ITEM 748.2 PROTECTION OF INFILTRATION SCMS LUMP SUM

The work under this item shall consist of construction and testing requirements for infiltration stormwater control measures (SCMs) in accordance with the Contract Documents and relevant provisions of subsections 150, 201, 230, 460, 751, 765 and 767. Infiltration SCMs include:

- Infiltration basin
- Infiltration linear practice
- Subsurface infiltration system
- Leaching basin
- Porous pavement
- Pavement disconnection (vegetated filter strip or qualifying pervious area)

MATERIALS

Silt sacks meeting material and submittal requirements of Special Provision Item 697.1.

Temporary permeable liner meeting material and submittal requirements of Item 698.2 Geotextile Fabric for Subsurface Drainage.

Sediment control barrier meeting material and submittal requirements of Item 767.121.

Temporary pipe plugs meeting material and submittal requirements of Standard Specifications Section 200.

CONSTRUCTION METHODS

All Infiltration SCMs

The Contractor shall put protections in place to minimize sedimentation of the infiltration SCMs. Erosion controls, including diversion berms or an extra layer of erosion control, shall be installed in accordance with Standard Specifications Subsection 767. For rain events estimated to exceed 0.25 inches, the Contractor shall stabilize bare soils draining to infiltration SCMs at least 24 hours before the storm.

The preferred construction sequencing is to bring the infiltration SCM on-line near the end of construction to minimize any sediment, erosion, or compaction activities affecting the infiltration capacity of the SCM.

Infiltration Basin and Infiltration Linear Practice

The Contractor shall direct stormwater runoff from exposed surfaces away from the infiltration basin/linear practice until any unstable surfaces, including the bottom and side slopes of the SCM, are fully stabilized with at least 60% established permanent grass species.

The top of slope of the infiltration basin/linear practice shall be staked with snow fencing to prevent the use of the area for activities such as construction equipment, vehicular traffic, vehicular parking, stockpiling of construction materials, and any other activities that might negatively impact the infiltration capacity of the SCM. The Contractor may also install sediment control barrier around the perimeter of the basin/linear practice, adjacent to the snow fencing, to reduce erosion and sedimentation.

The infiltration basin shall not be used as a construction-phase sedimentation basin without prior approval of the Resident Engineer. If the Resident Engineer approves the use of the infiltration basin for dewatering during construction, the Contractor shall install a temporary permeable liner at the basin and sediment forebay locations to protect infiltration capacity of the underlying soils. The liner and accumulated sediment shall be removed and disposed of at the end of construction.

The soil at the bottom of the infiltration basin/linear practice shall not compacted or smeared. The SCM floor shall be tilled to a depth of 12 inches to restore infiltration capacity following final grading.

Subsurface Infiltration System and Leaching Basins

Inlets connected to subsurface SCMs shall have silt sacks installed paid under Item 697.1.

Subsurface infiltration systems and leaching basins shall not be used for dewatering or as construction-phase sedimentation basins. Temporary pipe plugs shall be installed in the inlet pipes to the structures and remain in place until construction is completed, bare soils draining to the structures are stabilized, material is removed from sumps of structures, and the system is ready to go on-line.

Porous Pavement

The perimeter of the porous pavement area shall be staked with snow fencing to prevent the use of the area for activities such as construction equipment, vehicular traffic, vehicular parking, stockpiling of construction materials, and any other activities that might negatively impact the infiltration capacity of the area.

The Contractor shall protect the area from run-on by using sediment control barriers or divert the water away from the porous pavement area.

Pavement Disconnection (Vegetated Filter Strip or Qualifying Pervious Area)

The perimeter of the vegetated area shall be staked with snow fencing to prevent the use of the area for activities such as construction equipment, vehicular traffic, vehicular parking, stockpiling of construction materials, and any other activities that might negatively impact the infiltration capacity of the vegetated area.

The soil of the vegetated area shall not be compacted or smeared. The ground shall be tilled to a depth of 12 inches to restore infiltration capacity following final grading.

CLEANING

If the Contractor uses a temporary permeable liner, the liner shall be cleaned out and scraped when average sediment accumulation exceeds a depth of 6 inches. Cleaning of silt sacks shall follow the requirements under Item 697.1.

For sites with porous pavement, the stabilized construction entrance shall be cleaned by vacuum sweeping to remove sediment and limit tracking of sediment onto the porous pavement area.

