



StormTech®

Detention • Retention • Recharge

Subsurface Stormwater ManagementSM



A StormTech SC-740 chamber project under construction, utilizing the Isolator Row design.

Isolator™ Row O&M Manual

1.0 The Isolator™ Row

1.1 INTRODUCTION

A critical and sometimes overlooked component of any Stormwater Pollution Prevention Plan is the importance of inspection and maintenance. Under the proposed EPA mandated Storm Water Phase II rules, owners and operators of small municipal separate storm sewer system (MS4) facilities would be responsible for implementing BMP inspection and maintenance programs and having penalties in place to deter infractions (USEPA, 1999).



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

1.2 THE ISOLATOR™ ROW

Stormtech has developed a process, the Isolator™ Row, which has been designed to simplify the inspection and maintenance procedures while at the same time dramatically reducing maintenance costs to the end user. The system can be easily inspected from the surface while isolating sediments to a relatively small portion of the bed, reducing cleanout costs.

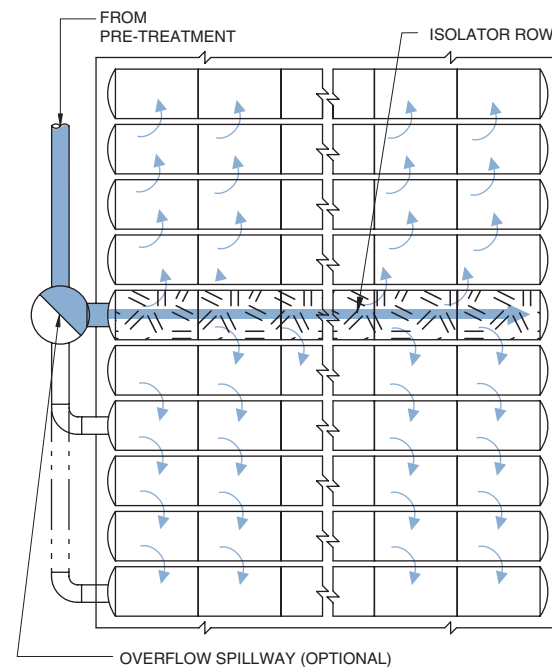
Typically, the Isolator Row is designed to receive the entire “first flush”. The chambers open bottom, coupled with engineered perforations in the chambers’ outside corrugations allow the flow to pass both vertically and horizontally into the surrounding stone. The stormwater is thereby evenly distributed throughout the entire detention/retention system. In large beds, multiple Isolator Rows may be used.

A woven geotextile fabric material is placed between the bedding stone and the chambers. This serves two functions, to keep the stone in place when stormwater enters into the header system at high velocities and to allow for high pressure cleaning without any relocation of the stone base.

The Isolator Row is configured to enhance the settling of fine sediment not captured by pre-treatment (i.e. sumped catch basins, hydrodynamic separators, etc.). The sediment is then trapped from exiting the perforations by non-woven geotextile material surrounding the Isolator Row of chambers. This acts to “isolate” the sediment to one row of chambers, providing a simple solution to scheduled maintenance, inspection and long-term performance.

Note: See the most current StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row. It is the ultimate responsibility of the design engineer to assure that the stormwater system's design is in full compliance with all applicable laws and regulations.

StormTech Isolator Row with Overflow Spillway (not to scale)



2.0 Isolator Row Inspection/Maintenance

2.1 INSPECTION

The frequency of Inspection and Maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

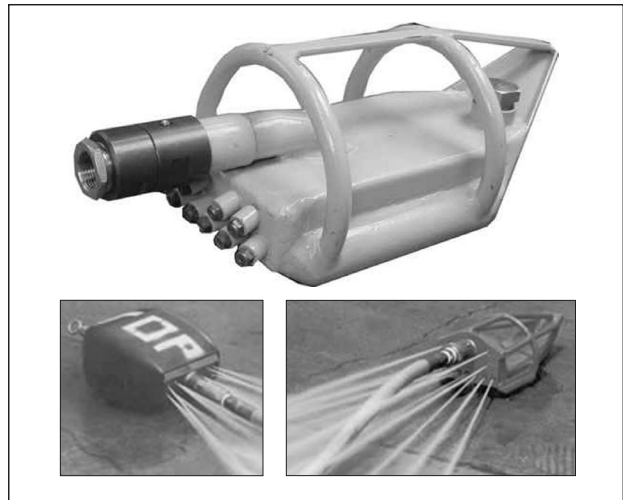
At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

