

SECTION 602

CULVERTS AND DRAINS

602.01 **DESCRIPTION** – Delete the text of this subsection and substitute the following:

This work consists of the installation of high-density polyethylene (HDPE) corrugated pipe and single barrel concrete box culvert for drainage. The work includes excavation, pipe bedding, conduit envelope, and backfilling, as indicated on the drawings for a proper installation.

602.02 **MATERIAL** - Delete the text of this subsection and substitute the following:

- a. Pipe Bedding and Conduit Envelope. Bedding and envelope material for drains shall be manufactured sand conforming to subsection 209.02.C.
- b. Backfill. Backfill material for excavated areas of trenches shall be aggregate sub-base course conforming to subsection 301.02.A, except at above sub-grade level for paved areas where backfill shall be base course material.
- c. Detectable Warning Tape. Detectable marking tape shall be green in color, identifying drain/sewer systems of the type specifically manufactured for marking and locating underground utilities. Detectable tape shall also conform to subsection 209.02.E.
- d. Drain Pipe. Drain pipe shall be high density polyethylene (HDPE) corrugated pipe conforming to AASHTO M294, Type S, full circular cross section with an outer corrugated pipe wall and a smooth inner wall. Corrugation shall be annular, N-12, and HDPE pipe shall also be rated for H2O traffic loads. See plans for required size and lengths.
- e. Drain Pipe Fittings. Fittings shall be as recommended by the HDPE pipe manufacturer for use with the HDPE corrugated drain pipe. Fittings to also comply with the joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II, Section 26.
- f. Concrete and materials for concrete, reinforcing steel, formwork, joint filler, and grout shall conform to Section 601.

CONSTRUCTION REQUIREMENTS

602.03 **GENERAL** – Delete the text of this subsection and substitute the following:

- a. Use fittings, extensions, elbows and branch connections as recommended by the HDPE pipe supplier or manufacturer.
- b. Culvert and drain sizes and their locations are shown on the plans. Construct concrete box culvert in accordance with the plans and Section 601. Forms shall be left in place for 48 hours or until the concrete has set sufficiently so that the forms can be removed without injury to the box culvert. The surfaces of the concrete box culvert, interior and exterior, shall be smooth and even.

- c. Provide and implement temporary traffic control measures approved by the Contracting Officer.
- d. Upon approval of the Contracting Officer, perform excavation and backfill work under Section 209.
- e. Verify that trench conditions are ready to receive work. Obtain approval from the Contracting Officer to commence the installation of the pipe, pipe bedding, pipe envelope, and detectable warning tape.
- f. Perform in-place field density tests on bedding and backfill as required under Section 301.05.B.

602.06 **LAYING PLASTIC PIPE** - Revise this subsection as follows:

Lay and install the high-density polyethylene (HDPE) corrugated pipe in accordance with the pipe manufacturer's recommendations. Install fittings as recommended and supplied by the HDPE pipe manufacturer.

602.08 **ACCEPTANCE** – Delete the text of this subsection and substitute the following:

- a. Excavation and backfill work will be evaluated under Section 209.
- b. Pipe bedding, conduit envelope, and backfill material will be evaluated under Section 209.
- c. In-place field density tests will be evaluated under Section 301.
- d. Concrete and other materials for concrete construction will be evaluated under Section 601.
- e. Material for drains and detectable tape furnished will be evaluated under subsections 106.02 and 106.03.
- f. Installation of drains will be evaluated under subsections 106.01, 106.02, and 106.04.

602.09 **MEASUREMENT** – Delete the text and substitute the following:

Measure high density polyethylene corrugated pipe and concrete box culvert by the linear foot, installed, along the invert, including fittings, excavation, pipe bedding, conduit envelope, detectable warning tape, backfill, and in-place field density tests.

602.10 **PAYMENT** – Revise this subsection as follows:

The accepted quantities will be paid at the contract price per unit of measurement for the Section 602 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Payment will be made under:

Pay Item No.	Pay item	Pay Unit
60201(A)	12-inch diameter High-Density Polyethylene Corrugated Pipe, Type S, N-12, complete-in-Place	Linear Feet
60221	5 feet wide x 3 feet deep single barrel reinforced Concrete box culvert, installed complete, at	Linear Feet

END OF SECTION 602