

ITEM 518 DRAINAGE OF STRUCTURES

- 518.01 Description**
- 518.02 Fabrication**
- 518.03 Materials**
- 518.04 General**
- 518.05 Porous Backfill**
- 518.06 Pipe**
- 518.07 Scuppers**
- 518.08 Excavation**
- 518.09 Method of Measurement**
- 518.10 Basis of Payment**

518.01 Description. This work consists of constructing drainage systems.

518.02 Fabrication. Fabricate scuppers according to Item 513. Select a fabricator that is at least pre-qualified at level SF. The City will base final acceptance of all fabricated members on the Engineer’s approval that the fabricated items can be successfully incorporated into the structures. Submit mill test reports for structural steel, steel castings, bronze, and sheet lead certified according to 501.06.

518.03 Materials. Furnish materials conforming to:

Scuppers, structural steel and cast steel.....	513
Metal pipe	707
Plastic pipe	720.12, 720.08
Other metals	711
Filter fabric, Type A.....	712.09

Furnish pipe specials of a grade at least as high as the type of pipe specified.

Furnish porous backfill consisting of gravel, stone, or air-cooled blast furnace slag, with a NO. 57 size gradation as per Table 703.01-1. The sodium sulfate soundness loss shall not exceed 15 percent.

518.04 General. As shown on the plans, connect all parts to new or existing sewers or other outlets.

When installing to superstructure, take into account the deflection of spans under full dead load.

518.05 Porous Backfill. Place porous backfill as shown on the plans. When not shown on the plans place at least 18 inches (0.5 m) thick behind the full length of abutments, wing walls, and retaining walls. Measure the thickness of porous backfill normal to the abutment or wall face. The Contractor may leave undisturbed rock or shale within 18 inches (0.5 m) of the abutment or wall. Place sufficient coarse aggregate or other material adjacent to, but not more than 6 inches (150 mm) below, the bottom of the weep hole to retain the porous backfill. Compact porous backfill according to Item 603.11 D.

518.06 Pipe. For drain pipe leading down from the superstructure, use either galvanized steel pipe, 707.70; or plastic pipe, 720.45. Provide specials, elbows, tees, wyes, and other fittings essential for a complete and satisfactory installation of the same material and quality as the pipe. Construct watertight joints of adequate strength. In

steel pipe, weld joints or use clamp-type couplings having a ring gasket. In plastic pipe, make joints according to the applicable ASTM standard. Securely fasten the pipe to the structure with hanger or clamp assemblies that are galvanized according to 711.02.

Place subsurface pipe according to Item 603. If the plans require drainage pipe in the porous backfill, provide plastic pipe conforming to 720.12.

For corrugated metal pipe, perforated specials are not required and the Contractor may make bends with adjustable elbows conforming to the thickness requirements of the pipe specifications.

518.07 Scuppers. Construct secure and watertight connections, including the connections to adjacent concrete. Provide castings, true to form and dimension. Weld the joints of structural steel scuppers. Galvanize scuppers according to 711.02.

518.08 Excavation. Excavate all material encountered to the dimensions necessary to provide ample space at least to install pipe or other drainage facility behind abutments and for outlets.

518.09 Method of Measurement. The City will measure Porous Backfill and Porous Backfill with Filter Fabric by the number of cubic yards (cubic meters) or lump sum. The City will measure pipe specials by the same method as the pipe. If pipe is by the foot (meter), the City will measure the pipe along its centerline.

518.10 Basis of Payment. The cost to backfill, if not separately itemized in the Contract, and excavation is incidental to the drainage facility that necessitates them.

The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
518	Cubic Yard (Cubic Meter) or Lump Sum	Porous Backfill
518	Cubic Yard (Cubic Meter) or Lump Sum	Porous Backfill with Filter Fabric
518	Foot (Meter)	___ inch (___ mm) ___ Pipe, Including Specials
518	Each	Scuppers, Including Supports
518	Pound or Foot (Kilogram or Meter)	Trough Horizontal Conductors
518	Pound or Foot (Kilogram or Meter)	Pipe Horizontal Conductors
518	Foot (Meter)	___ inch (___ mm) Pipe Downspout Including Specials