

## Section [ \_\_\_\_\_ ] Stormwater Catch Basin Filtration Device

### **PART 1 – GENERAL**

#### 01.01.00 Purpose

The purpose of this specification is to establish generally acceptable criteria for devices used for filtration of stormwater runoff captured by catch basins with curb openings. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

#### 01.02.00 Description

Stormwater Catch Basin Filtration Devices (SCBFD) are used to filter stormwater runoff captured by catch basins. The SCBFD is a filter system composed of a filter basket, media filtration boom and a trough system. SCBFDs are used to remove various pollutants from stormwater by means of screening, separation and media filtration.

#### 01.03.00 Manufacturer

The manufacturer of the SCBFD shall be one that is regularly engaged in the engineering, design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the SCBFD(s) shall be a filter device manufactured/distributed by Bio Clean Environmental Services, Inc. or assigned distributors or licensees. Bio Clean Environmental Services, Inc. can be reached at:

Corporate Headquarters:  
398 Via El Centro  
Oceanside, CA 92058  
Phone: (855) 566-3938  
Fax: (760) 433-3176  
[www.BioCleanEnvironmental.com](http://www.BioCleanEnvironmental.com)

#### 01.04.00 Submittals

- 01.04.01 Shop drawings are to be submitted with each order to the contractor and engineer of work.
- 01.04.02 Shop drawings are to detail the SCBFD, its components and the sequence for installation, including:
- SCBFD configuration with primary dimensions
  - Various SCBFD components
  - Any accessory equipment
- 01.04.03 Inspection and maintenance documentation submitted upon request.

#### 01.05.00 Work Included

- 01.05.01 Specification requirements for installation of SCBFD.
- 01.05.02 Manufacturer to supply SCBFD(s):
- Filter Basket
  - Trough System (weir and trough)
  - Media Filtration Boom

01.05.03 Media Filtration Boom shall be provided with each Filter Basket housed in nylon netting and securely fastened entrance to the Filtration basket. Each media boom shall contain polymer beads to permanently absorb hydrocarbons.

### 01.06.00 Reference Standards

ASTM A 240	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM F 716	Testing Sorbent Performance of Absorbents
ASTM F 726	Sorbent Performance of Absorbents
ASTM D3787 - 07	Standard Test Method for Bursting Strength of Textiles-Constant-Rate-of-Traversal (CRT) Ball Burst Test
ASTM D2690-98	Standard Test Method for Isophthalic Acid in Alkyd and Polyester Resins
ASTM C 582-02	Standard Specification for Contact-Molded Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion-Resistant Equipment
ASTM D 638	Standard Test Method for Tensile Properties of Plastics
ASTM D 790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 648	Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
ASTM D 2583	Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
ASTM D 4097	Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks
ASTM D3409	Standard Test Method for Adhesion of Asphalt-Roof Cement to Damp, Wet, or Underwater Surfaces
IFI 114	Break Mandrel Blind Rivets

## **PART 2 – COMPONENTS**

### 02.01.00 Trough System Components

- 02.01.01 Trough shall be manufactured from 100% marine grade polyester resin and fiberglass strands and stainless steel.
- The entire fiberglass structure must be coated with a polyester gel coating with ultra violet inhibitors incorporated into the coating for maximum ultra violet protection.
  - Fiberglass must have a minimum thickness of 3/16".
- 02.01.02 Weir portion of the Trough System shall be manufactured from 100% stainless steel.
- The Weir shall fully surround the Filter Basket on all sides. On the end of the weir the sides shall be made of screen with perforated round openings less than 5 mm in size.
  - Water flows in excess of the capacity of the Filter Basket shall pass through the additional weir screen for added treatment and retention of trash and debris during higher bypass flows.
  - The Weir shall be hinged in the middle along the centerline of the Filter Basket and hinge upward to allow for access into the catch basin.
- 02.01.03 Mounting Hardware shall be 100% non-corrosive metals.

