, INLETS, AND CATCH BASINS, SECTION 610 – STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION, and SECTION 653 – POLYSTYRENE PLASTIC INSULATION with the following modifications and additions:

MODIFICATIONS:

Section 603.01 This work shall consist of the construction of culverts, storm drains, manholes, catch basins, and all associated work as shown on the plans, details, and specified herein.

Contractor shall install locating/warning tape over the centerline of all storm drain pipe, including mains and catch basin laterals. Both a green warning tape and a number 10 or 12 single strand coated wire shall be installed at a maximum of 24 inches below finish surface grade for the entire length of pipe. Magnetic warning tape may be used in place of separate warning tap and wire.

Section 603.02 Pipe materials shall be limited to Reinforced Concrete Pipe or PVC pipe meeting the materials specifications in MDOT Section 706.02 and 706.08, respectively. PVC Pipe supplied shall conform to all aspects of ASTM specification D3034-73A and/or ASTM Spec. F789, and shall be in 12-½' lengths. Joints shall be rubber gasketed "bell and spigot" type.

Section 653.02 – Add the following: Polystyrene plastic insulation shall have a minimum thickness of 2 inches.

ADDITIONS:

Section 603.03 Construction Requirements

Open ends of pipe shall be closed by suitable temporary bulkheads to prevent the entrance of earth and other materials when pipe laying is not in progress. Contractor shall take all necessary precautions to prevent floatation of the pipe as a result of water in the trench.

All pipe joints and structures shall be made watertight. There shall be no visible leakage, spurting, or gushing of water, sand, silt, clay, or soil of any type entering the pipe at joints or structures. Where there is evidence of water or soil entering pipes or structures, defects shall be repaired at no cost to the DEPARTMENT.

PVC Pipe and Fitting: Each pipe shall be inspected before being laid. Installation of materials shall be as suggested in ASTM D2321. Pipe shall be laid to conform to lines and grades indicated on the drawings. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

Bell holes shall be excavated or provided in the base material to receive the bell or coupling so that only the barrel of the pipe receives bearing pressure from the supporting material.

No pipe or fitting shall be permanently supported on blocks, wedges, boards, or stones.

All joints shall be made in a dry trench in accordance with manufacturer recommendations.

It is the responsibility of the Contractor to assure the trench and the backfill around the pipe has been compacted sufficiently to limit deflection in the pipe to no more than 4%. All flexible pipe installed under this contract shall be tested by a "go, no-go" mandrel, permitting no greater than 4% deflection. Testing of the pipe shall be done in the presence of the RESIDENT. All pipes not passing the 4% deflection limit test shall be removed and replaced at no cost to the DEPARTMENT.

Pipe bundles shall be stored on a flat surface so as to support the barrels evenly. Warped sections of pipe shall be not be permitted for use and shall be replaced at no cost to the DEPARTMENT.

Pipe shall remain stacked in the original shipping bundles, and only pipe taken off the bundle for one day's laying shall be distributed along the trench.

PVC Pipe does not bond to concrete or mortar and therefore, connection to manholes and catch basins shall be made as shown on the pipe connection details.

Reinforced Concrete Pipe: Reinforced Concrete Pipe (RCP) shall be Class III, 1350 "D" Load conforming to ASTM C76. Each pipe shall be obtained from a manufacturer of established good reputation in the industry. The pipe shall have a smooth and even interior surface, free from projections, indentations, or irregularities of any kind. Joints shall be such that pipes will form a continuous and uniform line without projections, offsets, or irregularities. Joints shall be made with rubber or rubber-type gaskets that conform to the requirements established in ASTM D443-67. The joint shall be sealed by the rubber gasket so as to remain tight under all conditions of service. Rubber gasket shall be applied in accordance with the manufacturer's recommendations.

Each segment of pipe shall be provided with proper ends made either of concrete formed or machined rings to ensure accurate joint surfaces or of metal rings. The diameters of the joint surface depended upon to compress the gasket, shall not vary from the theoretical diameter by more than 1/16-inch.

Joint surfaces shall be cleaned once pipes are aligned in the trench and prior to be jointing. Immediately before jointing, the inside surface of the groove shall be thoroughly lubricated with a recommended lubricant. Pipe shall then be coupled immediately by carefully pushing each pipe into place without damage to pipe or gasket. The position of the gasket in the joint shall then be inspected to be sure it is properly together and tight. Gaskets found to be out of position in the joint shall be removed and pipe reset at no cost to the DEPARTMENT.

Pipes shall be coupled by any suitable arrangement to exert sufficient force to couple pipe to its tightest position without damaging the pipe or gasket.

Pipe thirty-six inches in diameter or larger shall be sealed on the inside with cement mortar or gunite by the grout-weld method using a pneumatic machine of the Nicholson, Bondactor, or equal type. Cement mortar, if used, shall be applied by trowel and the joint shall be thoroughly filled and finished smoothly with the inside surface of the pipe. The grout-weld seal shall be applied only by experienced and skilled worker in accordance with the instructions of the manufacturer of the machine.

Pipe shall be laid to conform to lines and grades indicated on the drawings. Pipe lain in the trench shall not be supported on blocking, wedges, brick, or anything except the bedding material. Pipe on concrete cradle shall be supported on solid concrete blocks or precast concrete saddles which become part of the completed cradle.

Each segment of pipe shall be shoved home against the pipe previously laid, and held securely in position. Joints shall not be pulled or cramped. Holes provided for jointing shall be filled and compacted.

Pipe from which a core has been cut and resulting hole repaired, shall be placed with the cored hole located forty-five degrees above or below the horizontal centerline of the pipe.

Submittals: The CONTRACTOR shall submit to the RESIDENT:

- A. Manufacturer's product data and installation instructions for all materials prior to start of construction.

- B. Construction Records: Record depth and location of the following:
1. Pipe and service locations, cleanouts, and connection points to storm drainage system.
 2. Repairs to existing pipes, when encountered.
 3. Sanitary sewer and potable water pipe locations, when encountered.
 4. Manhole locations, depths and invert depths.

Record neatly in a permanently bound notebook and submit at Substantial Completion. Provide access to records for RESIDENT at all times. Submit copies to RESIDENT on a weekly basis.

EXECUTION:

Furnishing and installing polystyrene plastic insulation shall be considered incidental to the cost of the water distribution system.

*** END OF SECTION ***