



ACO StormBrixx®

Sediment Filtration Tunnel

StormBrixx® 300

StormBrixx® 600

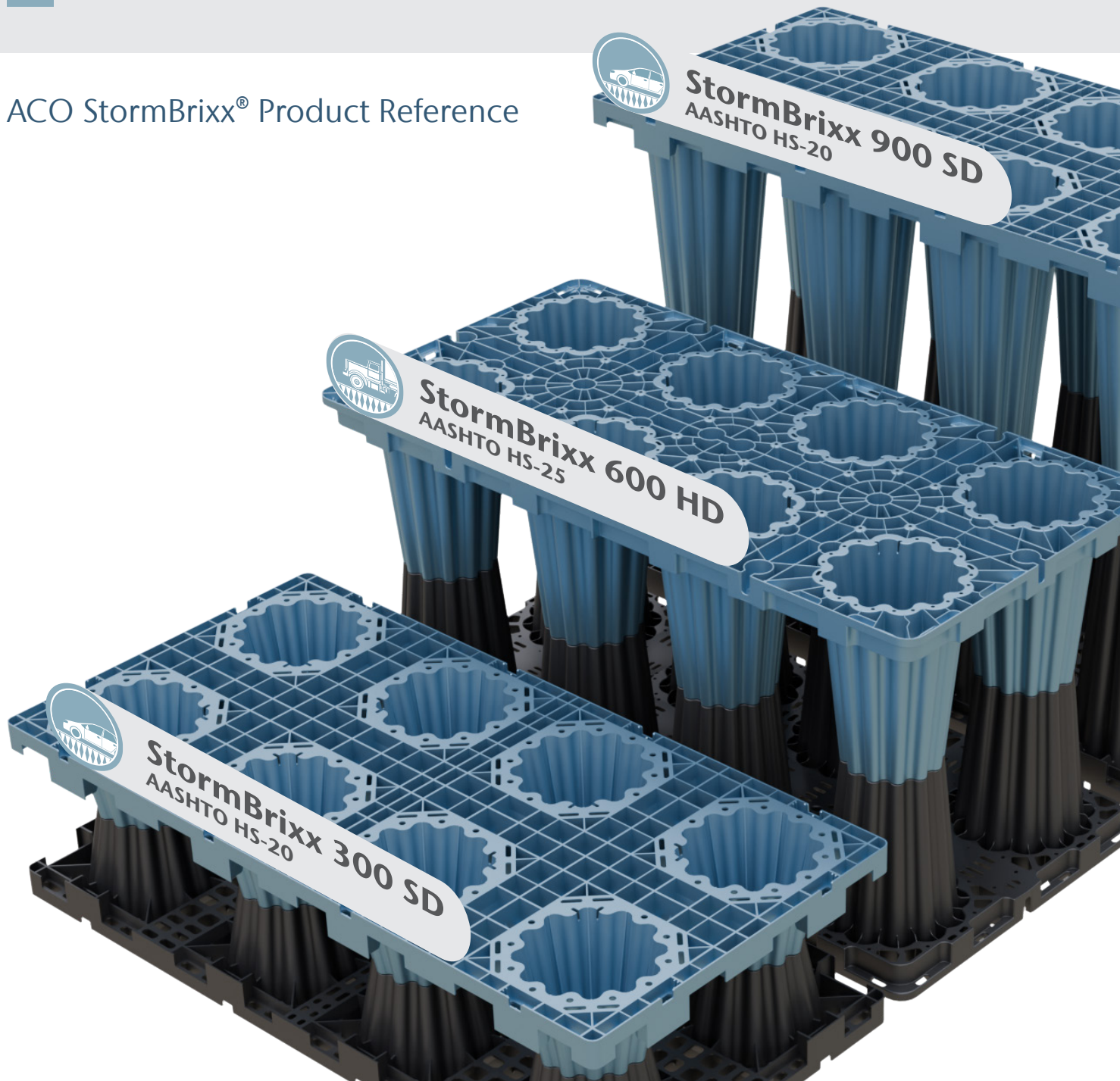
StormBrixx® 900



Outline

1	Application Overview	02
2	Tunnel Sizing and Design Considerations	03
3	Installation Comments	04
4	Operation and Maintenance Comments	05

