SECTION (_____)
STORM WATER TREATMENT DEVICE

1.0 GENERAL

1.1 This item shall govern the furnishing and installation of the SciCloneX Hydrodynamic Separator® by Contech Engineered Solutions LLC, complete and operable as shown and as specified herein, in accordance with the requirements of the plans and contract documents.

1.2 The Contractor shall furnish all labor, equipment and materials necessary to install the storm water treatment device(s) (SWTD) and appurtenances specified in the Drawings and these specifications.

1.3 The manufacturer of the SWTD shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of storm water runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer. In accordance with the Drawings, the SWTD(s) shall be a SciCloneX Separator™ device manufactured by:

Contech Engineered Solutions LLC
9100 Centre Pointe Drive
West Chester, OH, 45069
Tel: 1 800 338 1122

1.4 Related Sections

1.4.1 Section 02240: Dewatering
1.4.2 Section 02260: Excavation Support and Protection
1.4.3 Section 02315: Excavation and Fill
1.4.4 Section 02340: Soil Stabilization

1.5 All components shall be subject to inspection by the engineer at the place of manufacture and/or installation. All components are subject to being rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective may be subject for repair where final acceptance of the component is contingent on the discretion of the Engineer.

1.6 The manufacturer shall guarantee the SWTD components against all manufacturer originated defects in materials or workmanship for a period of twelve (12) months from the date the components are delivered to the owner for installation. The manufacturer shall upon its determination repair, correct or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period. The use of SWTD components shall be limited to the application for which it was specifically designed.

1.7 The SWTD manufacturer shall submit to the Engineer of Record a "Manufacturer's Performance Certification" certifying that each SWTD is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research

1.8 No product substitutions shall be accepted unless submitted 10 days prior to project bid date, or as directed by the Engineer of Record. Submissions for substitutions require review and approval by the Engineer of Record, for hydraulic performance, impact to project designs, equivalent treatment performance, and any required project plan and report (hydrology/hydraulic, water quality, stormwater pollution) modifications that would be required by the approving jurisdictions/agencies. Contractor to coordinate with the Engineer of Record any applicable modifications to the project estimates of cost, bonding amount determinations, plan check fees for changes to approved documents, and/or any other regulatory requirements resulting from the product substitution.

2.0 MATERIALS

2.1 Housing unit of stormwater treatment device shall be constructed of pre-cast or cast-in-place concrete, no exceptions. Precast concrete components shall conform to applicable sections of ASTM C 478, ASTM C 857 and ASTM C 858 and the following:

- **2.1.1** Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
- **2.1.2** Unless otherwise noted, the precast concrete sections shall be designed to withstand lateral earth and AASHTO H-20 traffic loads;
- **2.1.3** Cement shall be Type III Portland Cement conforming to ASTM C 150;
- **2.1.4** Aggregates shall conform to ASTM C 33;
- **2.1.5** Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497.
- **2.1.6** Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990.
- **2.1.7** Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.

2.2. Flow Splitter shall be constructed of polypropylene conforming to a tensile strength of 3,600 psi (ASTM D-638), and Izod impact value of “no break” (ASTM D-256), water absorption of 0.01% (ASTM D-570), a density of 0.905 (ASTM D-792), a flexural modulus of 155,000 (ASTM D-792), a heat deflection temperature of 180°F at 66 PSI (ASTM D-648), and a Shore Hardness of 70 (ASTM D-2240). Thickness of Flow Splitter will be 1/4”or greater. Joints must be welded using acceptable methods for polypropylene. Flow Splitter shall be mounted across the inlet pipe such that all inflowing water flows into it. The flow splitter must split the incoming flows in two directions along the perimeter of the structure toward the oil/floatables skimmer. The horizontal deck of the flow splitter shall be positioned below the inlet pipe invert.

2.3. Oil/Floatables Skimmer shall be constructed of polypropylene conforming to a tensile strength of 3,600 psi (ASTM D-638), and Izod impact value of “no break” (ASTM D-256), water absorption of 0.01% (ASTM D-570), a density of 0.905 (ASTM D-792), a flexural modulus of 155,000 (ASTM D-792), a heat deflection temperature of 180°F at 66 PSI (ASTM D-648), and a Shore Hardness of 70 (ASTM D-2240). Thickness of Oil/Floatables Skimmer will be 1/4” or

greater. Joints must be welded using acceptable methods for polypropylene. Oil/Floatables Skimmer shall be mounted across concrete structure at its widest point and extend vertically downward 6" below the outlet pipe invert and upward several feet above the outlet pipe invert. For larger units the Oil/Floatables skimmer can alternatively be made of concrete with reinforcing.

2.4. Outlet Weir shall be constructed of polypropylene conforming to a tensile strength of 3,600 psi (ASTM D-638), and Izod impact value of "no break" (ASTM D-256), water absorption of 0.01% (ASTM D-570), a density of 0.905 (ASTM D-792), a flexural modulus of 155,000 (ASTM D-792), a heat deflection temperature of 180°F at 66 PSI (ASTM D-648), and a Shore Hardness of 70 (ASTM D-2240). Thickness of Outlet Weir will be 1/4" or greater. Joints must be welded using acceptable methods for polypropylene. Outlet Weir shall be mounted across the outlet pipe such that all outflowing water flows over it. The outlet weir must be level as to create laminar flow over its top to minimize entrance velocity out of the system and into the outlet pipe. The top of the outlet weir must be above the outlet pipe invert. The horizontal deck of the outlet weir shall be positioned below the outlet pipe invert. The horizontal deck shall contain one or more down pipes to protrude into the sump chamber below.

2.5 Wedge Anchors - internal components shall be fastened to the concrete structure using stainless steel hardware Grade 304 or 316. Stainless steel wedge anchors shall be 3/8" in diameter and at least 2 3/4" long. Fender washers, 1" diameter or greater, are to be used with wedge anchors where the internal baffles are fastened to the concrete walls to disperse the anchor pressure over the baffle surface area.

3.0 PERFORMANCE

3.1 The SWTD shall be sized to either achieve an 80 percent average annual reduction in the total suspended solid load or treat a flow rate designated by the jurisdiction in which the project is located. Both methods should be sized using the OK-110 particle distribution having particles ranging from 53 microns to 212 microns with a d50 of around 110 microns.

3.2 The SWTD shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTD's treatment efficiency as captured pollutants accumulate. In order to not restrict the Owner's ability to maintain the SWTD, the minimum dimension providing access from the ground surface to the sump chamber shall be 12 inches in diameter.

3.3 The SWTD shall be designed to capture and retain Total Petroleum Hydrocarbons generated by wet-weather flow and dry-weather gross spills.

3.4 The SWTD shall convey the flow from the peak storm event of the drainage network, in accordance with required hydraulic upstream conditions as defined by the Engineer. If a substitute SWTD is proposed, supporting documentation shall be submitted that demonstrates equal or better upstream hydraulic conditions compared to that specified herein. This documentation shall be signed and sealed by a Professional Engineer registered in the State of the work. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

4.0 EXECUTION

4.1 The contractor shall exercise care in the storage and handling of the SWTD components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor.

4.2 The SWTD shall be installed in accordance with the manufacturer's recommendations and related sections of the contract documents. The manufacturer shall provide the contractor installation instructions and offer on-site guidance during the important stages of the installation as identified by the manufacturer at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.

4.3 The contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.

4.4 The contractor shall removal all loose material and pooling water from the SWTD prior to the transfer of operational responsibility to the Owner.

END OF SECTION