

BAYFILTER™ SPECIFICATIONS

PART 1.00 GENERAL

1.1 DESCRIPTION

- A. The BayFilter™ system's internal components manufacturer selected by the Contractor and approved by the Engineer, shall furnish all labor, materials, equipment and incidentals required to manufacture the BayFilter system component(s) specified herein in accordance with the attached drawing(s) and these specifications.
- B. Concrete structures and any appurtenances that form an integral part of the BayFilter™ system shall be described in Part 2.00 of 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 worksite after delivery, or at both places, and shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements. If a BayFilter system component(s) is rejected after delivery to the site, it shall be marked for identification and removed from the site. Any BayFilter system component(s) which have been damaged beyond repair during delivery will be rejected.

1.3 SUBMITTALS

- A. Plan, elevation, and profile dimensional drawings shall be submitted to the Engineer for review and approval. The Contractor shall be provided with the approved plan, elevation, and profile dimensional drawings.

PART 2.00 PRODUCTS

2.1 INTERNAL COMPONENTS

All components including concrete structure(s), PVC manifold piping and filter cartridges, shall be provided by BaySaver Technologies Inc., 1302 Rising Ridge Road, Unit 1, Mount Airy, MD (800.229.7283).

- A. PVC Manifold Piping: All internal PVC pipe and fittings shall meet ASTM D1785. Manifold piping shall be provided to the contractor partially pre-cut and pre assembled.

- B. Filter Cartridges: External shell of the filter cartridges shall be substantially constructed of polyethylene or equivalent material acceptable to the manufacturer. Filtration media shall be arranged in a layered fashion to maximize available filtration area. An orifice plate shall be supplied with each cartridge to restrict flow rate to a maximum of 30 gpm.
- C. Filter Media: Filter media shall be by BaySaver Technologies Inc. or approved alternate. Filter media shall consist of the following mix. Sand media shall have an effective particle size of not more than 0.49mm, it shall have an angular grain shape, a hardness of 7, be 99% silica, and not leach nutrients. The media shall also include a blend of Perlite and Activated Alumina.

2.2 PERFORMANCE

- A. The stormwater filter system shall be capable of treating 100% of the required treatment flow at full sediment load conditions.
- B. The stormwater filter system's cartridges shall have no moving parts.
- C. The stormwater treatment unit shall be designed to remove at least 80% of the suspended solids load. Said removal shall be based on full-scale testing using SIL-CO-SIL 106 media gradation with a d_{50} of 23 microns (manufactured by US Silica) or equivalent. Said full scale testing shall have included sediment capture based on actual total mass collected by the stormwater filtration system.
- D. The stormwater filtration system shall reduce incoming turbidity (measured as NTUs) by 50% or more and shall not have any components that leach nitrates or phosphates.
- E. The stormwater filtration cartridge shall be equipped with a hydrodynamic backwash mechanism to extend the filter's life and optimize its performance. Inlet flow shall be upflow.
- F. The stormwater filtration system shall be designed to remove a minimum of 50% of the incoming Total Phosphorus (TP) load.
- G. The stormwater filtration system's cartridges shall have the following minimum flow and sediment load capacities:

Design Flow per BFC- (gpm) Nominal	Treated Sediment Load (lbs)
30	150
23	200
20	250
15	300

2.3 PRECAST CONCRETE VAULT COMPONENTS

- A. Concrete structures shall be designed for H-20 traffic loading and applicable soil loads or as otherwise determined by a Licensed Professional Engineer. The materials and structural design of the devices shall be per ASTM C857 and ASTM C858.
- B. The minimum compressive strength of the concrete shall be 4000 psi.
- C. Cement shall conform to the requirements for Portland cement of Specification C150.
- D. Aggregates shall conform to Specification C33, except that the requirement for gradation shall not apply.
- E. Reinforcement shall consist of wire conforming to Specification A82 or Specification A496, of wire fabric conforming to Specification A185 or Specification A497, or of bars of Grade 40 steel conforming to Specification A615/A615M.
- F. The access cover shall be designed for HS20-44 traffic loading and shall provide a minimum 30 inch clear opening.
- G. All joints shall be waterproof with wrapped gaskets or sealed with a mastic treatment.
- H. Any grout used within the system shall meet the ASTM C 1107 “Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink)”. Grades A, B and C at a pourable and plastic consistency at 70°F. CRD C 621 “Corps of Engineers Specification For Non-Shrink Grout.”

2.4 CONTRACTOR PROVIDED COMPONENTS

Specifications for all contractor-provided components are minimum requirements. If a higher standard is shown on the plans or described in another section of the technical specifications, then the higher standard shall govern.

- A. Sub-Base: Sub-base shall be six-inch minimum of ¾-inch minus rock, 95% compaction. Compact undisturbed sub-grade materials to 95% of maximum density at +/-2% of optimum moisture content. Unsuitable material below sub-grade shall be replaced to engineer's approval.
- B. The minimum compressive strength of the concrete for cast in place structures shall be 4000 psi.
- C. Silicone Sealant: Shall be pure RTV silicone conforming to Federal Specification Number TT S001543A or TT S00230C or Engineer approved.
- D. Grout: Shall be non-shrink grout meeting the requirements of Corps of Engineers CRD-C588. Specimens molded, cured and tested in accordance with ASTM C-109 shall have minimum compressive strength of 6,200 psi. Grout shall not exhibit visible bleeding.
- E. Backfill: Backfill shall be ¾-inch minus rock at 95% compaction.

PART 3.00 EXECUTION

3.1 PRECAST CONCRETE VAULT

- A. Vault top finish grade shall be even with surrounding finish grade surface unless otherwise noted on plans.
- B. Contractor shall grout all inlet and outlet pipes flush with vault interior wall.
- C. Sanded PVC fittings shall be used on all PVC inlet and outlet pipes.

3.2 ANTI-FLOTATION BALLAST (Where Required)

- A. Ballast shall be to the dimensions specified by the engineer and noted on the data block. Ballast shall run the entire length of the long side of the vault on both sides. Ballast shall not encase the inlet and/or outlet piping. Provide 12" clearance from outside diameter of pipe.

3.3 CLEAN UP

- A. Remove all excess materials, rocks, roots, or foreign debris, leaving the site in a clean, complete condition approved by the engineer. All filter components shall be free of any foreign materials including concrete.

3.4 FILTER CARTRIDGES

- A. Filter cartridges shall not be installed until the project site is clean and stabilized or if the inlet and outlet pipes are temporarily blocked off. The project site includes any surface that contributes stormwater runoff to the BayFilter system. All impermeable surfaces shall be clean and free of dirt and debris. All catch basins, manholes and pipes shall be free of dirt and sediments.

3.5 INSTALLATION NOTES

- A. Contractor to strictly follow the approved design and construction specifications. Any substitutions are to be pre-approved by the inspector and design engineer in writing prior to placement of materials.
- B. The stormwater filtration system(s) may not be activated until all contributing drainage areas to each facility are stabilized. Construction of the facility shall not proceed without prior authorization of the inspector.
- C. No "rock dust" can be used for sand.
- D. Contact "Miss Utility" at 1-800-257-7777 at least 48 hours prior to the start of construction.

PART 4.00 EXECUTION

4.1 INSTALLATION

- A. Installation of the BayFilter System(s) shall be performed per manufacturer's Installation Instructions. Such instructions can be obtained by calling BaySaver Technologies, Inc. at 1.800.229.7283 or by login to www.BaySaver.com.