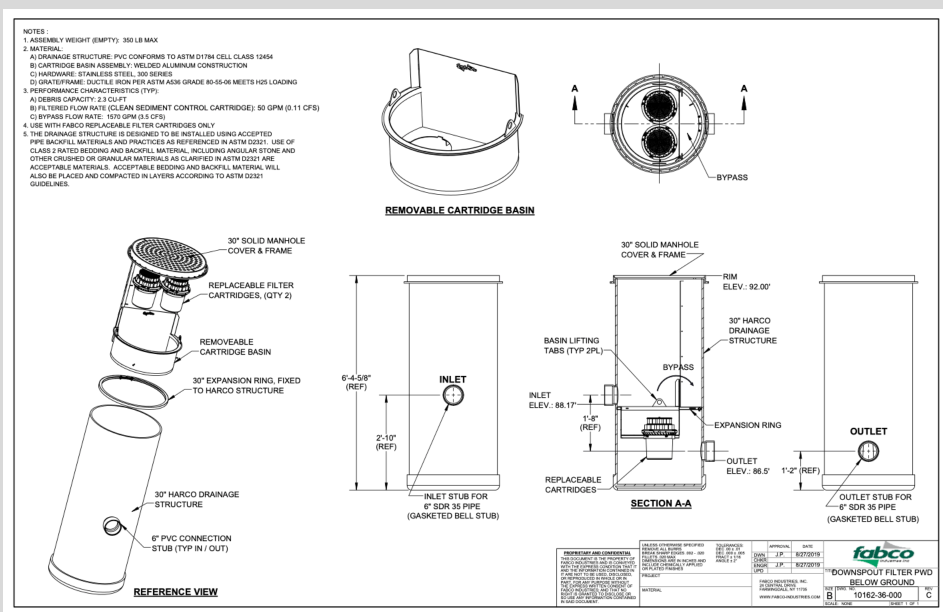
Evolved Stormwater Solutions

DOWNSPOUT FILTER PWD BELOW GRADE (BG)

Basic configuration concept shown here – drawings on plans are project specific.

DownSpout Filter PWD Below Ground (DSF BG)



Warren Cohn CPESC, CPSWQ Stormwater Product Specialist

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fabco Industries Inc

Evolved Stormwater Solutions

DOWNSPOUT FILTER

PWD

(Select Above / Below Ground)

FERGUSON WATERWORKS

PWD Proprietary Media Compliance Design Worksheet

DESIGNER COMPANY / NAME: ____

PROJECT NAME: ____

PROJECT LOCATION: ____ **DATE:** ______________________

Number of Cartridges:

The Fabco DownSpout Filter PWD is a flow-based device. Each PWD approved “Sediment Control Cartridge (SCC)” can treat a peak flow of 0.11 cfs. The water quality design flow or treatment goal for the inlet of interest determines how many cartridges are required to meet that water quality goal. The Computation below should be used for each inlet.

DownSpout Filter PWD I.D. ....= ____________________________ (i.e. CB-1, D-6 etc.)

- Water Quality Flowrate to Drain of Interest ……..……………….= ____________cfs.
- Number of SCC Cartridges Required............Flow Rate / 0.11 = ____________Cartridges

Round up to nearest whole number

Note: The maximum # cartridges that can be accommodated in a DownSpout Filter is 4, If > 4 cartridges are required, please contact John Hilbert per his contact information at the bottom of this page. Minimum drop of 24" from the Invert In to the Invert Out is required.

Post-Treatment Volume Management:

If infiltration or detention is needed after runoff has gone through the Fabco DownSpout Filter PWD Above Ground unit, the Ferguson R-Tank system can be utilized. The R-Tank is a modular subsurface storage system with 95% voids and is H-20 load rated. For assistance with sizing and unit selection contact Ferguson John Hilbert

If you have any questions regarding the Fabco DownSpout Filter PWD or R-Tank System: Contact John Hilbert / Urban Green Infrastructure BMP Specialist / Ferguson

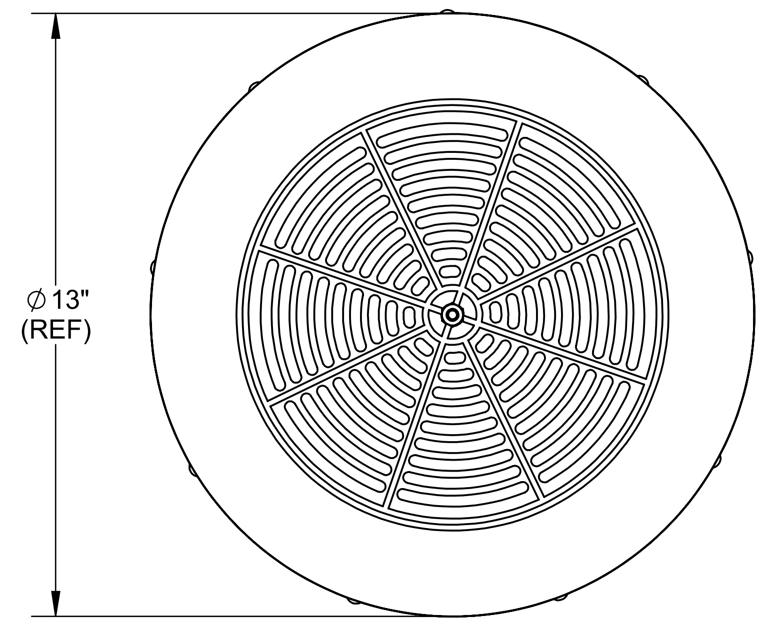
C: 610-656-5640 / E: John.Hilbert@ferguson.com

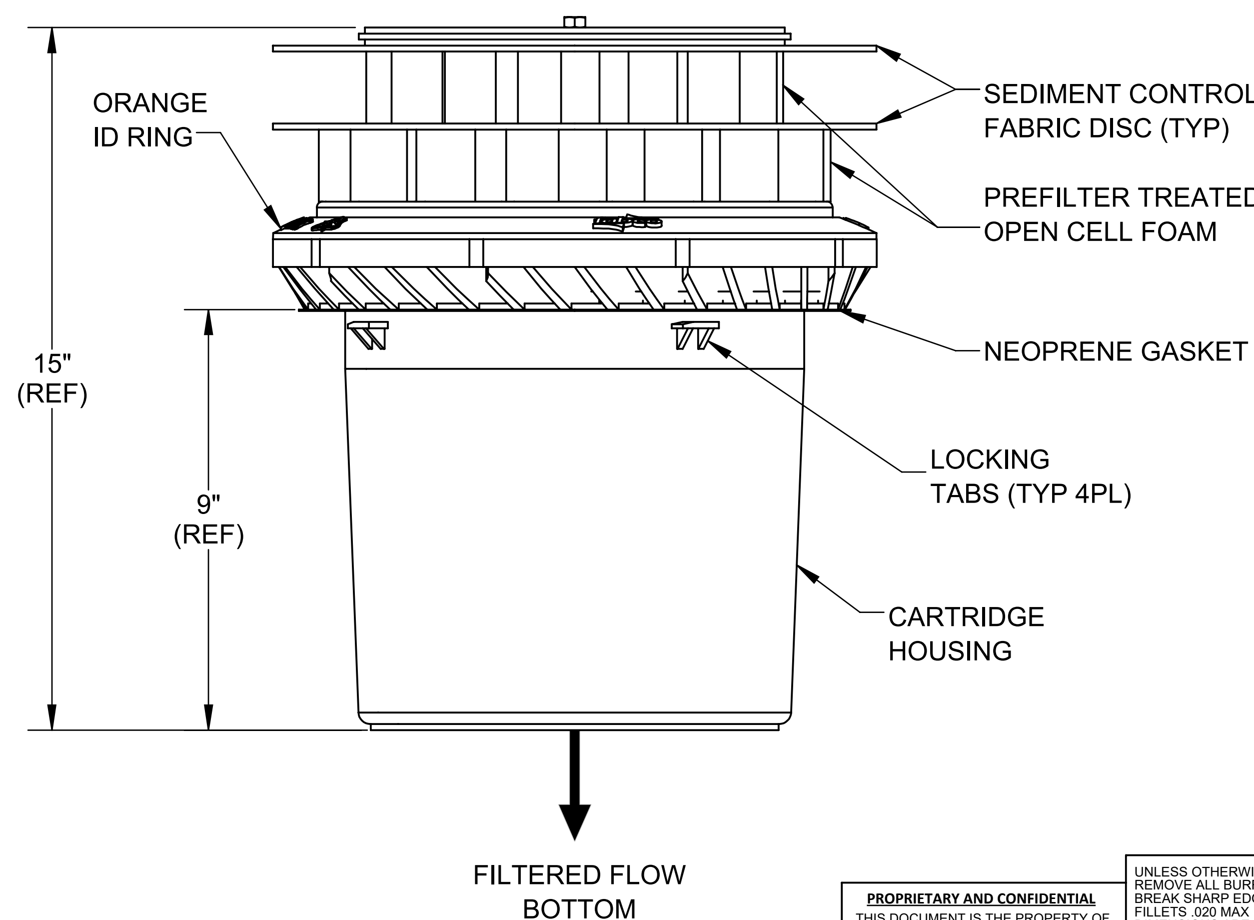
NOTES:

