

5.4.12 Manufactured/Proprietary Treatment Devices

Manufactured or proprietary stormwater control measures are devices that use proprietary settling, filtration, absorption/adsorption, vortex principles, vegetation, and other processes to meet permanent stormwater management requirements. They may be used individually, or with other measures as part of a treatment train. Although there are some proprietary devices that are used to control stormwater quantity such as underground storage and cisterns, the common purpose of proprietary devices is pollutant removal. There are two general types of devices: **hydrodynamic separators and filtering systems**.

<p>Key Design Criteria: See manufacturer’s technical specifications.</p>	<p>Advantages:</p> <ul style="list-style-type: none"> • Useful for pretreatment/removal of TSS. • Can be an excellent choice in ultra-urban or other constrained sites. • Useful for redevelopments and to improve local conditions. • Longevity can be high with proper maintenance.
<p>Key Considerations:</p> <ul style="list-style-type: none"> • Independent performance data must be available to prove a demonstrated capability of meeting stormwater management requirements. • System or device must be appropriate for use in Tennessee conditions. • Installation and operations/maintenance requirements must be understood by all parties approving and using the system or device in question. 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Must be sized carefully to achieve design removal efficiencies. • Efficiency may be affected by size of sediment and rate of sediment loading. • Must ensure regular maintenance to achieve design removal efficiencies. • Limited performance data.
<p>Maintenance: See manufacturer’s technical specifications.</p>	

1. Description

1.1. Hydrodynamic Separators

- Hydrodynamic separators are designed to meet specific pollutant removal requirements and generally control pollution using the movement of water and water’s properties to settle or filter pollutants from the stormwater.
- No outside power source is required, because the energy of the flowing water allows the sediments to efficiently separate.
- Depending on the type of device, separation may be by means of swirl action or indirect filtration.

1.2 Filtering Systems

- Filtering systems typically use a settling chamber and filtering system that removes specific pollutants. The choice of filtering media or cartridges is typically based on the target pollutants.

2. Guidelines for Selection and Use of Proprietary Treatment Devices

In order for use as a limited application control, a proprietary treatment device must have a demonstrated capability of meeting the stormwater management goals for which it is being intended. It is recommended that the system provide:

- (1) Independent third-party scientific verification of the ability of the proprietary treatment device to meet pollutant removal objectives;

- (2) Proven record of longevity in the field; and,
- (3) Proven ability to function in local conditions (e.g., climate, rainfall patterns, soil types, etc.).
- (4) Maintainability – Documented procedures for required maintenance including collection and removal of pollutants or debris.

Although local data is preferred, data from other regions can be accepted as long as the design accounts for the local conditions. Local stormwater programs may submit a proprietary system to further scrutiny based on the performance of similar practices. A poor performance record or high failure rate is valid justification for not allowing the use of a proprietary system or device.

Consult your local stormwater program for information related to the selection and use of proprietary stormwater control measures.

3. Maintenance

Maintenance is especially important with these devices, and must be performed in accordance with the manufacturer's technical specifications. Clogging of devices can not only hinder removal of pollutants, but may also create drainage problems. Frequent inspections throughout the first year of installation are recommended. Although the general rule of thumb is that these devices need to be cleaned out once or twice a year, they must be maintained once capacity is reached. Depending on the device, maintenance may include the use of a sump vacuum or vacuum truck.

REFERENCES

Boston Water and Sewer Commission and Geosyntec Consultants. "Chapter 4 Proprietary Stormwater BMPs." Volume 2: Technical Guide for Compliance with the Massachusetts Stormwater Management Standards. Stormwater Best Management Practices: Guidance Document. Vol. 4. Boston, MA: n.p., 2013.

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Knox County. "4.4.5 Proprietary Structural BMPs." Knox County Tennessee Stormwater Management Manual. Volume 2 (Technical Guidance): 4-249--250.
<http://www.knoxcounty.org/stormwater/pdfs/vol2/4-4-5%20Proprietary%20Structural%20BMPs.pdf>