- Nuts and bolts
  - Rivets
  - Support brackets
  - Concrete anchors
- 02.01.04 Concrete Filler and Sealant shall be made of Acrylic Emulsion and have a minimum service temperature range of -30°F to 150°F.

## 02.02.00 Filter Basket Components

- 02.02.01 Filter Basket Housing shall be manufactured of 100% stainless steel.
- 02.02.02 Side Screens shall be manufactured of 100% stainless steel louver expanded metal with openings equal to or less than 4.7 mm in size.
- Screens shall be oriented with openings opposite to the flow of water into the filter and be non-clogging based on perpetual deflective shielding.
- 02.02.03 Bottom Screens shall be manufactured of 100% stainless steel perforated round openings less than 5 mm in size.
- 02.02.03 Handle shall be manufactured entirely of 100% stainless steel and be mounted to the Filter Basket Housing using mounting hardware per section 02.01.03
- 02.02.04 Media Filtration Boom shall be made up of granulated oil absorbing polymers that have been tested in accordance with section 11.2 of ASTM F 716.07 and held within a netting.
- Oil absorbing polymers must be proven to absorb 180% of its weight within a 300 second contact time, and at this absorption percentage the physical increase in the size of the granules is not more than 50%.
  - Netting shall be 100% polyester with a number 16 sieve size, and strength tested per ASTM D 3787.

## **PART 3 – PERFORMANCE**

### 03.01.00 General

- 03.01.01 Function - The SCBFD has no moving internal components and functions based on gravity flow, unless otherwise specified. The SCBFD is composed of a Trough System, Media Filtration Boom and a Filter Basket. Runoff enters the SCBFD from a curb opening and flows into the Trough System which is mounted under the face of the curb opening. It then flows horizontally inside the System's Trough to the Weir which holds the Filter Basket. This Trough System positions the Filter Basket directly under the catch basin access point (manhole cover, grate or hatch). The Filter Basket can be removed through the access point without disassembly. The Filter Basket can also be cleaned without entering the access point by using a vacuum truck. Within the Filter Basket is a Media Filtration Boom. Water flows through the Weir and into the Filter Basket. Stormwater enters the inside of the Filter Basket and flows downward toward the bottom portion of the Basket. The non-clogging screen has openings that are facing upward. As water flows downward the screening continuously removes debris from the screen's surface. Flowing water also makes contact with the Media Filtration Boom which absorbs free floating oils. Stormwater flow up to the peak treatment flow rate is processed through the

filtration screens. During the heaviest flows the Filter Basket fills with water and spills over the top to bypass directly into the bottom of the catch basin, while previously captured debris and solids are contained by the weir screens which prevents re-suspension.

- 03.01.02 Pollutants - The SCBFD will remove and retain debris, sediments, metals, nutrients, oxygen demanding substances, bacteria and hydrocarbons entering the filter during frequent storm events and specified flow rates. For pollutant removal performance see section 03.02.00.
- 03.01.03 Treatment Flow Rate - The SCBFD operates using gravity flow. The SCBFD treatment flow rate varies by size and is provided on the drawings for each model. Flow rates must be supported by independent lab results.
- 03.01.04 Bypass Flow Rate – The SCBFD is designed to fit within the catch basin in a way not to affect the hydraulics. The area over the top of the Trough System is always greater than the curb opening area and/or the area of the outflow pipe. Therefore, the SCBFD does not create a critical point of restriction.
- 03.01.05 Pollutant Load – The SCBFD must be designed to have minimum storage capacity as documented on the drawing for each particular size and model.
- 03.01.06 Performance Protocol and Results – All lab testing on filtration media must be performed by an independent third party consultant and testing lab.

**03.02.00 Test Performance**

At a minimum, the SCBFD shall be tested, according to section 03.01.03 & 03.01.06, and meet these performance specifications:

03.02.01 Filter Pollutant Removal Table

POLLUTANT	REMOVAL EFFICIENCY
Trash and Debris - (down to 5 mm)	100%

- 03.02.02 Maintenance Performance – The Filter Basket must be able to be maintained and cleaned from finish surface using a vacuum hose inserted through the manhole or hatch opening and not the curb face. All cleaning shall be done without entering the catch basin. The Filter Basket shall be removable from finish surface and reinstalled from finish surface without entrance into the catch basin.

