

Attachment 1

Manufactured Treatment Device (MTD) Registration

1. Manufactured Treatment Device Name: StormTech Isolator Row PLUS

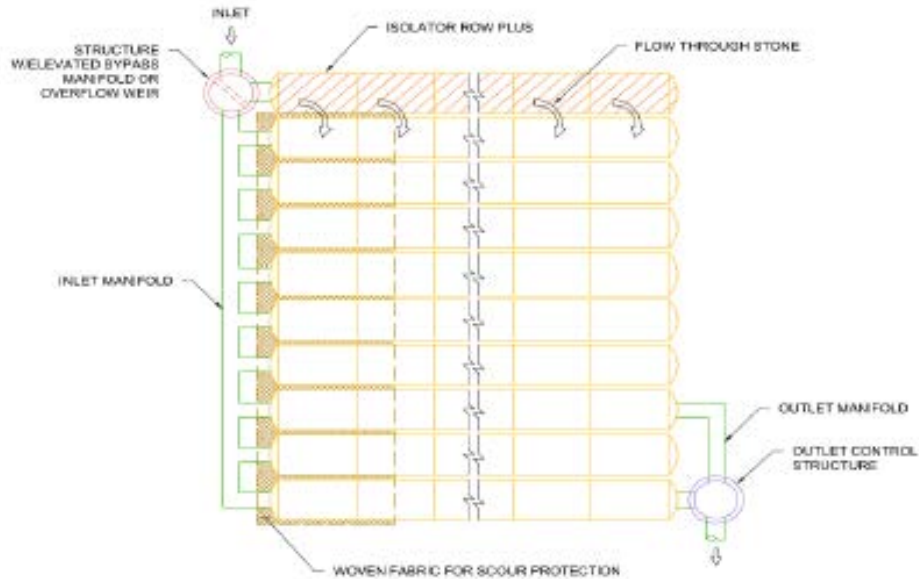


Figure 1 Schematic of the StormTech Isolator Row PLUS System

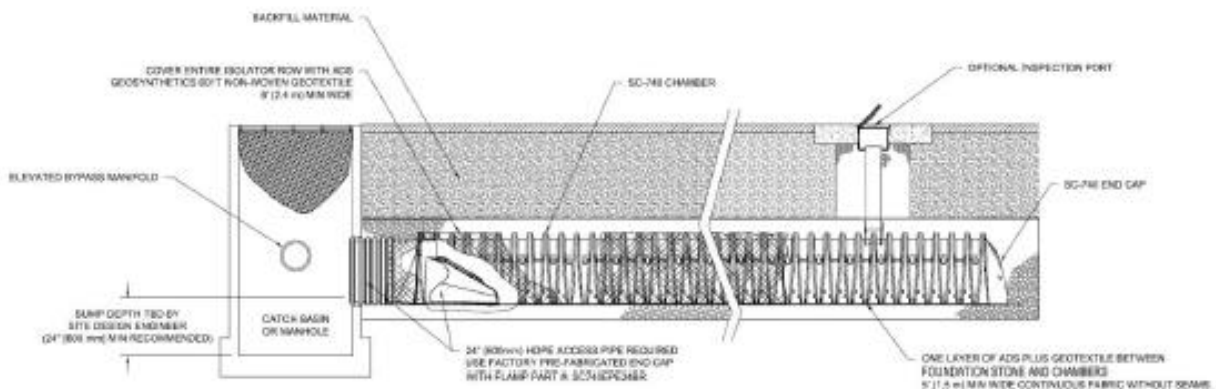


Figure 2 Isolator Row PLUS Detail

The Isolator Row PLUS is a row or rows of StormTech chambers that is surrounded with filter fabric and connected to a closely located structure for easy access. The Isolator Row PLUS provides for settling and filtration of sediment as stormwater rises in the chamber and ultimately passes through the filter fabric. The open bottom chambers allow stormwater to flow out of the chambers, while sediment is captured in the Isolator Row PLUS.

