

SECTION 2200

CULVERT DRAINAGE PIPE

1.00 GENERAL

1.01 Scope. Work under this section includes furnishing, installing, cleaning and testing drainage pipe (including culverts) underdrains, trench drains, bands, collars, inlet section, outlet sections and all other items appurtenant to drainage pipe. This section does not include pipe for storm sewer systems.

1.02 Related Work Specified Elsewhere.

Section 2110 - Excavation and Embankment
Section 2120 - Excavation and Backfill For Structures
Section 2130 - Trenching, Backfilling, and Compaction
Section 2140 - Embedment and Base Course Aggregate

1.03 Reference Standards.

Colorado State Department of Transportation Standards
Specifications for Road and Bridge Construction Section 707 and M-Standards

1.04 Submittals. Product data including catalogue cut sheets and descriptive literature.

1.05 Protection of Work. All pipe and appurtenances shall be carefully handled, stored and protected in such a manner as to prevent damage to materials and protective coatings and linings. At no time shall such materials be dropped or dumped into trench.

Precaution shall be taken to prevent foreign matter from entering the pipe and appurtenances prior to and during installation. Place no debris, tools, clothing or other materials in the pipe during installation.

2.00 MATERIALS

This item covers the types of material that will be required for the construction and installation of drainage pipe. All materials used shall be new and the best quality available. All material used shall be in accordance with applicable standards of the American National Standards Institute (ANSI), the American Standards Association (ASA), the American Society of Testing and Materials (ASTM) and the American Association of State Highway Transportation Officials (AASHTO).

2.01 Corrugated Galvanized Steel Pipe and Pipe Arches.

A. Pipe and Bands.

1. Conform to Section 707.02 and applicable section of AASHTO M-36.
2. Size, length and shape as shown on Drawings.
3. Corrugations to be 2-2/3" x 1/2" or 3" x 1" unless shown otherwise.

4. Gauge to be determined based on HS-20 loading with a minimum to be 16 gauge.
5. Bands to be "Hugger" type with forged steel bars secured to connecting bar with tension straps.
6. Gasket use rubber O-ring, two for each joint.
7. Pipe seams shall be continuous weld type.

B. End Sections.

1. Conform to M-603-CA.

2.02 Corrugated Aluminum Pipe.

A. Pipe and Bands.

1. Conform to Section 707.06 and AASHTO M-196.
2. Size, length and shape as shown on Drawings.
3. Corrugations to be 2-2/3" x 1/2" unless shown otherwise.
4. Thickness to be determined based on HS-20 loading with a minimum of 0.060".
5. Bands to be "Hugger" type with forged steel bars secured to connecting bar with tension straps.
6. Gasket use rubber O-ring, two for each joint.
7. Pipe seams shall be continuous weld type.

B. End Sections.

1. Conform to M-603-CA.

2.03 Corrugated Polyethylene Pipe.

A. Pipe, bands and fittings.

1. Conform to the following applicable specifications:

ASTM F405, standard specification for corrugated polyethylene tubing and fittings.

ASTM F667, standard specifications for large diameter corrugated polyethylene tubing and fittings.

AASHTO M252, standard specification for polyethylene corrugated drainage tubing.

2. Size, length and shape as shown on Drawings.

3.00 METHODS AND PROCEDURES

3.01 General. Excavation, installation, and backfill shall be done in accordance with section 02221 "Trenching, Backfilling, and Compaction" of this manual.

3.02 Cleaning and Inspection. Clean all pipe and appurtenances thoroughly of all foreign material and inspect for cracks, flaws or other defects prior to installation. Mark all defective, damaged or unsound materials with bright marking crayon or paint and remove from job site.

3.03 Pipe Installation. Pipe shall be laid in straight sections except as noted on the plans. Jointing of the pipe shall be made in accordance with the directions of the manufacturer of the pipe and the manufacturer of the coupling. All pipe to be installed with minimum cover of 12 inches.

3.04 Pipe Embedment. Pipe shall be embedded according to all applicable details.

3.05 Metal Apron Endwalls. Metal apron endwalls (end sections) shall be constructed at the ends of all drainage pipe as shown on the plans. All entrance endwalls shall have toe plates. Excavation for endwalls shall be such that the endwall rests on undisturbed soil in its final position. Excavation for toe plates shall be such that the inside of the toe plate rests on undisturbed soil in its final position.

4.00 QUALITY CONTROL - FIELD

4.01 Inspection and Testing. Inspection and testing to be performed in accordance with section 2130 "Trenching, Backfilling, and Compaction" of this manual and at direction of the Engineer. Contractor to cooperate fully with all testing procedures.

Any pipe section which has been damaged in any way which, in the opinion of the Town, may affect the structural integrity of the pipe or reduce the expected corrosion resistance of the pipe, shall be removed and replaced. At the option of the Town, re-coating of minor dents and deformities with an approved fluid applied galvanized material may be allowed.

End of Section