

# V2B1 Structural Stormwater Treatment System

The V2B1's compact design is well-suited for space constrained and urban sites, where the installation of a larger stormwater treatment is impractical. Depending on state regulations, these devices are used by themselves, or as a pretreatment system in conjunction with other stormwater treatments.

The V2B1 is a two-chambered system encased in two, shallow, pre-cast concrete storm drains in series. Each drain measures four feet in diameter. Stormwater enters the first drain, where a tangential inlet pipe creates a vortex and hydrodynamic separation for sediment removal. A four- to five-foot deep sump provides sediment storage.

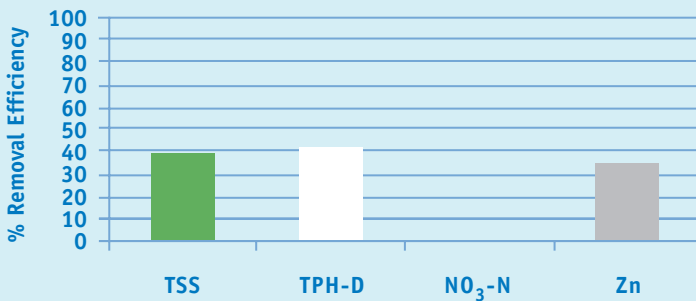
Stormwater then enters the second drain, where a floatables chamber containing a baffle wall traps floating oil and organic debris. An underflow opening beneath the baffle wall directs water to the outlet pipe.

Maintenance requirements are similar to other hydrodynamic separators and include the periodic removal of solids by a vacuum truck. The unobstructed access and lack of moving parts enables easy maintenance.

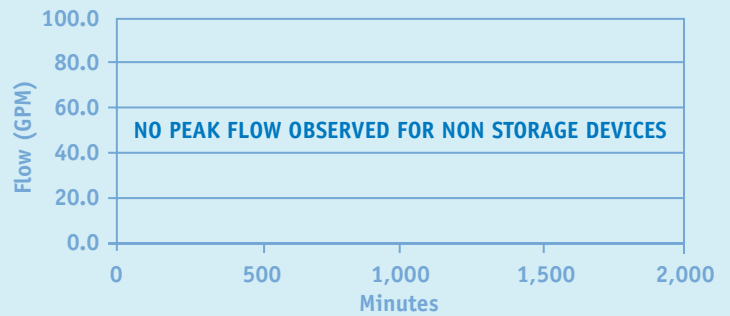


The V2B1's first chamber [right] uses a hydraulic vortex to settle out particles, and then allows clarified water to exit through a central drain into the second chamber [left], where a baffle traps oil and organic debris.

## WATER QUALITY PERFORMANCE



## PEAK FLOW REDUCTION



### Category Type

Manhole Retrofit

### BMP Type

Manufactured Device

### Design Source

Environment 21, LLC

### Basic Dimensions

2 Manholes, Each 4 ft in Diameter  
Depth Below Invert: 5.1 ft

### Specifications

Catchment Area: 1/3 acre  
Peak Flow: 1/3 cfs  
Volume: 577 cf

### Treatment Function

Physical

### Cost Per Acre

\$20,000

### Maintenance Data

Maintenance Sensitivity: High  
Inspections: High  
Sediment Removal: High

## Water Quality Treatment Process

The V2B1 treats stormwater through the hydrodynamic removal of sediment, followed by the skimming of floatables such as oil, grease, trash, and debris. In the first chamber, a hydraulic vortex settles out particles, and clarified stormwater exits through a central drain. In the second chamber, a baffle wall traps floatables such as trash and organic debris. (It can capture small volumes of oil or fuel spills when outfitted with a top-mounted baffle.)

The primary contaminant addressed by hydrodynamic separators is sediment. However, comparable reductions are observed for zinc and total petroleum hydrocarbons-diesel, presumably as a result of binding to trapped sediments. This treatment does not have a storage volume and therefore has no peak flow or volume reduction. Influent and effluent hydrographs are the same. These devices must receive frequent inspection and cleaning to maintain effectiveness.