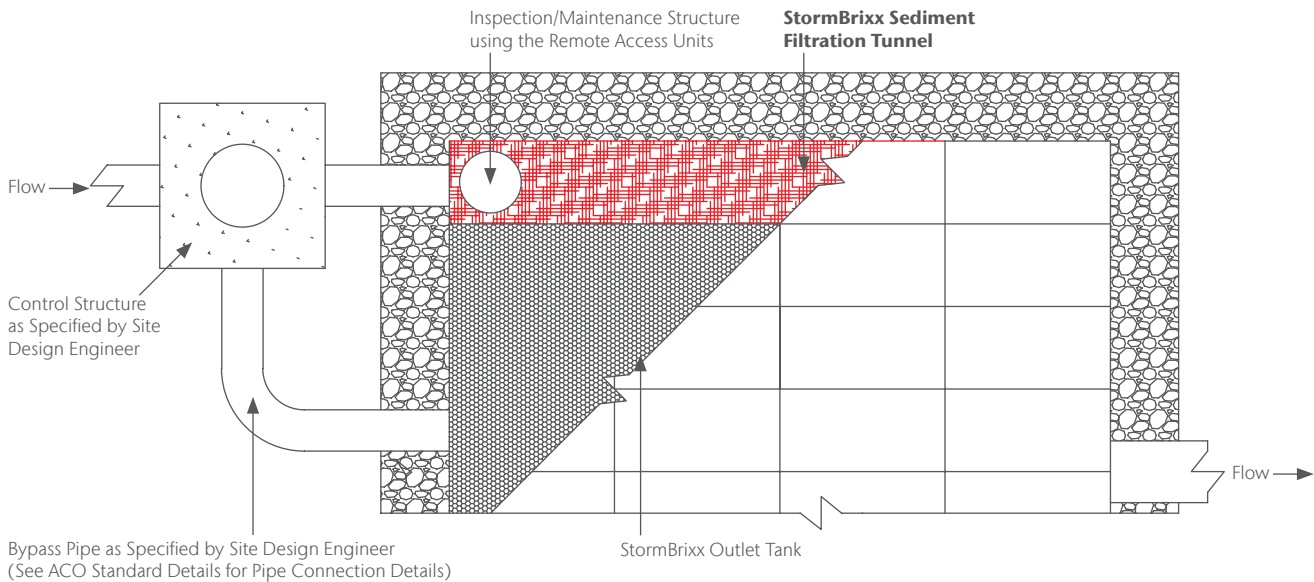
ACO StormBrixx® Product Reference



1 Application Overview

StormBrixx® systems are a type of underground modular storage system. When the patented geocellular thermoplastic units are combined, they form a system that provides high void space (94-97%) stormwater storage for flood mitigation, detention, and infiltration applications. These systems can be outfitted with Sediment Filtration Tunnels to capture "first flush" or water quality flows. A Sediment Filtration Tunnel consists of one or more StormBrixx half-modules that are connected to the inflow via a nearby control structure. The control structure directs the treatment flow into the Sediment Filtration Tunnel, with a weir or raised bypass allowing flows greater than the treatment flow rate to bypass the Sediment Filtration Tunnel and discharge into the larger system (see **Figure 1** below).

Figure 1: StormBrixx Sediment Filtration Tunnel Example Layout



NOTE 1: Sump below pipe inverts to be specified by Engineer of Record. Control Structures may be installed outside or within the tank footprint depending on the structure's geometry. Contact ACO for more information

NOTE 2: Tank Dimensions and Module Orientation Varies based on project-specific layer orientation drawings.

The Sediment Filtration Tunnel consists of a series of interconnected modules encapsulated with a minimum of a single layer of non-woven geotextile fabric on the exterior sides, top, and bottom. At the interface between the Sediment Filtration Tunnel and the larger system, two layers of non-woven geotextile fabric are installed. This combination provides settling and filtration of stormwater, retains the sediment within the Sediment Filtration Tunnel, and provides accessibility for maintenance. Access points can be added in nominally 2' by 2' areas within the tank using the StormBrixx Remote Access Plate or along the exterior of the tank using Remote Access Units. See **Figure 2**.