**PART 4 - EXECUTION**

**04.01.00 General**

The installation and use of the SCBFD shall conform to all applicable national, state, municipal and local specifications.

**04.02.00 Installation**

The contractor shall furnish all labor, equipment, materials and incidentals required to install the (SCBFD) device(s) and appurtenances in accordance with the drawings, installation manual, and these specifications, and be inspected and approved by the local governing agency. Installation contractor should possess a Confined Space Entry Certification Permit, pursuant to OSHA standards. Any damage to catch basin and surrounding infrastructure caused by the installation of the SCBFD is the responsibility of the installation contractor.

- 04.02.01 Trough System will be installed in accordance with manufactures' recommendations. The Trough component will be installed the complete width of the curb opening, or underneath any wings as to provide 100% coverage of incoming stormwater. The Weir component of the Trough System must be located directly under the manhole opening or other access point (not including the curb opening) regardless of its position relative of the curb opening. The Trough System must be properly mounted and assembled inside the catch basin with drive pins and pop rivets per manufacture's recommendations. Once the Trough System is secured to the walls of the catch basin all seams must be filled with sealant per section 02.01.03.
- 04.02.02 Filter Basket will be inserted through the manhole opening or access point of the catch basin directly without entry into the basin. The Filter Basket shall be fully visible from finish surface while looking into the access point for ease of inspection and maintenance. The curb opening itself is not a point of access as maintenance personnel cannot enter.

#### 04.03.00 Shipping, Storage and Handling

- 04.03.01 Shipping – SCBFD shall be shipped to the contractor's address and is the responsibility of the contractor to transport the unit(s) to the exact site of installation.
- 04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the SCBFD(s) and its 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 born by the contractor. The SCBFD(s) and its components shall always be stored indoors and transported inside the original shipping container(s) until the SCBFD(s) are ready to be installed. The SCBFD shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

#### 04.04.00 Maintenance and Inspection

- 04.04.01 Inspection – After installation, the contractor shall demonstrate that the SCBFD has been properly installed at the correct location(s), elevations, and with appropriate supports and fasteners. All components associated with the SCBFD and its installation shall be subject to inspection by the engineer of work, governing agency, and the manufacture at the place of installation. In addition, the contractor shall demonstrate that the SCBFD has been installed per the manufacturer's specifications and recommendations. SCBFD(s) shall be physically inspected regularly in accordance to owner's Stormwater Pollution Prevention Plans (SWPPP) and manufacture's recommendations. An inspection record shall be kept by the inspection operator. The record shall include the condition of the SCBFD and its appurtenances. The most current copy of the inspection record shall always be copied and placed in the owner's SWPPP.
- 04.04.02 Maintenance – SCBFD(s) must be completely maintained from outside the catch basin. The SCBFD(s) shall be inspected, maintained and cleaned 1 to 4 times a year and/or in accordance to owner's Stormwater Pollution Prevention Plans (SWPPP). The maintenance shall be preformed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the SCBFD. A Maintenance Record shall be kept by the

maintenance operator. The Maintenance Record shall include any maintenance activities performed, amount and description of debris collected, and the condition of the filter. The most current copy of the Maintenance Record shall always be copied and placed in the owner's SWPPP.

- 04.04.03 Material Disposal - All debris, trash, organics, and sediments captured and removed from the SCBFD shall be transported and disposed of at an approved facility for disposal in accordance with local and state regulations. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

## **PART 5 – QUALITY ASSURANCE**

### **05.01.00 Warranty**

The manufacturer shall guarantee the SCBFD against all manufacturing defects in materials and workmanship for a period of (8) years from the date of delivery to the contractor. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The SCBFD is limited to recommended application for which it was designed.

**[End of This Section]**