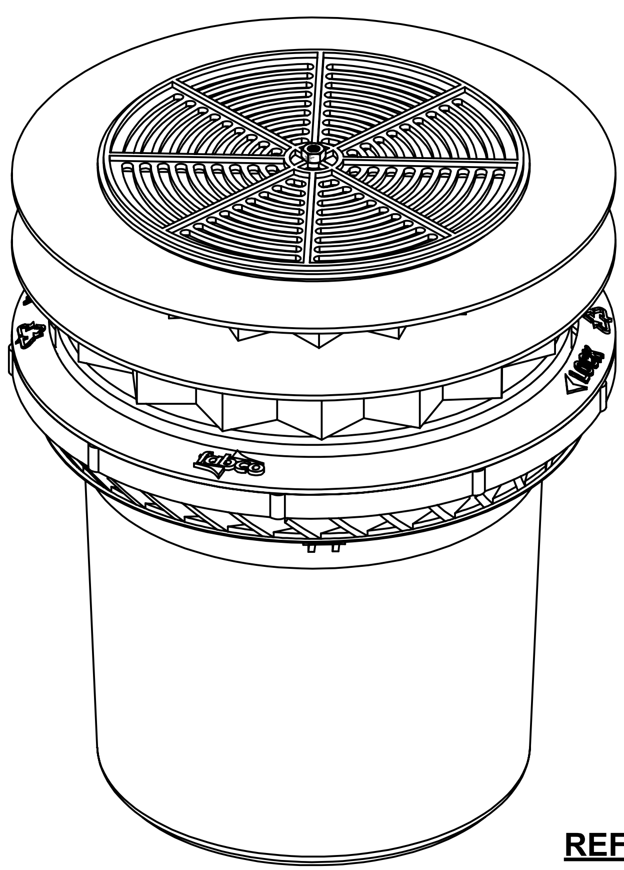
1. WEIGHT, DRY: 10 LB (MAX)
2. MATERIAL:
   A) HOUSING: POLYETHYLENE POLYPROPYLENE COPOLYMER
   B) EFFLUENT TREATMENT MEDIA: PROPRIETARY NON-TOXIC TREATMENT PRODUCTS.
   C) SUPPORT HARDWARE: CRES 300 SERIES OR EQUAL
3. FLOW RATE (TYP): 50 GPM (0.11 CFS)
4. STORMWATER TREATMENT: MEETS 80% TSS REDUCTION REQUIREMENTS FOR PHILADELPHIA WATER DEPARTMENT (PWD)
5. RING IDENTIFICATION COLOR: ORANGE
6. INSTALLATION: INSERT INTO CARTRIDGE OPENING AND ROTATE CLOCKWISE 30-DEGREES TO LOCK CARTRIDGE IN PLACE
7. FITS ALL FABCO STORMBASIN AND STORMPOD PRODUCTS
8. DISPOSE OF CARTRIDGE IN ACCORDANCE WITH LOCAL REGULATIONS
9. ADDITIONAL CARTRIDGE DESIGNS ARE AVAILABLE TO TARGET SPECIFIC POLLUTANTS SEE TABLE 1 FOR DETAILS

TABLE 1

ORDER NUMBER	DESCRIPTION	COLOR CODE	FLOW RATE
9718-1	STANDARD	RED	115 GPM (0.26 CFS)
9718-2	BACTERIA	YELLOW	115 GPM (0.26 CFS)
9718-3	HYDROCARBONS	BLUE	115 GPM (0.26 CFS)
9718-4	HEAVY METALS	GREY	60 GPM (0.13 CFS)
9718-5	STANDARD (SHORT)	MINT	115 GPM (0.26 CFS)
9718-6	NUTRIENTS	GREEN	100 GPM (0.22 CFS)
9718-7	HIGH FLOW	RED (MARKED)	260 GPM (0.58 CFS)
9718-25	SEDIMENT CONTROL (NJCAT-78)	BROWN	50 GPM (0.11 CFS)
9718-26	SEDIMENT CONTROL (PWD-80)	ORANGE	50 GPM (0.11 CFS)







REFERENCE VIEW

PROPRIETARY AND CONFIDENTIAL

UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS
BREAK SHARP EDGES .002 - .020
FILLETS .020 MAX
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES:
DEC .00 ± .01
DEC .000 ± .005
FRACT ± 1/16
ANGLE ± 2°

PROJECT

MATERIAL

	APPROVAL	DATE
DWN	H.A.	5/13/2021
CHKR	R.W.	5/13/2021
ENGR	J.P.	5/13/2021
UPD		

FABCO INDUSTRIES, INC.
24 CENTRAL DRIVE
FARMINGDALE, NY 11735
WWW.FABCO-INDUSTRIES.COM

TITLE: SEDIMENT CONTROL CARTRIDGE (PWD-80)

SIZE: B | DWG. NO. 9718-26-000 | REV: A

SCALE: NONE | SHEET 1 OF 1

TRI ENVIRONMENTAL

MAPP-LSH 2021-02

Inlet Filter Performance Testing of Fabco Industries' "High Efficiency" Sediment Control Cartridge

TRI-MAPP Report

Issued April 2021

Final Report

Submitted to:
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Technical Director – TRI South Carolina
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Date Submitted:
April 30, 2021

Inlet Filter Performance Testing of Fabco Industries' "High Efficiency" Sediment Control Cartridge

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Issued April 2021

April 30, 2021

Fabco Industries
24 Central Drive
Farmingdale, NY 11735

Attn: Hilme Athar
hathar@fabco-industries.com

REPORT: Inlet Filter Performance Testing of "High Efficiency" Sediment Control Cartridge

This testing program included three parts:

The hydraulic performance testing (Part 1) developed the relationship between flow rate and water depth for the sediment control cartridge (SCC) for a range of clean water flows.