The Sediment Filtration Tunnel has been tested in accordance with the New Jersey Department of Environmental Protection "Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device", latest revision April 25, 2023 (Filtration Protocol). It has been confirmed to achieve 82.7% total suspended solids when designed as described in this guide.

2 Tunnel Sizing and Design Considerations

2.1 Tunnel Sizing

The Sediment Filtration Tunnel is sized based on the Maximum Treatment Flow rate (MTFR) in cubic feet per section per square-foot of effective treatment area (EFTA). Depending on your selected module series, the available effective treatment area will vary. Please see the table and equation below to size the Tunnel.

$$\text{\# of Treatment Modules in System Footprint} = \frac{\text{Design Flow Rate (CFS)}}{\text{Module MTFR (CFS/Module)}}$$

Table 1: Module Maximum Treatment Flow Rate (MTFR) per Module Type

Module Type*	Module MTFR (CFS/Module)
600 HD	0.127
900 SD	0.160
900 SD + 300 SD	0.190

* Module MTFR is based on 1-layer system for 600 HD and 900 SD. The 900 SD + 300 SD system includes a single layer of 900 SD and a single layer of 300 SD.

2.2 Design Considerations

The following items should be considered when implementing the Sediment Filtration Tunnel in a StormBrixx application:

Module Type and Tunnel Height

For ease of construction, the Sediment Filtration Tunnel should consist of the same module type and system height as the rest of the StormBrixx system. For example, if the tank is designed as using the 900 SD at a 1.5-layer (55.4-inch) system height, the Sediment Filtration Tunnel will also be consist of 900 SD at 1.5-layer system height.

ACO recommends a minimum system height of 2 feet when implementing a Sediment Filtration Tunnel.

Tunnel Footprint Location

Modules should connect directly to inlet pipes. The Tunnel may extend along the system edge or within the system interior (See **Figure 3** below). For detention or retention systems, we recommend tunnels be placed within the system interior.

Control Structures

Control Structures are used to connect inlet pipes to the system and house a bypass weir or pipe for designed peak storm flows exceeding the treatment flow rates. To achieve the 82.7% total suspended solids removal, we recommend that the top of weir or bypass pipe invert be 2.5 feet above the tank's invert.

These structures may be placed outside the system footprint or within the system footprint. If the control structure is within the system footprint, the length and width should be sized based on the length and width of the Stormbrixx Module used (See **Figure 4** below).

While not required, the Engineer of Record may include a control structure sump area by extending the bottom of the structure below the tank invert. ACO recommends placing control structures with sumps outside the tank footprint.

Inspection and Maintenance Access

ACO recommends a minimum of two access points, one at each end of Sediment Filtration Tunnel, to allow for flexibility during inspection and maintenance. Access points are created using the Remote Access Plate or the Remote Access Unit (See Figure 2). If the Sediment Filtration Tunnel exceeds 100 feet in length, we recommend one access point every 50 feet.

Structural Design and Backfill

Because the same modules are used for the Sediment Filtration Tunnel as the remainder of the tank, structural design and installation will follow the same structural design parameters. Please see the StormBrixx Standard Details and Structural Calculator tool for more details at <https://acoswm.com/stormbrixx/>.

3

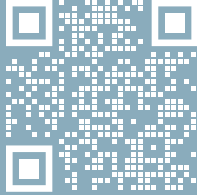
Installation Comments

The Sediment Filtration Tunnel follows the same installation procedures as the remainder of the StormBrixx system except for the geotextile installation. Please see the StormBrixx Installation Guide and Standard Details for more information. **Figure 5** below illustrates the geotextile installation differences.

4

Operation and Maintenance Comments

The Sediment Filtration Tunnel follows the same Operation and Maintenance procedures as the overall StormBrixx system. Please see the StormBrixx Geocellular Stormwater Storage Product Maintenance Guide for more information.



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