2. Company Name: StormTech

Mailing Address: 520 Cromwell Avenue
City: Rocky Hill
State: CT Zip: 06067

3. Contact Name (to whom questions should be addressed): George Ives

Mailing Address: 520 Cromwell Avenue
City: Rocky Hill
State: CT Zip: 06067
Phone number: 860-377-2056
Fax number: n/a
E-mail address: George.Ives@ads-pipe.com
Web address: www.StormTech.com

4. Technology

Specific size/capacity of MTD assessed (include units):

The StormTech Isolator Row PLUS can be sized to meet the needs of the project. Sizing can be either volume based for sites with good infiltrative soils, or the more commonly used practice of rate based sizing using a maximum water quality flow of 4.1 gpm/sqft of bottom area using a single layer of ADS PLUS woven geotextile.

Range of drainage areas served by MTD (acres):

Site configuration is the only limiting factor as to the drainage area that can be served. In general, StormTech recommends the length of the Isolator Row PLUS be limited to less than 175 feet for cleaning/maintenance purposes. Multiple Isolator PLUS Rows can be placed side by side to increase the size of the area served.

Include sizing chart or describe sizing criteria:

Volume Based - For sites with good infiltration rates, a volume based approach can be used with a corresponding stage storage curves based on the number of StormTech Isolator Row PLUS Chambers provided. Bare chamber storage volumes listed in table are in cubic feet per chamber:

SC-160	6.85 cf
SC-310	14.7 cf
SC-740	45.9 cf
DC-780	46.2 cf
MC-3500	109.9 cf
MC-4500	106.5 cf

Flow Based - For sites with where a combination of infiltration and detention/retention is used, a flow rate based (**MTFR**) approach is typically used.

The treatments rates are based on available surface treatment area and factors of safety that were developed from extensive testing. 80% TSS removal can be achieved by sizing the Isolator Row PLUS based on these flows per chamber size:

	Surface Loading Rate (gpm/ft ²)	Effective Filtration Treatment Area (ft ²)	MTFR (cfs) ¹	Mass Loading Capacity (lbs)	Mass Capture Capacity (lbs)	Drainage Area (acres)
Model	Single Chamber	Single Chamber	Single Chamber	Single Chamber	Single Chamber	Single Chamber
StormTech SC-160	4.13	11.45	0.105	41.0	33.4	0.06
StormTech SC-310	4.13	17.7	0.163	63.4	51.6	0.09
StormTech SC-740	4.13	27.8	0.256	99.6	81.0	0.14
StormTech DC-780	4.13	27.8	0.256	99.6	81.0	0.14
StormTech MC-3500	4.13	42.9	0.395	153.7	125.0	0.21
StormTech MC-4500	4.13	30.1	0.277	107.8	87.7	0.15

1. Based on 4.13 gpm/ft² of effective filtration treatment area.
2. Drainage Area is based on the equation in the NJDEP Filter Protocol wherein drainage area is calculated by dividing the pounds of mass captured by 600 lb/acre.

Intended application:

The Isolator Row PLUS is an on-line device that is used in conjunction with a structure and associated bypass feature. An upstream manhole provides access to the Isolator Row and typically includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row PLUS bypass through a manifold to other chambers. This is achieved with either an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row PLUS row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row PLUS. After Stormwater flows through the Isolator Row PLUS and into the rest of the StormTech chamber system it is either infiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

Media used (if applicable):

ADS PLUS Fabric

5. Warranty Information (describe, or provide web address):

https://www.stormtech.com/download_files/pdf/Standard_Limited_Warranty_05-19.pdf

6. Treatment Type

- Hydrodynamic Structure
- Filtering Structure
- Manufactured Bioretention System

Provide Infiltration Rate (in/hr):

- Other (describe): Utilizes a combination of woven geotextiles to capture TMDL's and infiltrate through insitu soils

