

SPECIFICATIONS - DETAILED PROVISIONS
Section 02433 - Drainage Pipe
Reinforced Concrete Pipe-Storm Drain

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**SECTION 02433
DRAINAGE PIPE
REINFORCED CONCRETE PIPE-STORM DRAIN**

PART 1 - GENERAL

1.01 REQUIREMENT

It is required that the Contractor shall furnish, deliver, unload and string along the trench site, all pipe and material as hereinafter described in these specifications. All fabrication, workmanship, material and testing of pipe shall conform to the latest revision of the specifications hereinafter described, except as otherwise specified herein or approved by the Engineer. Approval by the Engineer, whenever required, shall be in writing.

1.02 SUBMITTALS

Pipe Layout Drawings. Pipe shall be fabricated to adhere to the contract construction drawings. The Contractor shall submit three (3) sets of pipe layout drawings (including connector pipes for catch basins and junction structures) for approval by the Engineer when the pipe layout varies from the alignment or grade shown on the approved contract drawings. These drawings shall be the same scale as the contract drawings. The drawings submitted will be used by EMWD for reference only, and their use shall in no way relieve the Contractor of its responsibility for correctness.

1.03 PIPE HANDLING

The Contractor shall furnish, install and maintain stulls or other devices in the pipe as may be necessary to meet the limitations on cracks as specified herein, throughout pipe handling, transportation, and field installation.

1.04 MEASUREMENT AND PAYMENT

Payment for reinforced concrete pipe shall be made on a unit price basis per lineal foot of pipe in accordance with the plans and specifications. The unit price shall include but not be limited to the pipe materials, all necessary appurtenances, labor and services. The pipe installation shall be complete and in place in accordance with these plans, specifications, and manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 TYPE OF PIPE

Reinforced concrete pipe shall conform to the latest revision of ASTM Specification C76, AASHTO Specification M170, and Federal Specification S-P-375.

2.02 LENGTH OF PIPE

The nominal length of reinforced concrete pipe shall not be less than 8 feet except as otherwise specified or required for bends or special joints. Variations in laying lengths of two opposite sides of pipe shall not be more than 1/8 inch per foot of diameter with a maximum of 5/8 inch in any length of pipe.

2.03 CLASS OF PIPE

Reinforced concrete pipe shall be designated by D-loads per ASTM C76 except where noted otherwise. Pipe stronger than that specified may be furnished at the Contractor's option, and at its expense, provided such pipe conforms in all other respects to the applicable provisions of these specifications.

2.04 FABRICATION OF PIPE

Unless otherwise specified, pipe shall be either precast or spun per manufacturer's recommendations and the current edition of the Standard Specifications for Public Works Construction Section 207-2. In the event of a conflict, the Engineer shall be notified in writing.

2.05 CAST-IN-PLACE REINFORCED CONCRETE PIPE

The use of cast-in-place reinforced concrete pipe may be allowed under special circumstances. Provide manufacturer's installation procedures, pipe strength and other manufacturer's recommendations in writing to the Engineer for evaluation. If acceptable, the Engineer may approve the use of cast-in-place pipe. Contractor's recommendations may be approved by the Engineer.

2.06 MATERIALS

Except when otherwise permitted by the Engineer, no materials shall be used in manufacturing of the pipe other than water, portland cement, mineral aggregates and steel conforming to ASTM C76 and the current edition of the Standard Specifications for Public Works Construction Section 207-2.2.

2.07 FACTORY TESTING

All pipes shall be tested in the United States and Certification of testing shall be furnished to the Engineer prior to delivery upon Engineer's request. The Engineer may be present during physical testing of the pipe. Pipe to be D-Load tested shall be selected at random by the Engineer at the place of manufacture in accordance with Section 207-2.9.2 of the current edition of the Standard Specifications for Public Works Construction.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Notification of Manufacture. Unless specifically waived, EMWD Inspection Department shall be notified at least 48 hours prior to commencement of the manufacture of pipe.
- B. Acceptance of Stockpiled Pipe. Pipe may be used from stockpiles only when approved in advance by the Engineer.
- C. Manholes. All 24" diameter and larger pipe shall have 24" diameter or larger access manholes.
 - 1. Manholes shall consist of 24" diameter outlets with 24" blind flanges.
 - 2. Manholes shall be nominally spaced at 600 feet on center.
 - 3. Outlets or bumped heads that provide an equal or larger opening than a 24" manhole may be used for pipe access.
 - 4. Manhole locations shall be selected to minimize impact to traffic, and shall be approved by EMWD prior pipe fabrication.
- D. Marking. The date of manufacture, size, D-Load, lot number and manufacturer's identification mark shall be legibly painted on the exterior of the pipe.

3.02 INSTALLATION

- A. Preparation. Internal bracing, in addition to the bracing used for handling and transportation of the pipe, shall be installed when required to ensure maximum permissible deflections are not exceeded during laying, backfill, and compaction.
- B. Pipe Zone Density. Relative density in pie zone III as shown on standard drawing B-286B shall be in accord with the manufacturer's recommendation. The Contractor, in conjunction with the pipe manufacturer, will indicate in the space provided and attached hereto as part of the bid forms, the pipe zone density to be constructed, and the trench slope construction.

END OF SECTION 02433

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