2.2 MAINTENANCE

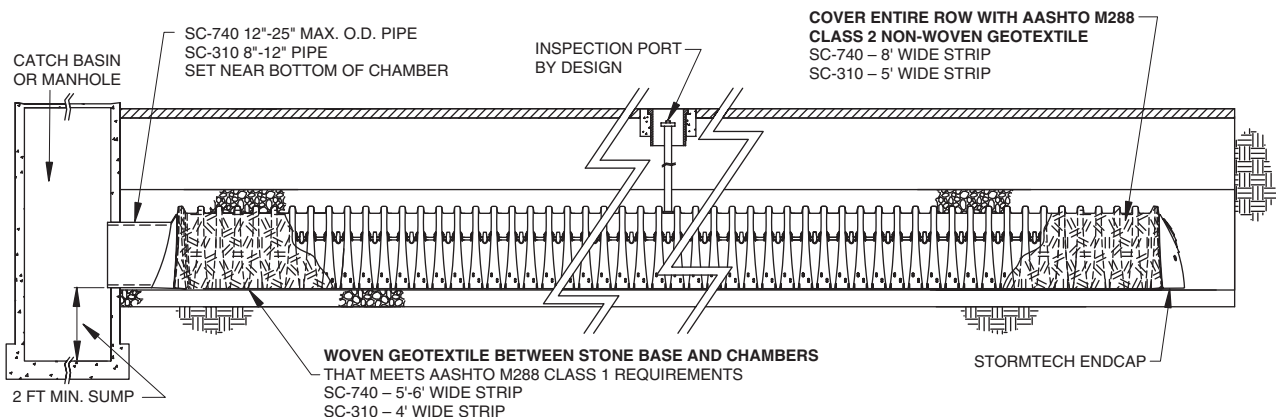
The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.



Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products.)

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45° are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

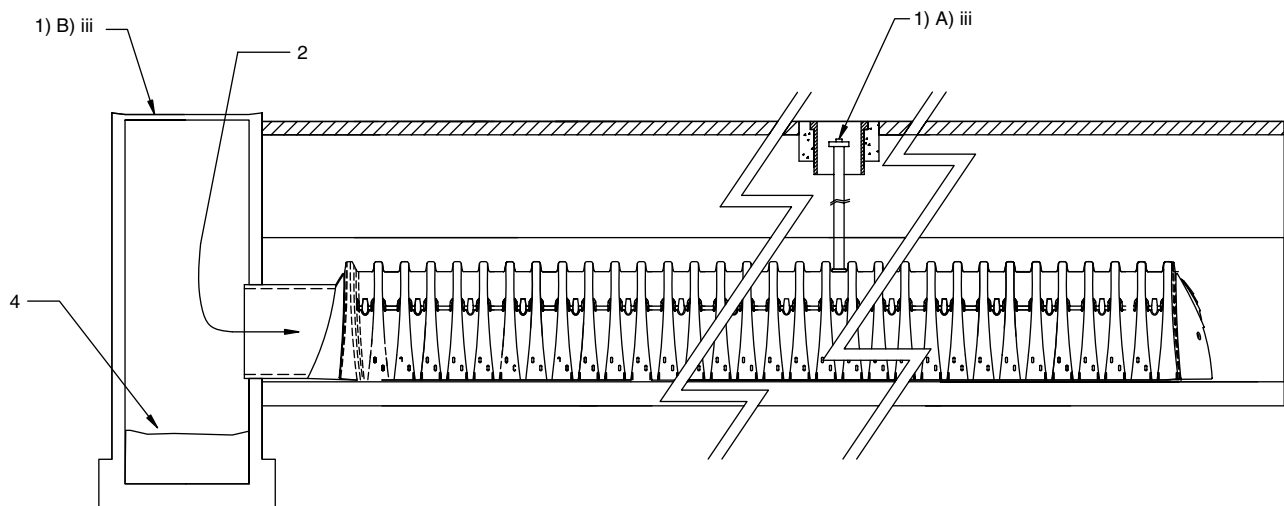


3.0 Isolator Row Step By Step Maintenance Procedures

STORMTECH ISOLATOR™ ROW

- Step 1)** Inspect Isolator Row for sediment
- A) Inspection ports (if present)
 - i. Remove lid from floor box frame
 - ii. Remove cap from inspection riser
 - iii. Using a flashlight and stadia, gage depth of sediment
 - iv. If sediment is at or above 3 inch depth proceed to Step 2. If not proceed to step 3.
 - B) All Isolator Rows
 - i. Remove cover from manhole at upstream end of Isolator Row
 - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
 - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
 - 2. Follow OSHA regulations for confined space entry if entering manhole
 - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3.
- Step 2)** Clean out Isolator Row using the JetVac process
- A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
 - B) Apply multiple passes of JetVac until backflush water is clean
 - C) Vacuum Manhole sump as required
- Step 3)** Replace all caps, lids and covers
- Step 4)** Inspect & clean catch basins and manholes upstream of the StormTech system

StormTech Isolator Row (not to scale)




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