The sediment removal efficiency testing (Part 2), performed at a prescribed maximum treatment flow rate (MTFR) of 50 gallons per minute and a prescribed sediment concentration of 200 mg/L, used bottle "grab" samples to demonstrate a significant sediment removal efficiency can be expected for a limited flow event at the MTFR. In this scenario, the sediment removal efficiency exceeded 91%.

The mass loading rate testing (Part 3) involved extended testing at the 50 gpm sediment-laden flow rate in order to characterize the longer-term performance of the SCC. The overall removal efficiency for the extended test was more than 80%.

C. Joel Sprague, P.E.
Technical Director
TRI-South Carolina

James E. (Jay) Sprague, CPESC
Laboratory Director
TRI-South Carolina

"High Efficiency" Sediment Control Cartridge (SCC) Inlet Filter Performance Testing

Overview

This report presents the results of hydraulic performance and sediment removal efficiency testing executed on Sediment Control Cartridges manufactured by Fabco Industries. The testing was performed at TRI Environmental's Roads to Rivers Research Institute (3RI) laboratory in Greenville, South Carolina. The testing protocol used was outlined by Fabco Industries and is derived from the New Jersey Department of Environmental Protection's "Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device". The testing used commonly manufactured components, manufacturer's published installation details, and the maximum treatment flow rate (MTFR) as directed by the client (Fabco). Hydraulic performance was based on flow rate monitoring and water depth measurements within the test chamber. Sediment removal efficiency was based on both direct measurements (collecting, drying, and weighing input, captured, and passing sediments) and indirect measurements (suspended sediment concentration determination of influent and effluent bottle samples).

The SCC System

Fabco Industries manufactures and sells a cartridge based inlet filtration system designed to capture and retain pollutants such as sediment, trash, vegetation, nutrients, coliform bacteria, oil/grease and dissolved metals entering common storm drain inlets such as those you see in parking lots or alongside roadways. However, in this program, only sediment removal was evaluated. The cartridges, also called inlet filtration media inserts, provide two stages of filtration:

Stage 1: The top layers of the cartridge, consisting of a coarse open cell foam, work with the open volume of the surrounding collection basin to keep particulate in the basin and out of the cartridge. This is designed to maintain cartridge flow rates, extend the life of the cartridge, and facilitate easy cleanout of sediments and debris during maintenance activities.

Stage 2: Once the pretreated water enters the cartridge body it contacts one or more proprietary filter media products. Treated water exits the bottom of the cartridge and is released into the storm water system.

Filter cartridges are available in various configurations that target specific pollutants. The modular cartridge design allows quick and easy replacement while containing the spent material for safe transportation and disposal. The filter cartridge comes fully assembled and snaps into place.

Testing Objectives and General Outline of Testing Protocol

The principal objective of this testing was to quantify and report the sediment removal efficiency of the SCC filter. A secondary objective was to quantify and report the hydraulic capacity (head vs. flow) and mass loading capacity (cumulative sediment retention and maximum head) of the SCC.

Testing was conducted in accordance with the Fabco prescribed procedure. The "StormBasin welded aluminum housing" and the Sediment Control Cartridges (SCC) used in this test program were provided by Fabco. The SCC target removal rate was a minimum removal of 80% of Total Suspended Solids (TSS). TSS was measured in accordance with ASTM D3977 *Standard Test Method for Determining Sediment Concentration in Water Samples*. The test sediment utilized for this procedure (provided by Fabco) consisted of uniformly distributed inorganic materials compliant with NJDEP composition and Particle Size Distribution (PSD) criteria. The maximum allowable head was prescribed as 30 inches.

Test Setup

The test setup includes a test basin – the "StormBasin welded aluminium housing" – above and discharging to a combined weir box / sump box, a recirculating pumping/piping system, and a sediment injection system. Figure 1 shows the test setup used in the testing reported herein. Additional setup pictures are included in Appendix A.

The StormBasin welded aluminium housing test basin was provided by Fabco and measured 30" x 30" x 36" tall. The floor of the basin had a circular cut-out to accommodate the SCC and to enable a highly watertight installation. The test basin discharged (through the SCC) into a calibrated weir box with a water depth data logger for continuous monitoring and recording of flow rate. The weir box measured 4 ft wide x 8 ft long and incorporated a 30° V-notch weir. The weir box discharged to a sump that ensured a stable head on the recirculating flow system while also facilitating sediment deposition prior to recirculation. The sump was outfitted with a fabric baffle to assure that sediments contained in the effluent draining from the weir box settle before sump waters are recirculated. The sump box measured 4 ft wide x 8 ft long.

The 2400 gallon potable water reservoir system was comprised of eight 300 gallon "totes" connected to the pump/pipe recirculation system through a 2 inch PVC header system. The pump/pipe recirculation system was comprised of 4 inch PVC pump inlet piping and 2 inch PVC pump outlet piping and a variable speed 3 hp pump. Prior to discharging into the test basin, the 2 inch piping transitioned into 4 inch piping to facilitate slower flows that allowed for more sediment mixing time and easier bottle sampling. The recirculation system was able to maintain constant flows through the test basin and sump system at a wide range of flow rates.

V-notch weir readings were verified using an in-line flow meter: An EMF5000 – DN50 electromagnetic flow meter. Verification readings were within +,- 10% as shown in Table 1.

The sediment injection was accomplished using vibrating screw auger system. The auger system was able to maintain a constant feed rate into the influent flows enabling an accurate infiltrate concentration at the prescribed maximum treatment flow rate (MTFR).

Figure 1. Test Apparatus Setup

Testing Parameters

The first step in the testing was to characterize the sediment control cartridge (SCC) hydraulics by establishing the flow vs. head (within the test basin) for clear water flows. Equilibrium flow rates were established for depths up to 30 inches. Figure 2 shows pictures of monitoring the depth of water within the test basin as the flow rate is increased.

Subsequently, the sediment retention testing was done at the prescribed maximum treatment flow rate (MTFR). The MTFR for the SCC tested was given as 50 gallons per minute. The prescribed sediment concentration of 200 mg/L was obtained by augering sediments into the upstream flow set at the MTFR. The sediments used for this testing were provided by the client and the gradation provided by the client is included in Appendix B (MIX3). The testing protocol prescribed bottle "grab" sampling of both the influent and effluent at 30, 60, 90, 120, and 150 seconds after sediment initiation. Suspended Sediment Concentration (SSC) testing to quantify TSS was done on all bottle samples and used for filtration performance characterization. The total suspended solids removal efficiency was determined from the ratio of the influent and effluent bottle sample results. Figure 3 shows the augering system and typical discharge from the SCC.

Finally, the 50 gpm sediment-laden flow was continued until the head reached 30 inches, the maximum design driving head. At this point the testing was stopped and the total sediment retained was determined through a mass balance approach of collecting, drying, and weighing all sediment input into the system, retained by the SCC, and passing the SCC. This total sediment retained prior to an increase of head above maximum design driving head is the Sediment Mass Loading Capacity (SMLC) as determined from the mass balance determinations. Figure 4 shows the monitoring of water depth over time and the collection of sediments from the weir box for drying and weighing.

