

ITEM 010180

Item 0101801 - 12" REINFORCED CONCRETE PIPE CLASS IV

Item 0101802 - 15" REINFORCED CONCRETE PIPE CLASS IV

Item 0101803 - 18" REINFORCED CONCRETE PIPE CLASS IV

Item 0101804 - 24" REINFORCED CONCRETE PIPE CLASS IV

Item 0101805 - 48" REINFORCED CONCRETE PIPE CLASS IV

Item 0101806 - 12" REINFORCED CONCRETE PIPE CLASS V

Item 0101807 - 15" REINFORCED CONCRETE PIPE CLASS V

Item 0101808 - 18" REINFORCED CONCRETE PIPE CLASS V

Item 0101809 - 24" REINFORCED CONCRETE PIPE CLASS V

Item 0101810 - 48" REINFORCED CONCRETE PIPE CLASS V

DESCRIPTION

Work under this item shall consist of saw cutting and excavation of existing pavement; trench excavation furnishing and installing Class IV or V Reinforced Concrete Pipe to line and grade, connecting from catch basin to existing/proposed catch basin furnishing and installing acceptable warning tape, and furnishing and placing new crushed stone material under and around the pipe, and above the pipe as stated below.

REFERENCED ITEMS

Item 0100801, 0103501

REQUIRED SUBMITTALS

Certified Test Report:

Submit 5 copies of certified test reports for concrete pipe in accordance with the contract general requirements.

MATERIALS

Bedding material shall be 3/4" crushed stone meeting the gradation of item 0100801.

The pipe shall be reinforced concrete pipe conforming to ASTM C-76-03. Each pipe shall be fabricated with a bell-and-spigot end to allow the assembly of a joint capable of compensating for normal movement due to earth settlement and extremes of temperature.

The concrete used in pipe production shall have a minimum dry density of 158 pounds per cubic foot and a maximum absorption of 5 percent. All pipes shall be furnished in eight-foot lengths. Concrete pipe shall not be shipped from the manufacturer's plant to the construction site until the pipe has aged seven days.

1. PIPE JOINTS

Joints shall conform with ASTM Specification C-443-03, "Joints for Circular-Concrete Sewer and Culvert Pipe Using Rubber Gaskets" with the following additions and/or exceptions. Each section of pipe regardless of size shall contain circumferential reinforcement to the bell and spigot of the pipe joint.

Pipe joint dimensions shall be as approved by the Engineer. The critical diameters of the joint surface that influence the compression of the gasket shall have a tolerance not to exceed 1/16th of an inch. A rubber gasket shall seal the joint so that the joint will remain tight under all conditions of service.

The gasket sealing the joint shall be made of rubber, either natural or special composition, having a texture to assure a watertight and permanent seal. The gasket shall be a continuous ring, of a circular cross-section unless otherwise approved, and of such size as to fill the groove on the spigot joint ring when the pipes are laid.

The rubber gasket shall be of a composition and texture which is resistant to common ingredients of sewage, industrial wastes including oils and ground water, and which will endure permanently under the conditions likely to be imposed by this use. The tensile strength shall be at least 1300psi. The elongation at rupture shall be such that 2" gauge marks shall stretch to not less than 10". Hardness shall be between 40 and 50, as measured with a Shore Durometer. The compression set (constant deflection) shall not exceed 25 percent of the original gauge length. The tensile strength after accelerated aging shall not be less than 80 percent of the original strength.

CONSTRUCTION METHODS

Excavation and backfill for reinforced concrete pipe shall conform with the typical trench cross section for pipe installation shown on the details.

Excavation shall include all trench work; digging bracing as necessary, support of other utilities crossed, removal and disposal of surplus material, crushed traprock foundation, placement of utility detection tape, backfill, etc. Excavation shall be at

least 6" below bottom of pipe. (In certain areas tree roots or stumps will have to be removed from the line of the pipe to be laid. The costs for such removals shall be included in the unit pricing for this item of work.)

Foundation shall consist of at least 6" of 3/4" crushed stone placed as foundation to the bottom of the pipe. Crushed traprock shall consist of sound, though, durable crushed particles, clean and free from dust, clay, loam or other foreign stone such as brownstone or clay and of gradation.

Square Mesh Sieve Size	Percent by Weight
1"	100
3/4"	90-100
1/2"	20-50
3/8"	0-20
#4	0-5

Crushed stone shall be placed around the pipe and 24" above the pipe.

The Contractor shall be required to backfill the remainder of the trench with bank run gravel conforming to the requirements of Item 0103501 to the proposed subgrade elevation. No additional payment for bank run will be made, and the cost of furnishing and placing bank run gravel shall be included in the linear foot price for pipe.

The backfill material shall be compacted in lifts not to exceed 12". Water shall not be applied during compaction to obtain proper results unless authorized by the engineer. Compaction shall be continued until the voids in the material have been reduced to a minimum and until the course is thoroughly compacted to firm and uniform surface satisfactory to the Engineer. The compaction of each layer shall be at least 97 percent of the maximum dry density as obtained by the AASHTO Test T-180-01, Method D.

Concrete pipe should be placed from down grade to up grade with the bell end of the pipe upgrade. All pipe installations shall be done under supervision of the City Engineering Services Bureau in addition to supervision and permit required from the Sewer Division of the Metropolitan District Commission.

METHOD OF MEASUREMENT

This work will be measured for payment by total number of linear feet of reinforced concrete pipe installed including excavation and new gravel backfill, complete and accepted.

BASIS OF PAYMENT

These items will be paid for the contract unit price per linear foot for “(SIZE) REINFORCED CONCRETE PIPE CLASS IV OR V” complete in place, in which price will include all materials including new backfill and disposal of unsuitable materials, furnishing and installing acceptable warning tape, tools, equipment and labor incidental thereto.

<u>PAY ITEM</u>	<u>DESCRIPTION</u>	<u>PAY UNIT</u>
0101801	12" Reinforced Concrete Pipe Class IV	LF
0101802	15" Reinforced Concrete Pipe Class IV	LF
0101803	18" Reinforced Concrete Pipe Class IV	LF
0101804	24" Reinforced Concrete Pipe Class IV	LF
0101805	48" Reinforced Concrete Pipe Class IV	LF
0101806	12" Reinforced Concrete Pipe Class V	LF
0101807	15" Reinforced Concrete Pipe Class V	LF
0101808	18" Reinforced Concrete Pipe Class V	LF
0101809	24" Reinforced Concrete Pipe Class V	LF
0101810	48" Reinforced Concrete Pipe Class V	LF