

STORMWATER TREATMENT SYSTEM SPECIFICATION

PART 1.00 GENERAL

1.1 DESCRIPTION

A. Work included

The Contractor, and/or manufacturer selected by the Contractor and approved by the Engineer, shall furnish all labor, equipment, and incidentals required and install all precast concrete stormwater systems and appurtenances in accordance with the Drawings and these specifications.

1.2 QUALITY CONTROL INSPECTION

- A. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer. Such Inspection may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections which have been damaged beyond repair during delivery will be rejected and, if already installed, shall be replaced, entirely at the Contractor's expense.
- B. All sections shall be inspected for general appearance, dimensions, soundness, etc. The surface shall be dense, close textured and free of blisters, cracks, roughness, and exposure of reinforcement.
- C. Imperfections may be repaired, subject to the acceptance of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi (28 MPa) at the end of 7 days and 6,000 psi (34 MPa) at the end of 28 days when tested in 3 inch (76 mm) diameter by 6" (152 mm) log cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs.

1.3 SUBMITTALS

A. Shop Drawings

The Contractor shall be provided with dimensional drawings and, when specified, utilize these drawings as the basis for preparation of shop drawings showing details for construction, reinforcing, joints, and any cast-in-place appurtenances. Shop drawings shall be annotated to indicate all materials to be used and all applicable standards for materials, required tests of materials, and design assumptions for structural analysis. Shop drawings shall be prepared at a scale of not less than 3/16 inches per foot (1:75). Six (6) hard copies of said drawings shall be submitted to the Engineer for review and approval.

PART 2.00 PRODUCTS

2.1 MATERIALS AND DESIGN

- A. The stormwater treatment system shall be constructed entirely from locally obtained materials, specifically precast concrete and either HDPE or PVC pipe (Stormwater Treatment System internal piping) and shall not include inserts (e.g., components such as fiberglass, aluminum, etc. manufactured and shipped in from manufacturers in other U.S. States or other countries).
- B. Concrete for precast stormwater treatment systems shall conform to ASTM C 857 and C 858 and meet the following additional requirements:
 - 1. The wall thickness shall not be less than 6 inches (152 mm) or as shown on the dimensional drawings. In all cases, the wall thickness shall be no less than the minimum thickness necessary to sustain HS20-44 (MS18) loading requirements as determined by a Licensed Professional Engineer.
 - 2. Sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C 990.
 - 3. Cement shall be Type II Portland cement conforming to ASTM C 150.

4. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi (28 MPa) or until 5 days after fabrication and/or repair, whichever is the longer.
 5. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s) and shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C 595M.
- C. The stormwater treatment system shall be comprised of one round structure (e.g., manhole), or one rectangular structure (e.g., vault), or two-structures (round or rectangular, or a combination of both). The one-structure system is used most often as the two-structure system is for special circumstances (e.g., offset stormwater lines, etc.)
 - D. The inlet pipe shall be installed into the structure mating with the internal bypass pipe.
 - E. A baffle wall with openings sized and located by the manufacturer per the site design requirements shall be installed in the structure. Said baffle wall shall be installed in a preformed groove (one per side 180° apart) in the wall of the structure or pinned into place. The baffle wall shall be sealed to the structure wall with a butyl mastic sealant conforming to ASTM C 990. The internal bypass pipe shall pass through the baffle wall at an elevation determined from the site design requirements.
 - F. Brick or masonry used to build the manhole frame to grade shall conform to ASTM C 32 or ASTM C 139 and shall be installed in conformance with all local requirements.
 - G. Casting for manhole frames and covers shall be in accordance with ASTM A48, CL.30B and AASHTO M105.

2.2 PERFORMANCE

- H. A backwater analysis specific to the project shall be completed and supplied by the manufacturer.

- I. Each stormwater treatment system shall be capable of removing 80% of the net annual Total Suspended Solids (TSS) load based on a Particle Size Distribution (PSD) having a d_{50} of 110 microns and verified/documentated by full scale laboratory tests. Said tests shall be conducted by or under the direct supervision of an approved independent third party.
- J. The baffle wall in the second structure shall serve as a water-lock to prevent the introduction of trapped hydrocarbons (oils) and floatable debris immediately downstream of the stormwater treatment system.

2.3 MANUFACTURER

The stormwater treatment system manufacturer shall have been in the stormwater treatment business for a minimum of five years.

The stormwater treatment system shall be a StormPro from Environment 21, LLC.