

ITEM 04604.5101nn M - STORMWATER TREATMENT SYSTEM (SWTS)

DESCRIPTION:

This work shall consist of designing, furnishing and installing a stormwater treatment system (SWTS) in accordance with this specification, as shown in the contract documents, and as directed by the Engineer. The SWTS shall also be routinely inspected, cleaned and maintained for the duration of the contract.

MATERIALS:

All precast concrete materials used in SWTS units shall meet the requirements of Section 704-03, *Precast Concrete - General* of the Standard Specifications except that the concrete shall have a minimum compressive strength of 35 Mpa at the end of 28 days. Precast concrete units shall be fabricated at facilities approved by the Department.

Stormwater treatment system components shall be installed or contained within one-piece precast concrete units. Systems that utilize multiple, inter-connected precast concrete units shall not be allowed. The stormwater treatment system to be used shall be one of the following systems, or an equivalent one-piece, fully assembled hydrodynamic SWTS unit approved by the Engineer:

<i>Vortechs</i> TM system as manufactured by	Vortechnics, Inc. 41 Evergreen Drive Portland, ME 04103 Phone (207) 855-9830
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<i>Downstream Defender</i> TM as manufactured by	Hydro International 94 Hutchins Drive, Portland, ME 04102 Phone (207) 756-6200
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<i>Stormceptor</i> TM as manufactured by	Camtek Construction Products Corporation 3481 Treeline Drive Murrysville, PA 15668 Phone (800) 909-7763
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The contractor shall provide eight sets of the manufacturer's standard sheets, installation details, and the system operation and maintenance manual to the Engineer at least 30 days prior to the installation. The contractor shall provide three sets of detailed fabricator shop drawings to the Materials Bureau at least 45 days prior to fabrication of the SWTS into precast concrete units.

The SWTS must meet the following performance specifications: (1) the manufacturer must document a sediment removal efficiency of 80% for all particles entering the structure as determined by a third party, independent scientific study; (2) the manufacturer shall determine the rise in Hydraulic Grade Line (HGL) of the drainage system upstream of the SWTS. This shall consist of a stage-discharge table indicating the water surface elevation at the entrance of the SWTS for the full range of flows that may pass through the system. Documentation of these performance standards must be submitted to the Engineer at least 30 days prior to the installation.

Sizing of the SWTS unit will be determined by the manufacturer based on the ten year, twenty four hour

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event Peak Design Flow and/or Design Capacity and Required Sediment Storage Capacity as indicated in the contract documents. Inlet, bypass and outlet pipe diameters will be as required by the manufacturer and/or as indicated in the contract documents. All pipe sizes and invert elevations determined by the manufacturer shall be verified by the contractor prior to installation of pipes at the SWTS unit.

CONSTRUCTION DETAILS:

The contractor shall follow the procedures established by the SWTS manufacturer for installation and field testing of the units. The contractor shall arrange for a manufacturer's representative to be present on site during installation of all units.

The contractor shall be responsible for routine monthly inspections of the SWTS, cleaning the system when needed, maintaining the system's performance/efficiency, and for keeping a record of all inspections, cleanings and maintenance for the duration of the contract. If the system is not functioning as outlined in the manufacturer's operation and maintenance manual, then the contractor, with the Engineer's approval, shall take the necessary steps to diagnose and correct the problem(s) at no additional cost to the State.

The contractor shall also be responsible for cleaning the SWTS immediately prior to completion of the contract.

Final approval of the SWTS shall be made by the Engineer after verifying the system has been installed, field tested, and is functioning as outlined in the manufacturer's operation and maintenance manual.

METHOD OF MEASUREMENT:

This work shall be measured as the number of SWTS units installed in accordance with this specification, the contract documents, and approved by the Engineer.

BASIS OF PAYMENT:

The unit price bid for each storm water treatment system shall include the cost of all labor, materials, equipment necessary to complete the work, including manhole frames and covers, and all necessary inspections, cleanings and maintenance for the duration of the contract. Seventy-five percent of the price bid for this item shall be paid upon satisfactory installation of the SWTS units. The remaining percentage shall be paid after the SWTS is satisfactorily cleaned at the completion of the contract.

A performance bond, in the amount of four times the price bid for this item, shall be posted by the contractor to ensure the SWTS units are properly installed and meet the manufacturer's stated sediment removal efficiency. Any testing needed to verify the system's efficiency shall be arranged by the contractor using an independent party/laboratory approved by the Department. The contractor shall be responsible for all costs.

The cost of excavation, backfill, sheeting, and outlet/inlet pipes shall be paid for under their respective items.

NOTE: "nn" denotes that this is a serialized item as per Section 101-02 of the Standard Specifications. This specification shall be serialized by the number of locations the system is shown in the contract documents.