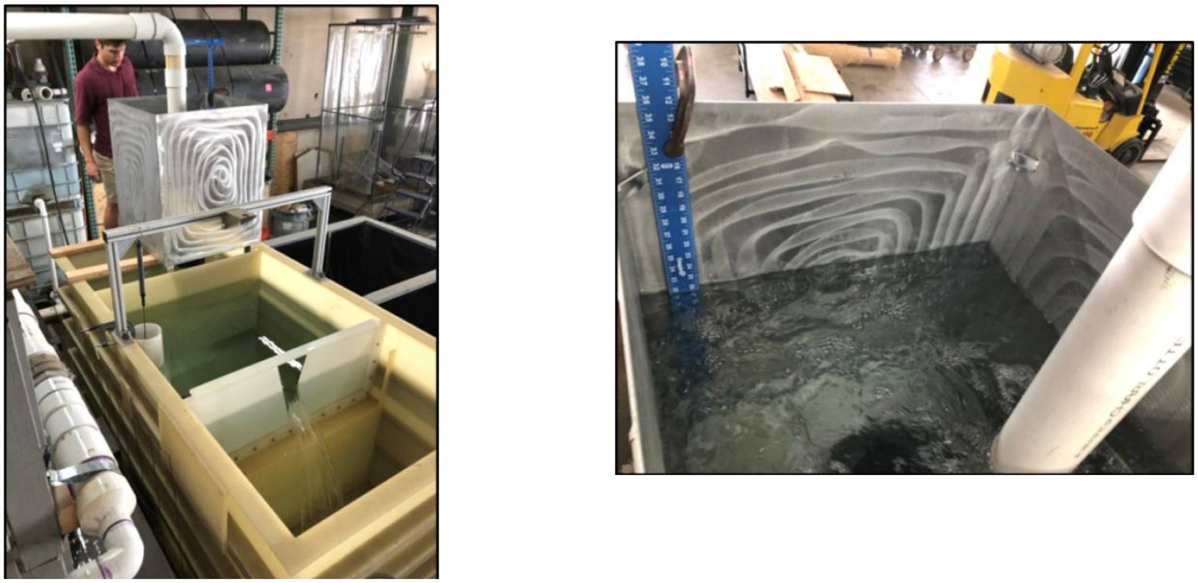


Figure 2. SCC Hydraulics – Measuring Head (Depth) at Different Flow Rates

Figure 3. SCC Removal Efficiency – Sediment Augered into Flow; Influent & Effluent Sampled

Figure 4. SCC Mass Loading Capacity – Monitoring Head and Collecting Passing Sediments

Testing Procedures

Testing was done in accordance with the procedure outlined by the client. The pre-test, component preparation, test setup, procedural, and breakdown steps are detailed in Tables 1a, 1b, 1c, and 1d. These tables specifically apply to sediment removal and mass loading tests. Hydraulic testing just involved clear water, so sediment-related steps are not applicable.

Table 1a. Pre-Test Determinations (example values shown)

Pre-1	Select the target influent suspended sediment concentration (SSC).	200	mg/L
Pre-2	Select the desired test flow rate (MTFR).	50	gpm
Pre-3	Calculate the sediment feed rate needed to achieve the target SSC.	38	g/min
Pre-4	Determine sampling interval. (5 influent and 5 effluent in first 3 minutes)	30	seconds

Table 1b. Component Preparation Steps (example values shown)

1	Weigh test sediment to be added to auger. Place in a clean bucket.	18 - 20	lbs
2	Weigh clean, dry 50µm sock	0.4	lbs
3	Weigh clean, dry Sediment Control Cartridge	5	lbs
4	Pre-position sample bottles for influent and effluent sampling (5 each)	10	bottles

Table 1c. Test Setup Steps

5	Install the Sediment Control Cartridge (SCC) Inlet Filter Testing unit into the test basin.
6	Attach 50µm sock to sump outlet.
7	Pour the preweighed test sediment into the vibrating auger feeder.
8	Pump or gravity feed clear water into the weir box and sump box until the water level is at the 0-point on the V-notch weir and 24 inches deep in the sump box.
9	Set zero depth on the weir box water level data logger and initiate data collection.

Table 1d. Test Procedure and Breakdown Steps

10	Close all valves to the water supply system and open other necessary valves so that only recirculation flows are used.
11	Set RPMs on the variable speed pump to the pre-calibrated speed for the desired test flow rate.
12	Turn on the pump and allow the flow to proceed into and through the test basin and SCC until a steady flow (constant depth on data logger) is maintained through the weir.
13	While the flow is stabilizing, calibrate the sediment auger to confirm the sediment feed rate (while catching and returning all sediments back to the auger). Adjust auger speed as needed.
14	Once stable flow and sediment feed rates are confirmed, begin introducing sediment into the influent pipe and start the test timer.
15	At 30, 60, 90, 120, and 150 seconds take a 1L bottle sample of both the influent and effluent.
16	After bottle sampling, monitor the depth of water over the SCC and record the time it reaches 30 inches.
17	Turn off the sediment auger and pump and allow the system to come to a complete stop.
18	Gradually disassemble setup and drain the weir box and sump box (through a 50µm sock)
19	Collect all sediments from all parts of the system and oven dry along with the SCC.
20	Vacuum / Weigh sediment remaining in auger feeder.

Testing Results

The first step in the testing was to characterize the cartridge hydraulics by establishing the flow vs. head (within the test basin) for clear water flows. Equilibrium flow rates were established for depths up to 30 inches. The test results are shown in Table 1 and presented graphically in Figure 5.

Table 1. SCC Hydraulic Testing Data

Pump	Electromagnetic Flow Meter	Weir Box		Average Q	Head on Cartridge
RPM	gpm	H (ft)	Q (gpm)	gpm	in.
1000	13.71	0.29	13.60	13.66	4.00
1250	35.96	0.42	35.35	35.66	14.70
1400	45.29	0.47	45.27	45.28	20.80
1500	51.27	0.49	50.22	50.74	25.00
1700	62.80	0.53	62.10	62.45	33.20