7. Water Quality Treatment Mechanisms (check all that apply)

- Sedimentation/settling
- Infiltration
- Filtration (specify filter media) ADS PLUS Fabric
- Adsorption/cation exchange
- Chelating/precipitation
- Chemical treatment
- Biological uptake
- Other (describe):

8. Performance Testing and Certification (check all that apply):

Performance Claim (include removal efficiencies for treated pollutants, flow criteria, drainage area):

Sixteen (16) removal efficiency testing runs were completed in accordance with the NJDEP filter protocol. The target flow rate was 225 gpm and the influent sediment concentration was 200 mg/L. The average flow rate for all 16 runs was 226.1, with a coefficient of variation (COV) below the flow compliance (COV) < 0.1 for all the runs. Likewise, for all runs the sediment feed rate COV was below the < 0.03 protocol limit. The Isolator Row PLUS demonstrated a cumulative sediment removal efficiency of 81.2% over the course of the 16 test runs.

Specific size/Capacity of MTD assessed:

Mass loading capacity testing was conducted concurrently with removal efficiency testing. The Isolator Row PLUS has a mass loading capture capacity of 158.4 lbs (2.91 lbs/ft² of filtration area).

Has the MTD been "approved" by an established granting agency, e.g. New Jersey Department of Environmental Protection (NJDEP) , Washington State Department of Ecology, etc.

No

Yes; For each approval, indicate (1) the granting agency, (2) use level if awarded (3) the protocol version under which performance testing occurred (if applicable), and (4) the date of award, and attach award letter.

NJCAT Technology Verification – June 2020

<http://www.njcat.org/uploads/newDocs/NJCATIsolatorRowReportFinal.pdf>

Canadian Environment Technology Verification (ETV) by VerifiGlobal – October 2020

<https://www.verifiglobal.com/media/knubjbej/verifiglobal-verification-statement-for-stormtech-isolator-row-plus-final-2020-10-27-for-posting.pdf>

Was an established testing protocol followed?

No

Yes, (1) Provide name of testing protocol followed, (2) list any protocol deviations:

Provide the information below and provide a performance report (attach report):

<http://www.njcat.org/uploads/newDocs/NJCATIsolatorRowReportFinal.pdf>

9. MTD History:

How long has this specific model/design been on the market? 1 Year

List no more than three locations where the assessed model size(s) has/have been installed in Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

Since only the classic Isolator Row is approved at this time, the Isolator Row PLUS has not yet been installed in the state of Virginia.

List no more than three locations where the assessed model size(s) has/have been installed outside of Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

Project FLASH - Amazon Warehouse
Sw 272 Street and SW 132 Ave
Homestead Fl 33032

YMCA Cambridge
258 Hespeler Road
Cambridge ON Canada

10. Maintenance:

What is the generic inspection and maintenance plan/procedure? (attach necessary documents):

https://www.stormtech.com/download_files/pdf/11081-stormtech-isolator-row-plus-manual-07-20.pdf

Is there a maintenance track record/history that can be documented?

No, no track record.

The technology is still too new to provide a maintenance track record as systems typically aren't cleaned for the first time until 2-5 years. Because of the similarity between this and the current Isolator Row we have no reason to believe the maintenance will be any different.

Yes, track record exists; (provide maintenance track record, location, and sizing of three to five MTDs installed in Virginia [preferred] or elsewhere):

Recognizing that maintenance is an integral function of the MTD, provide the following: amount of runoff treated, the water quality of the runoff, and what is the expected maintenance frequency for this MTD in Virginia, per year?

Maintenance interval is 3 to 5 years depending on sediment loading into the Isolator Row PLUS. Per the Maintenance manual above, the system should be inspected once each year (preferably in the spring after winter loading of salt/sand). When approximately 3 inches of sediment has accumulated throughout the length of the Isolator Row PLUS, the system shall be cleaned with a JetVac in accordance with the manual.

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media:

With proper maintenance, the life expectancy of the Isolator Row is 75 Years.

