

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

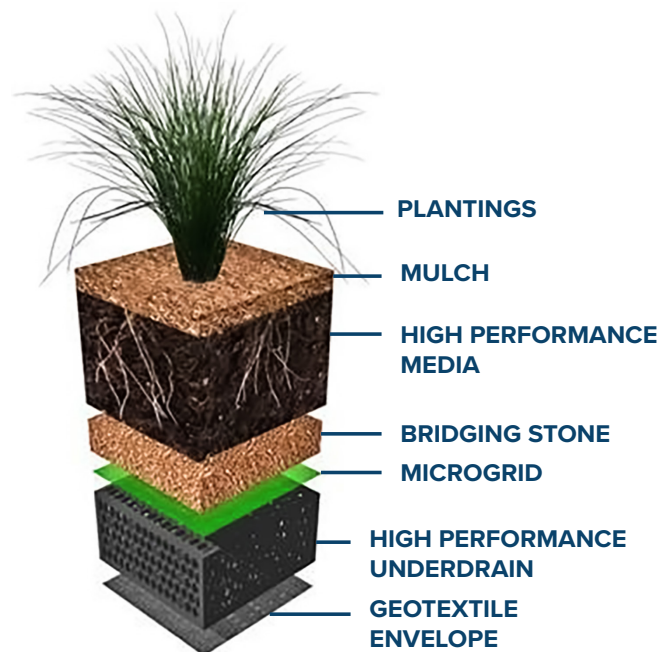


FocalPoint is an ultra-efficient, modular biofiltration system that treats and drains large volumes of stormwater runoff in a small footprint to meet post-construction stormwater treatment requirements. The biofiltration system utilizes the physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The system can be installed along the edge of a roadway behind curb lines, in landscaped stormwater basins and can be incorporated into an urban green infrastructure streetscape. Infiltration flow rates for the system's standard media exceed 100" per hour. It is a complete, integrated system with a demanding specification that ensures functionality, performance and maintainability.

These smaller systems are ideal for urban retrofits and new construction that do not have space for traditional systems.

ADVANTAGES

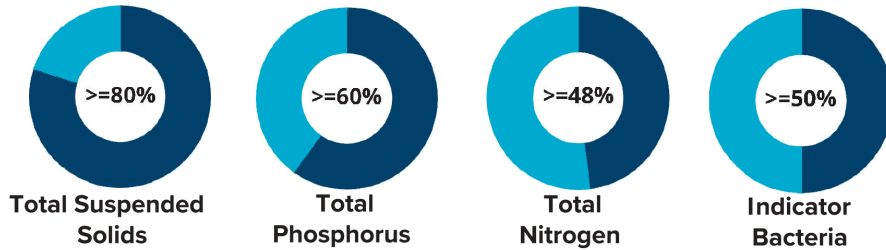
- Gain usable square footage
- Reduce material requirements and cost
- Improve property aesthetic and land value
- 100"+ per hour infiltration rate
- Treat the same amount of water in as little as 8-10% of the area required for traditional bioretention
- Approved for new development in many jurisdictions across the country
- Incorporate green infrastructure in locations previously overlooked
- Option to expand underdrain to meet volume/storage requirements



Have questions? Contact your local Ferguson Stormwater/Geo Specialist or Urban Green Infrastructure BMP Specialist for assistance with your next design.

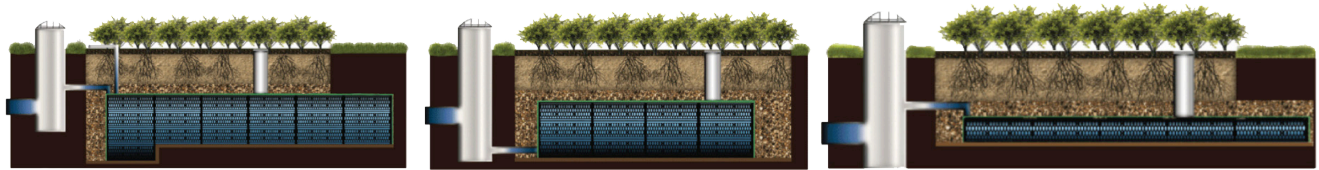
POLLUTANT REMOVAL

FocalPoint achieves pollutant removal rates consistent with traditional bioretention, and the option of increased removal characteristics for specific pollutant targets. The system has been 3rd party field tested following the TAPE (Technology Assessment Protocol - Ecology), NJ CAT Verified, NJ DEP Certified and independently field tested by the North Carolina State University, and has numerous regulatory agency approvals that meet state water quality standards for post construction BMPs.