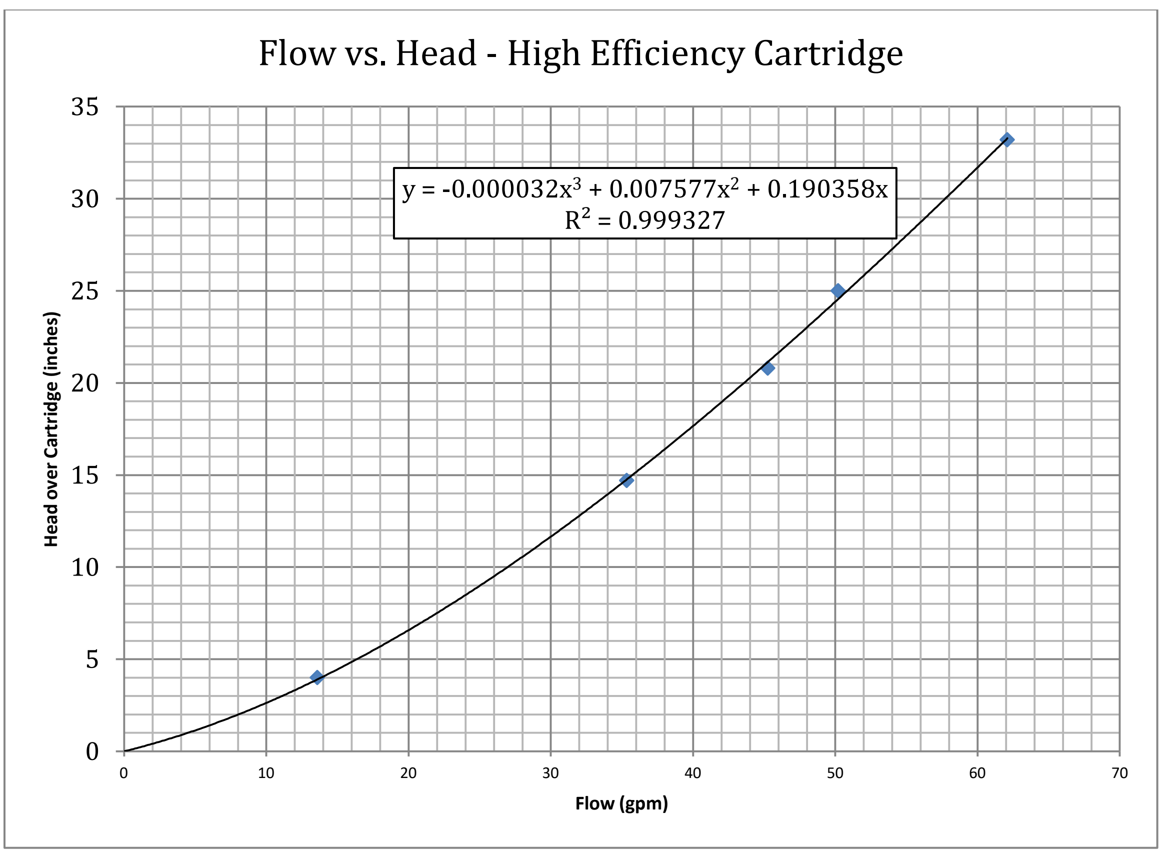


Figure 5. SCC Hydraulics

Subsequently, the sediment retention testing was done at the prescribed maximum treatment flow rate (MTFR). The MTFR for the SCC tested was prescribed by the client as 50 gallons per minute. The prescribed sediment concentration of 200 mg/L was obtained by augering sediments into the upstream flow set at the MTFR. The sediments used for this testing were provided by the client and the gradation report provided by the client is included in the appendix. The testing protocol prescribed bottle "grab" sampling of both the influent and effluent at 30, 60, 90, 120, and 150 seconds after sediment initiation. Suspended Sediment Concentration (SSC) testing to quantify TSS was done on all bottle samples and used for filtration performance characterization. The total suspended solids removal efficiency was determined from the ratio of the influent and effluent bottle sample results as shown in Table 2.

Table 2. SCC Sediment Removal Efficiency

Sample Time hrs:min:sec (Start time = 13:33:00)	Influent Concentration @ MTFR = 50 gpm			Effluent Concentration	Removal Efficiency (%)
	30 sec. dry feed (g)	Dry Feed Calc. (mg/L)	Bottle Sample (mg/L)	Bottle Sample (mg/L)	
13:33:30	19.24	204.5	206.2	5.6	
13:34:00	19.30	205.2	197.1	13.6	
13:34:30	19.35	205.7	200.9	18.8	
13:35:00	19.55	207.8	215.7	26.6	
13:35:30	19.69	209.3	198.0	24.3	
	Average	206.5	203.6	17.8	**91.3%**

Finally, the 50 gpm sediment-laden flow was continued until the head reached 30 inches, the maximum design driving head. At this point the testing was stopped and the total sediment retained was determined through a mass balance approach of collecting, drying, and weighing all sediment input into the system, retained by the SCC, and passing the SCC. This total sediment retained prior to an increase of head above maximum design driving head is the Sediment Mass Loading Capacity (SMLC) as determined from the mass balance determinations as shown in Table 3.

Table 3. SCC Sediment Mass Loading Capacity

Test Time to Achieve Max. Driving Head (minutes)	Sediment in Influent @ MTFR = 50 gpm			Sediment Retained	Removal Efficiency (%)
	Avg Influent Concentration (mg/L)	Total In-flow (gal)	Total In (lbs)	Total Retained (lbs)	
5.4	200.9	270	0.451	0.367	**81.3%**

The detailed data collection sheets are included in the appendix.

Discussion

Hydraulic Performance: Figures 5 shows the relationship between flow rate and water depth in the test basin, for clean water flow. With clear water, the head to maintain the MTFR (50 gpm) through the SCC is just under 25 inches. More related to actual filtration performance is the head required to maintain the MTFR when the flow is sediment laden. As is demonstrated in the filtration efficiency and mass loading testing, the head continues to increase for a stable sediment-laden flow due to SCC blinding/clogging as sediment is filtered out of the influent.

Sediment Removal Efficiency: As shown in Table 2, bottle samples demonstrated significant sediment removal efficiency for a limited flow event at the MTFR. In this scenario, the sediment removal efficiency exceeded 91%.

Mass Loading Rate: To determine the longer-term effectiveness of the SCC, the MTFR was continued until clogging and blinding of the device caused the head within the test basin to rise beyond an acceptable level, determined by the client to be 30 inches. As shown in Table 3, the test was run for a total of 5.4 minutes at the MTFR and 200 mg/L while the depth of water over the SCC was measured. At 30 inches of depth the test was stopped. During the extended testing, very slight increasing turbidity was apparent in the waters in and passing through the weir box and sump box, suggesting that as the head increased, sediment particles were being forced through the device at only very slightly increasing rates. The overall removal efficiency for the extended test was more than 80%.

Appendix A: Additional Test Setup Pictures

Inlet Basin Resting on Weir Box

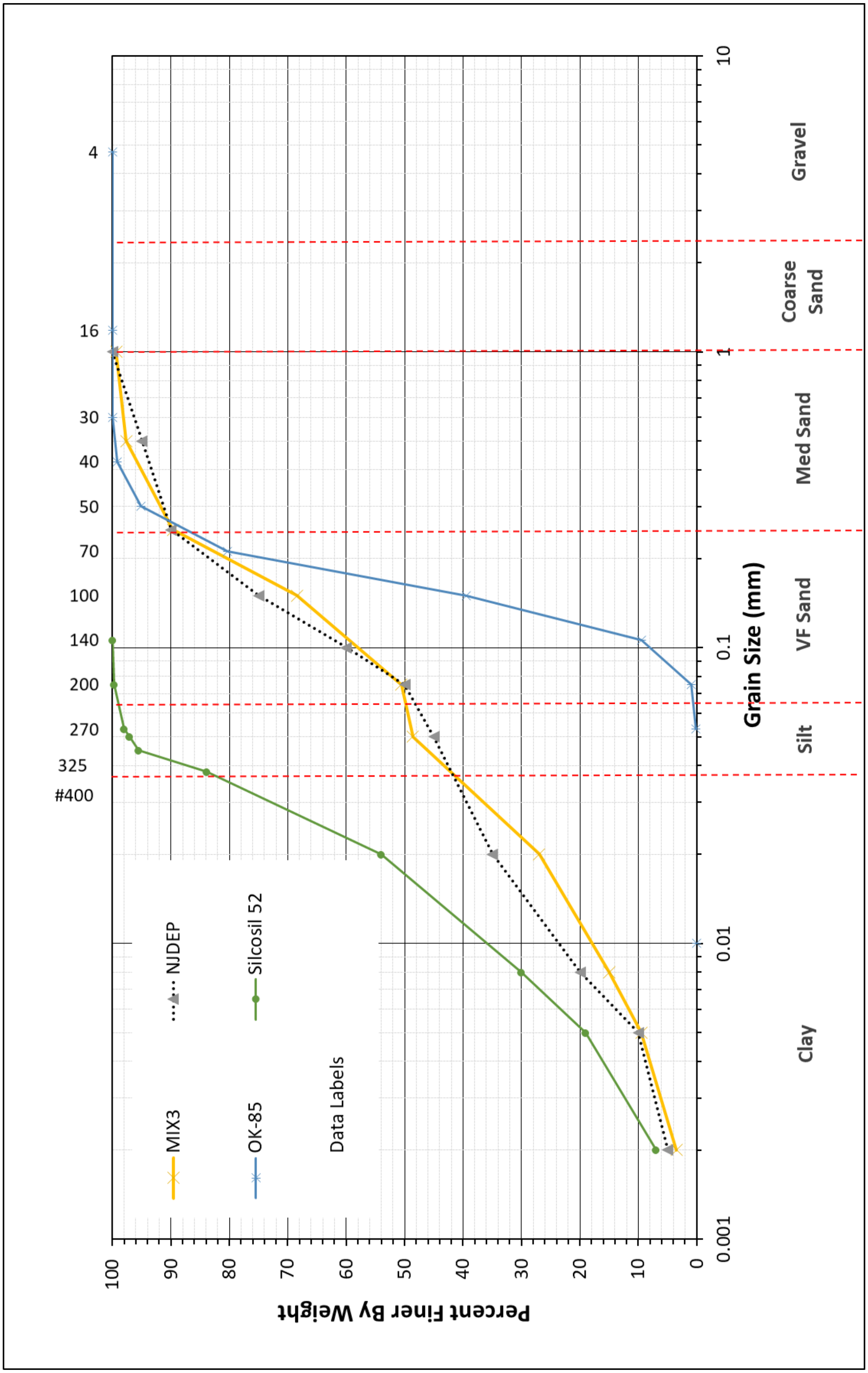
View of Testing – Sump Box in Foreground

