

## **ITEM 604.5102nn15 - 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 system shall also be routinely inspected, cleaned, and maintained for the duration of the contract.

### **MATERIALS:**

All precast concrete elements shall meet the requirements of Section 704-03 - *Precast Concrete - General*, of the Standard Specifications except the concrete shall have a minimum compressive strength of 35 Mpa at 28 days, unless otherwise noted on the approved fabrication drawing. Precast units shall be fabricated at facilities approved by the Department.

Manhole frames and covers shall comply with the requirements of Section 655 – *Frames, Grates and Covers*.

The stormwater treatment system components, inserted or cast into precast concrete units, shall be one of the following:

*Vortechs*™ as manufactured by

CONTECH Construction Products Inc.  
9025 Centre Pointe Drive, suite 400  
West Chester, OH 45069  
1-800-925-5240

*Downstream Defender*™ as manufactured by

Hydro International  
94 Hutchins Drive  
Portland, ME 04102  
Phone (207) 756-6212

*Stormvault*™ as manufactured by

CONTECH Construction Products Inc.  
9025 Centre Pointe Drive, suite 400  
West Chester, OH 45069  
1-800-925-5240

Or an approved equal.

The contractor shall provide the manufacturer's standard sheets, installation details, and operations and maintenance manuals to the Engineer ten days prior to the installation. Units shall be designed to withstand an MS-18 highway loading. Design calculations and fabricator working drawings shall be stamped by a Professional Engineer licensed and registered to practice in New York State. Fabricator working drawings, prepared in accordance with the requirements of Section 704-03, *Precast Concrete - General*, of the Standard Specifications, shall be supplied to the Materials Bureau for approval prior to fabrication of the precast concrete units. The structure(s) 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 third party independent scientific study) at the flow rate associated with the Water Quality Volume as indicated in the contract documents; (2) the manufacturer shall determine the

## **ITEM 604.5102nn15 - STORMWATER TREATMENT SYSTEM (SWTS)**

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.

Sizing of the unit shall be determined by the manufacturer based on the maximum flow rate through the structure (i.e. the flow associated with water quality volume for 10-year, 24-hour storm event) as indicated in the contract documents and shown in Table 1. If units can not pass the 10-year, 24-hour storm event, the SWTS shall be installed off of the main drainage system (off-line installation). The configuration of the unit with respect to the drainage system (on-line vs. off-line) shall be as shown in the contract documents. Inlet, bypass, and outlet pipe diameters will be as required by the manufacturer and/or as indicated on the plans. All pipe sizes and invert elevations determined by the manufacturer shall be verified by the contractor prior to installation of pipes at the unit.

**Table 1**

<b>Item Number</b>	<b>Maximum Flow Capacity (cfs)/(l/s)</b>
<b>604.51020115</b>	<b>1.6 (45)</b>
<b>604. 51020215</b>	<b>2.8 (80)</b>
<b>604. 51020315</b>	<b>4.5 (125)</b>
<b>604. 51020415</b>	<b>6.0 (170)</b>
<b>604. 51020515</b>	<b>8.5 (240)</b>
<b>604. 51020615</b>	<b>11.0 (315)</b>
<b>604. 51020715</b>	<b>14.0 (400)</b>
<b>604. 51020815</b>	<b>17.5 (495)</b>
<b>604. 51020915</b>	<b>25.0 (710)</b>

### **CONSTRUCTION DETAILS:**

The contractor shall follow the procedures established by the manufacturer for installation and field testing.

The contractor shall be responsible for cleaning the system when needed, maintaining performance / efficiency, and keeping a record of maintenance inspections for the duration of the contract. If the system is not functioning as outlined in the Operation and Maintenance Manual for the system, then the contractor, with the Engineer's approval, shall take the necessary steps to diagnose and correct problems at no additional cost to the State.

Final approval of the installation will be made by the Engineer verifying that the system has been installed, field tested and functioning as outlined in the Operation & Maintenance Manual for the system.

## **ITEM 604.5102nn15 - STORMWATER TREATMENT SYSTEM (SWTS)**

### **METHOD OF MEASUREMENT:**

This work will be measured as the number of Stormwater Treatment Systems installed in accordance with this specification, and approved by the Engineer.

### **BASIS OF PAYMENT:**

The unit price bid for each Stormwater Treatment System shall include the cost of all labor, materials, equipment necessary to complete the work, including manhole frames and covers; all necessary excavation, backfill, sheeting; and necessary maintenance for the duration of the contract.

The cost of the outlet/inlet pipes will be paid for under their respective items.

Seventy-five percent of the price bid for this item will be paid upon satisfactory installation of the SWTS units. The remaining percentage will be paid after the SWTS is satisfactorily cleaned at the completion of the contract.