For media or amendments functioning based on cation exchange or adsorption, how long will the media last before breakthrough (indicator capacity is nearly reached) occurs?

Not Applicable

For media or amendments functioning based on cation exchange or adsorption, how has the longevity of the media or amendments been quantified prior to breakthrough (attach necessary performance data or documents)?

Not Applicable

Is the maintenance procedure and/or are materials/components proprietary?

- Yes, proprietary
 No, not proprietary

Maintenance complexity (check all that apply):

- Confined space training required for maintenance
 Liquid pumping and transportation

Specify method:

- Solids removal and disposal

Specify method: Pressure Nozzle and Vacuum

Other noteworthy maintenance parameter (describe):

While ADS/StormTech is the manufacturer of the Isolator Row PLUS, technical support personnel are available to provide assistance and to help owners in understanding the simplicity of this system and the need to perform subsequent annual inspection for sediment accumulation. In addition, we put these owners in touch with companies like Clean Harbors, ESI Environmental Services Inc. and Stormwater Maintenance & Consulting to perform cleaning when needed.

11. Comments

Include any additional explanations or comments:

The StormTech Isolator Row and Isolator Row PLUS have been approved on a project by project basis for tens of thousands of projects around the world. Following are some examples:

- The Isolator Row PLUS is a verified filtration manufactured treatment device by the New Jersey Corporation for Advanced Testing (NJCAT) in accordance with NJDEP Filter Protocols.
- The Isolator Row PLUS has been evaluated and approved for Canadian Environment Technology Verification (ETV) by VerifiGlobal.
- In Ohio, the Isolator Row is approved per the Ohio EPA as a pretreatment to underground storage and can be used for both storage volume and pretreatment as the water quality volume all passes through the Isolator Row.
- The Metropolitan St. Louis Sewer District (MSD) has approved the StormTech Isolator Row as a standalone post-construction stormwater Best Management Practice.
- In Massachusetts, approvals for the State DEP requirement of 80% TSS removal on an annual load basis are issued at the Conservation Commission level, and the Isolator Row is commonly used to meet these criteria.
- In Oregon, the Rogue Valley Storm Water Advisory Team (SWAT) has incorporated the StormTech Isolator Row into their Stormwater Design Manual as a pre-approved proprietary device for stormwater quality treatment.
- The Kansas City Metro Chapter of the American Public Works have included the StormTech Isolator Row with a value rating of 3.0 in their Manual of Best Management Practices for Stormwater Quality.

- Maine DEP has approved the Isolator Row pollutant removal efficiency based on laboratory testing of 110 micron (US Silica OK-110) particle size
- In Texas, the City of Houston PWE as well as Harris county, has recognized the Isolator Row as an official water quality device.
- Under the New Environmental Technology Evaluation program, the Ontario (Canada) Ministry of the Environment has evaluated the Isolator row and issued a Certificate of Technology Assessment

In the State of Virginia, hundreds of StormTech systems have been installed since 2014 utilizing the Isolator Row as a cost-effective solution to water quality taking advantage of the 40% TP removal rate. Engineers in Richmond and Southwest Virginia and even Northern Virginia will use a stand alone Isolator Row to provide sediment and phosphorus removal and reduce the cost of purchasing “credits”. Engineers such as Townes Site, J2 Engineering, Dewberry and Kimley Horn have very large StormTech Systems under design in VA continuing to utilize the Isolator Rows within the systems in conjunction with other MTDs to meet the stringent DEQ requirements.

12. Certification

Signed by the company president or responsible officer of the organization:

“I certify that all information submitted is to the best of my knowledge and belief true, accurate, and complete.”

Signature:



Name: ___ George Ives

Title: ___ StormTech Sales Support Manager

Date: ___ 6/14/2021

NOTE: All information submitted to the department will be made publicly accessible to all interested parties. This MTD registration form will be posted on the Virginia Stormwater BMP Clearinghouse website.