In-line Electromagnetic Flow Meter

High Efficiency Cartridge

Drying of Sediment-laden Cartridge and Collected Retained Sediments (typical)

Appendix B: Test Sediment


Percent Finer By Weight
Grain Size (mm)
0.001
0.01
0.1
1
10
100
90
80
70
60
50
40
30
20
10
0
4
16
30
40
50
70
100
140
200
270
325
#400
Gravel
Coarse Sand
Med Sand
VF Sand
Silt
Clay
MIX3
NJDEP
OK-85
Silcosil 52
Data Labels

Appendix C: Test Data Sheets

TRI ENVIRONMENTAL

Test Summary

Test Date:	4/23/2021			
Test ID:	SCC-High Efficiency			
Influent Volume per Sample:	25.00	gallons		
Sample Interval (first 3 minutes):	0.50	minutes		
Sample Interval (first 3 minutes):	0:00:30	hours:minutes:seconds		(convert decimal to minutes:seconds)
Total Test Length:	5.4	minutes		
Total Test Time:	0:05:25	minutes:seconds		(convert decimal to minutes:seconds)
Target Influent Concentration:	200	mg/L		
Target Sediment Injected:	0.452	lbs		
Target Sediment Injection Rate:	0.0834	lb/min	37.85 g/min	(12 setting on auger)
Target Flow Rate:	50	gpm	189 lpm	

Test Data Collection

DIRECT - USING SEDIMENT MEASUREMENTS:

Dry SCC Weight - Initial:	5.063	lbs
Dry SCC + Upstream Sed Weight - Final:	5.429	lbs
Dry 50μm Filter Sock Weight - Initial:	0.358	lbs
Dry Filter Sock & Other Deposition Weights - Final:	0.416	lbs
Dry Weight in Feeder - Initial:	18.000	lbs
Dry Weight in Feeder - Final:	17.549	lbs

SOLIDS MASS BALANCE	
Retained Solids - Within Units (lbs):	0.367
Passed/Collected Solids (lbs):	0.058
Actual Solids Injected (lbs):	0.451
Unaccounted Solids (lbs):	0.027

INDIRECT - USING CONCENTRATION MEASUREMENTS:

Pump Speed:	1480	rpm	
Average Head on Weir: 0.485 ft — Avg Flow Rate:	50	gpm	0.111 cfs

(Fill system from reservoirs at target flow rate until sump reaches the desired fill line. Close/open valves to create closed loop.)

Final Stage Relative to Outlet (in)	30	inches	(Measure in well near end of test.)
Equilibrium Start Time:	13:33:00	min.:sec.	(Begin test;Take sump temp.)
Equilibrium End Time:	13:38:25	min.:sec.	(Take first influent/effluent samples, then start feeder.)
Sump Water Temp / Time:	18.1	°C	/ 13:33:00
Initial Sample Time:	13:33:30	hours:minutes:sec	
Initial Sample - Sump Water Temp / Time:	18.1	°C	/ 13:33:30
Final Sample - Sump Water Temp / Time:	18.1	°C	/ 13:38:25

Sample Data Collection (ASTM D3977)											Concentration (mg/L)	
Sample Time hrs:min:sec	30 sec. dry feed (g)	Sample	Time to Fill 1L, sec	Bottle Tare (g)	Bottle Gross (g)	Bottle Net (g)	Water (mL)	Filtrate Tare (g)	Filtrate Dry (g)	Solids (mg)	Dry Feed Calc.	Bottle Sample Calc
13:33:00												
13:33:30	19.24	Influent 1	1 sec	50.55	1040.46	989.91	989.91	0.4288	0.6329	204.1	204.5	206.2
13:34:00	19.30	Influent 2	1 sec	49.67	1046.15	996.48	996.48	0.4266	0.6230	196.4	205.2	197.1
13:34:30	19.35	Influent 3	1 sec	50.47	1046.46	995.99	995.99	0.4284	0.6285	200.1	205.7	200.9
13:35:00	19.55	Influent 4	1 sec	50.46	978.71	928.25	928.25	0.4291	0.6293	200.2	207.8	215.7
13:35:30	19.69	Influent 5	1 sec	49.57	1022.09	972.52	972.52	0.4288	0.6214	192.6	209.3	198.0
									Average Concentration:		**206.5**	**203.6**
13:33:00												
13:33:30		Effluent 1	< 5 sec	49.35	1047.31	997.96	997.96	0.4256	0.4312	5.6	n/a	5.6
13:34:00		Effluent 2	< 5 sec	49.58	1032.59	983.01	983.01	0.4247	0.4381	13.4	n/a	13.6
13:34:30		Effluent 3	< 5 sec	50.30	1061.30	1011.00	1011.00	0.4273	0.4463	19.0	n/a	18.8
13:35:00		Effluent 4	< 5 sec	49.41	1042.13	992.72	992.72	0.4275	0.4539	26.4	n/a	26.6
13:35:30		Effluent 5	< 5 sec	50.72	1056.50	1005.78	1005.78	0.4287	0.4531	24.4	n/a	24.3
									Average Concentration:		**n/a**	**17.8**

Initial 2.5 Minute Performance

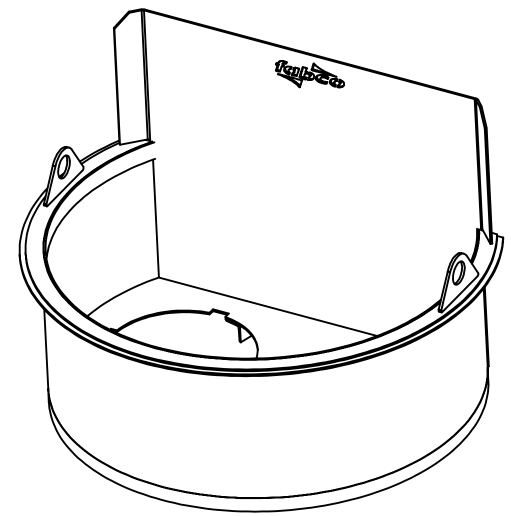
Based on Bottle Samples	Average Concentration in Influent (mg/L):	203.6	Average Concentration in Effluent (mg/L):	17.8		**Removal Efficiency (%)**	**91.3%**