The Contractor shall clean the entire infiltration SCM prior to substantial completion. Cleaning shall include removal of all construction debris, obstructions, and sediment. The Contractor shall furnish all necessary hose, pumps, pipe and other equipment that may be required for this

purpose. No debris shall be flushed into existing drains, storm drains and/or streams. Heavy equipment is prohibited for use of cleaning infiltration SCM. Contractor shall use handheld equipment.

INFILTRATION TESTING REQUIREMENTS

Infiltration Basin and Infiltration Linear Practice

Testing for the infiltration basin/linear practice shall be performed using Double Ring Infiltrometer Test in accordance with ASTM D3385-03 or a Falling Head Permeameter test in accordance with ASMT D5126-90. Test methods shall not include major excavation or any methods that may compact the soils. Testing shall be conducted by the Geotechnical Engineer.

The Contractor shall provide the saturated hydraulic conductivity test results to the Design Engineer, who will confirm that the infiltration basin/linear practice completely dewaters within the required 72 hours. The Design Engineer will compare the saturated hydraulic conductivity test results with the minimum allowable infiltration rate as provided in the table below.

	Infiltration Basin/Linear Practice Test Requirements					
	SCM Size		As Designed / Permitted		To Compare Against Field Results	
	Bottom Area (sf)	Cumulative Volume (cf)	Infiltration Rate (in/hr)	Drawdown (hrs)	**Minimum Allowable Infiltration Rate (in/hr)**	Maximum Drawdown (hrs)
SCM 1	2,537	3,279	1.00	15.5	**> 0.22**	72

A minimum of one (1) test shall be conducted for each infiltration basin and minimum of one (1) test for every 300 feet of infiltration linear practice.

Tests shall be performed by the Geotechnical Engineer under the observation of the Resident Engineer not sooner than 30 days after final stabilization. The basin/linear practice shall be cleaned and inspected for obstructions prior to testing.

Any SCM with testing results beyond acceptable limits shall be tilled to a depth of 12 inches to restore infiltration capacity and tested again. A SCM with failure of any test location shall be subject to up to two other test locations at the discretion of the Resident Engineer.

Subsurface Infiltration System

The Contractor and Resident Engineer (or designated inspector such as the Environmental Monitor or Design Engineer) shall visit the site 72 hours after a rainfall event exceeding 0.25 inches to visually inspect the water level through the structure's inspection port.

If the system has not completely dewatered based on the inspection, the Contractor shall follow the manufacturer's guidelines for flushing and cleaning the subsurface system and perform another visual inspection after a 0.25-inch rain event.

Leaching Basins

The Contractor and Resident Engineer (or designated inspector) shall visit the site 72 hours after a rainfall event exceeding 0.25 inches and visually inspect the water level in the structure.

If the structure has not completely dewatered based on the inspection, the Contractor shall propose mitigation measures to clean and remove sediment and restore infiltration capacity.

Porous Pavement

The Contractor shall test the full permeability of the pavement surface through application of clean water at a minimum rate of 5 gallons per minute over the surface, using a hose or other distribution device, in accordance with ASTM C1701. All applied water shall infiltrate directly without puddle formation or surface runoff. The test shall be observed by the Resident Engineer prior to and after placement of surface course.

If the porous pavement does not meet the minimum infiltration rate of 5 gallons per minute over the surface, the Contractor shall propose mitigation measures to restore infiltration capacity.

Pavement Disconnection (Vegetated Filter Strip or Qualifying Pervious Area)

The Resident Engineer (or designated inspector), shall visually inspect that the grass and/or vegetation has established per the Construction Documents and Subsections 751, 765, 770, and 771. There shall be no channelized flow of water through the seeded/vegetated area.

SUBMITTALS

Test Reports

The Contractor shall provide the infiltration test results for review by the Design Engineer and subsequent approval by the Resident Engineer. The test results shall include plans documenting test locations.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for all work under this Item shall be made at the contract unit price, Lump Sum, which shall include all work detailed above, including temporary permeable liner, snow fencing, temporary pipe plugs, testing, cleaning, and maintenance of the infiltration SCMs until substantial completion.

Payment for silt sacks will be paid under Item 697.1.

Payment for sediment control barrier will be paid under Item 767.121.

Such payment will constitute full compensation for all labor, materials, equipment, site preparation, setup, products, execution, cleaning, monitoring weather forecasts, infiltration testing, mitigation measures to restore infiltration capacity of SCMs to meet testing requirements, restoration of all disturbed areas, and all incidental costs required to complete the work.