Full Test Performance (test time = 5.4 minutes)

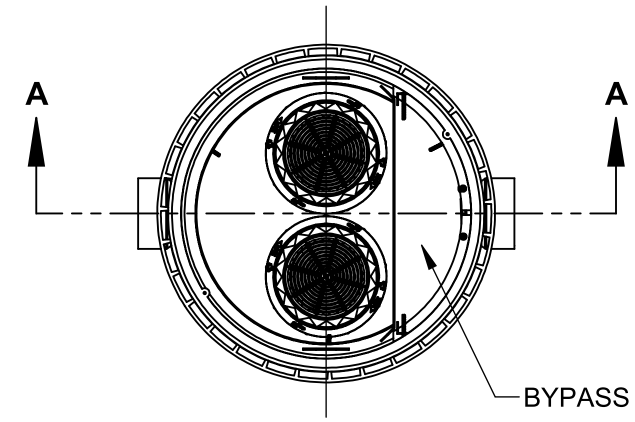
Based on Mass Balance	Average Concentration in Influent (mg/L):	200.9	Average Concentration in Effluent (mg/L):	37.6		**Removal Efficiency (%)**	**81.3%**

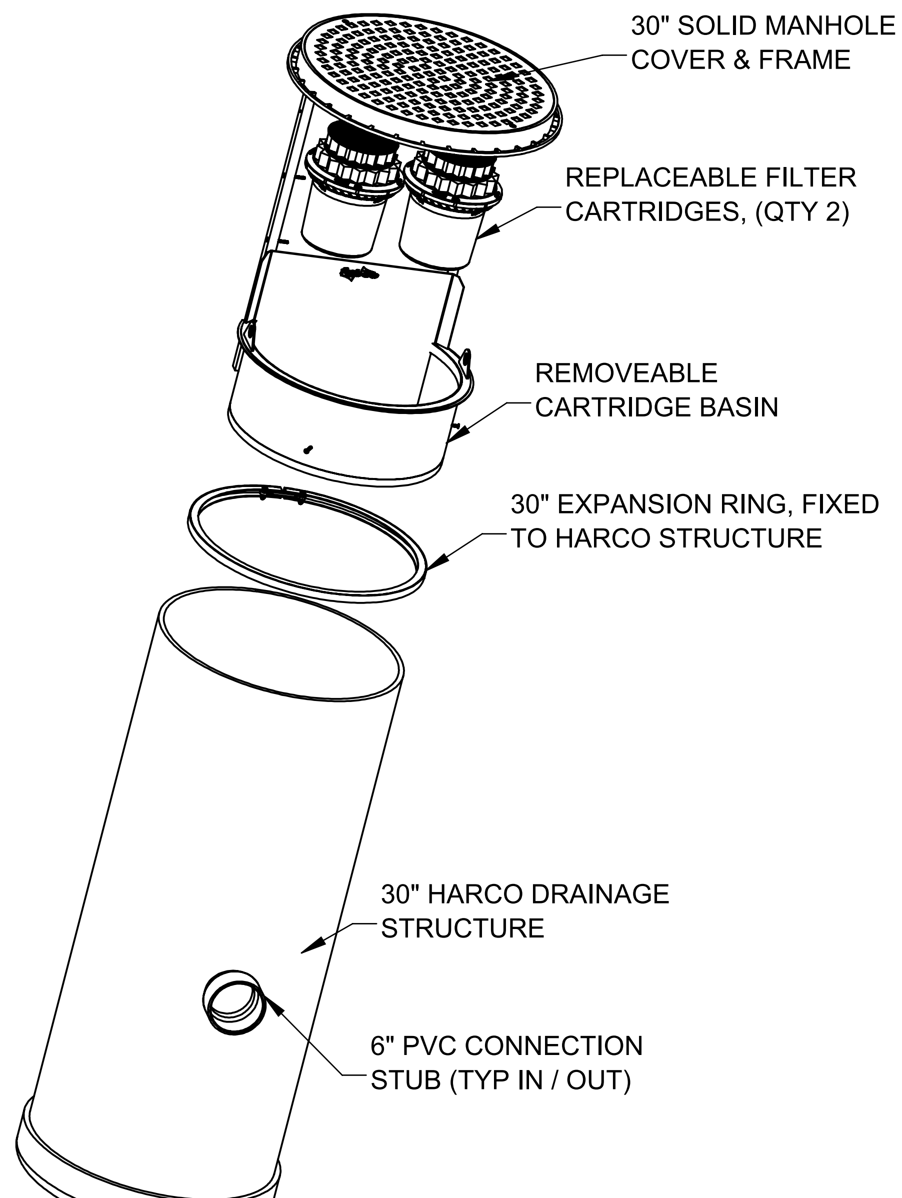
NOTES :

1. ASSEMBLY WEIGHT (EMPTY): 350 LB MAX
2. MATERIAL:
   A) DRAINAGE STRUCTURE: PVC CONFORMS TO ASTM D1784 CELL CLASS 12454
   B) CARTRIDGE BASIN ASSEMBLY: WELDED ALUMINUM CONSTRUCTION
   C) HARDWARE: STAINLESS STEEL, 300 SERIES
   D) GRATE/FRAME: DUCTILE IRON PER ASTM A536 GRADE 80-55-06 MEETS H25 LOADING
3. PERFORMANCE CHARACTERISTICS (TYP):
   A) DEBRIS CAPACITY: 2.3 CU-FT
   B) FILTERED FLOW RATE (CLEAN SEDIMENT CONTROL CARTRIDGE): 50 GPM (0.11 CFS)
   C) BYPASS FLOW RATE: 1570 GPM (3.5 CFS)
4. USE WITH FABCO REPLACEABLE FILTER CARTRIDGES ONLY
5. THE DRAINAGE STRUCTURE IS DESIGNED TO BE INSTALLED USING ACCEPTED PIPE BACKFILL MATERIALS AND PRACTICES AS REFERENCED IN ASTM D2321. USE OF CLASS 2 RATED BEDDING AND BACKFILL MATERIAL, INCLUDING ANGULAR STONE AND OTHER CRUSHED OR GRANULAR MATERIALS AS CLARIFIED IN ASTM D2321 ARE ACCEPTABLE MATERIALS. ACCEPTABLE BEDDING AND BACKFILL MATERIAL WILL ALSO BE PLACED AND COMPACTED IN LAYERS ACCORDING TO ASTM D2321 GUIDELINES.

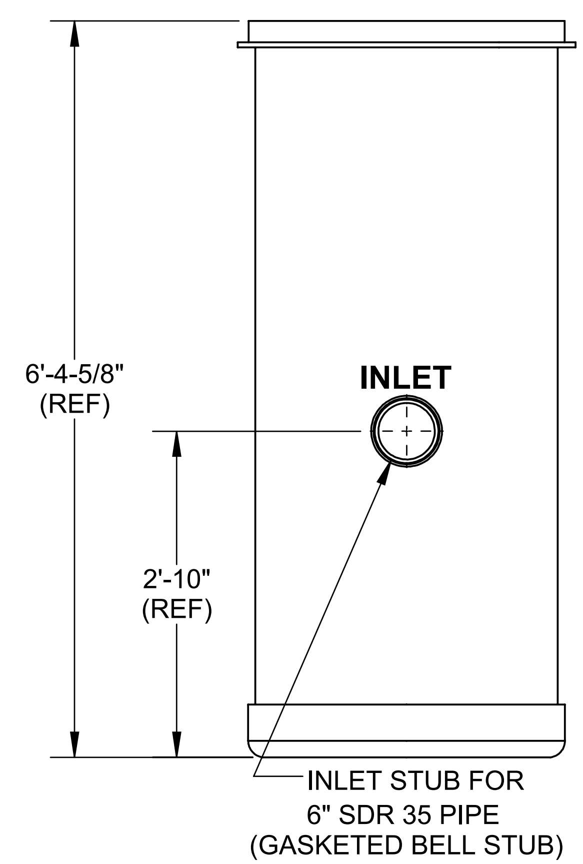


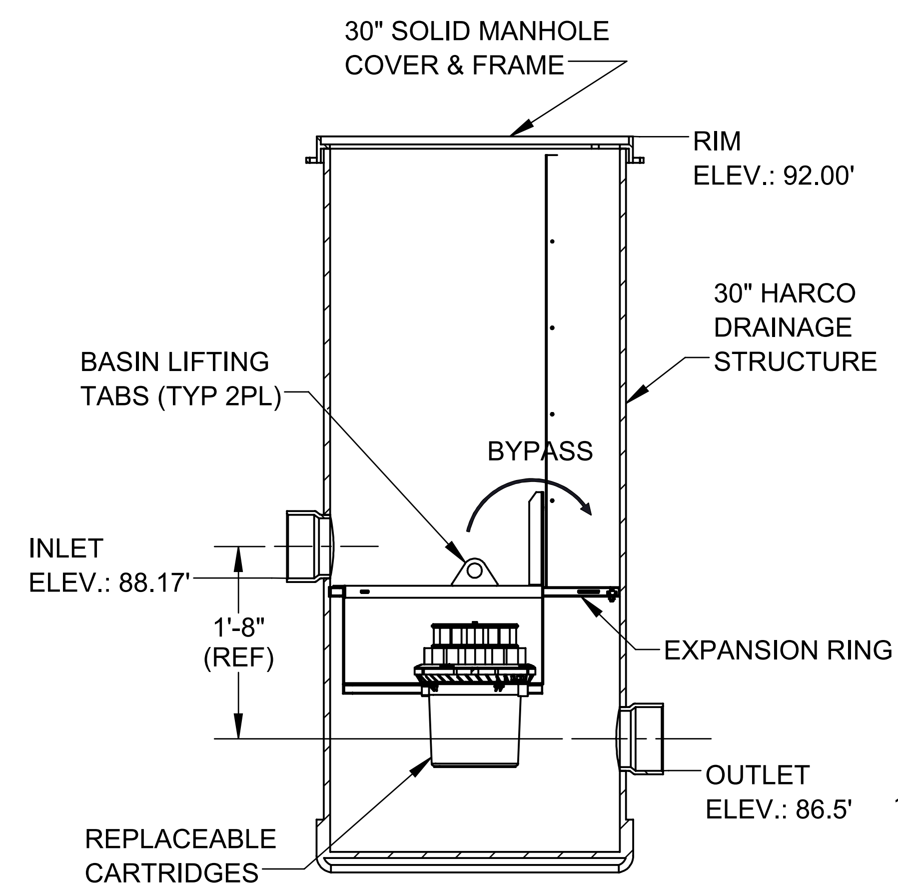
REMOVABLE CARTRIDGE BASIN



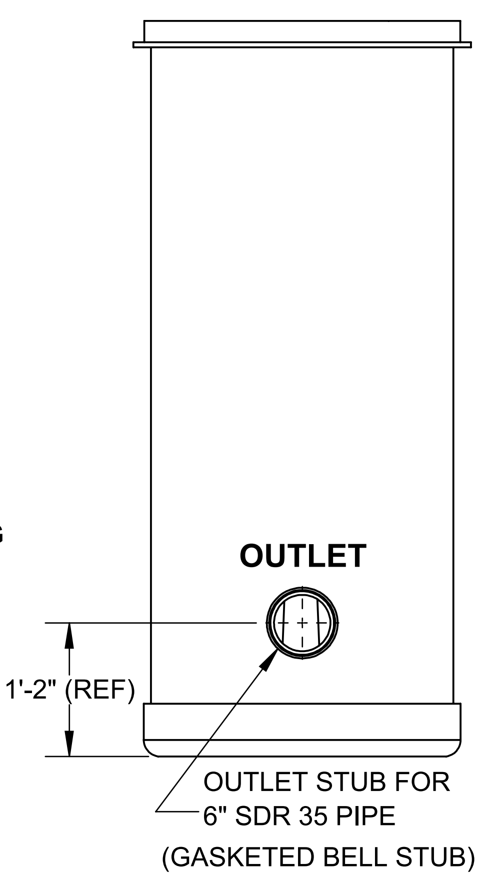


REFERENCE VIEW





SECTION A-A



UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS
BREAK SHARP EDGES .002 - .020
FILLETS .020 MAX
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES:
DEC .00 ± .01
DEC .000 ± .005
FRACT ± 1/16
ANGLE ± 2°

	APPROVAL	DATE
DWN	J.P.	8/27/2019
CHKR		
ENGR	J.P.	8/27/2019
UPD		

PROJECT

MATERIAL

FABCO INDUSTRIES, INC.
24 CENTRAL DRIVE
FARMINGDALE, NY 11735
WWW.FABCO-INDUSTRIES.COM

fabco industries inc

TITLE: DOWNSPOUT FILTER PWD BELOW GROUND

SIZE	DWG. NO.	REV
B	10162-36-000	C

SCALE: NONE | SHEET 1 OF 1

DownSpout BG PWD

Servicing, Maintenance and Disposal

The DownSpout PWD, like any other stormwater remediation device requires maintenance to remain efficient as a stormwater filter. Fabco Industries highly recommends inspecting the perspective roof drainage system before installing a DownSpout PWD unit and thoroughly cleaning it if necessary.

Below Ground Configuration:
Gain access to the DownSpout PWD filter in accordance with all the safety protocols outlined above. With the manhole cover removed, remove any standing liquid, sediment, and debris from the structure. This can be done manually or with a vacuum device.

Cartridge Filter*:*
The removable cartridge basin is equipped with two lifting tabs, one on each side of the basin. Using two hooks, carefully lift the basin straight out of the Harco structure. Rinse the aluminum basin with a high-pressure hose to dislodge and remove sediment and/or debris that may impede the performance of the filter system. After rinsing, remove each Sediment Control Cartridge by rotating counterclockwise until rotation stops, and pull out. If necessary, wipe clean the cartridge sealing area on the filter box and install the new Sediment Control Cartridges. Lock the new Sediment Control Cartridges in place by pushing and turning in the clockwise direction until rotation stops.

Subsurface Debris Basket:
The removable basket is equipped with two lifting handles, one on each side of the basket. Using two hooks, carefully lift the basket straight out of the Harco structure. Rinse the stainless-steel basket with a high-pressure hose to dislodge and remove sediment and/or debris that may impede the performance of the filter system.