MODULAR UNDERDRAIN

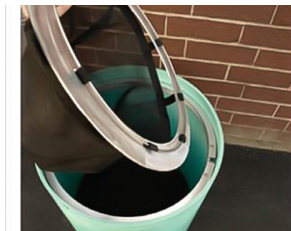
FocalPoint's modular open cell underdrain system (R-Tank modular subsurface storage system), unlike traditional underdrains, not only supports the flow rate of the media, but can be expanded beyond the footprint of the media bed to provide unlimited underground detention, infiltration and/or storage for water reuse. This can help meet channel protection, infiltration and flood control requirements. The R-Tank is traffic load rated so this portion of the system can be located under paved areas adjacent to the FocalPoint biofilter area.



R-Tank underdrain can be extended beyond FocalPoint footprint as shown above

ACCESSORY PRODUCTS

Below, there are a series of accessories available to accent the performance, simplify maintenance and help with curblin feasibility of the FocalPoint system.



Beehive Overflow Riser Filter

for collection of gross solids during major storm events



Rain Guardian

for curblin pretreatment and energy dissipation



PRETX

for larger watershed curblin pretreatment and energy dissipation



Urban Rain Garden

Modular precast T wall system for FocalPoints in tight spaces

Have questions? Contact your local Ferguson Stormwater/Geo Specialist or Urban Green Infrastructure BMP Specialist for assistance with your next design.



POWERBLOCK PERMEABLE PAVEMENT

HIGH-PERFORMANCE PERMEABLE PAVEMENT FOR
STORMWATER MANAGEMENT



PowerBLOCK is an open-joint permeable paver system that moves rainfall through pavement up to 10 times faster than traditional permeable/porous systems. With a guaranteed surface infiltration rate of over 1,000 inches per hour, PowerBLOCK provides a drivable surface that requires minimal attention from project owners.

ADVANTAGES:

- Moves water rapidly through the drivable surface
- Reduces maintenance and life cycle costs
- Modular, removable, replaceable
- Supports all types of traffic loads
- No minimum quantities
- Available in several colors (color mixed into concrete mix)

The precast 4.5 inch tall blocks have built in 1/4" spacers that are not filled with aggregate, making maintenance simpler, less frequent (typically 3-5 year intervals) and more economical than other permeable/porous options.

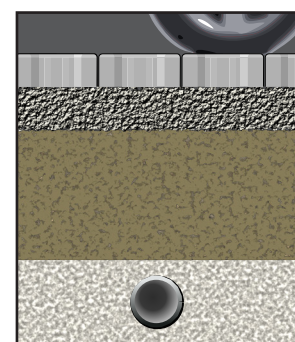
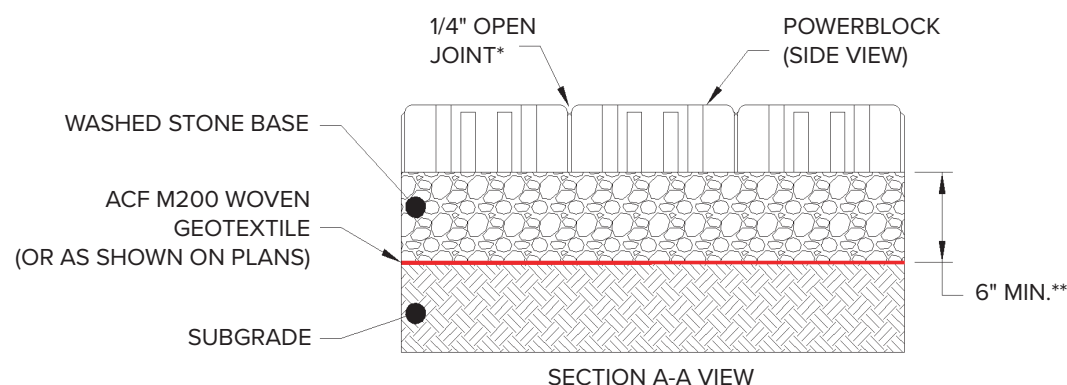
As a precast block, PowerBLOCK is perfect for small areas. There are no minimum quantities as compared to cast-in-place porous alternatives that are driven by complex mix-design and installation protocols.

SPECIFICATIONS

PROPERTY	DESCRIPTION	VALUE
Dimensions	Length x Width x Height	11.75" X 13.70" X 4.5" (+/- 1/8")
Block Weight	Pounds	44 Lbs. (Minimum)
Loading Capability	Traffic Rating	HS-20/HS-25
Open Joint Width	Inches	0.25" (+/-0.02")
Joint Filler Between Blocks	Material Used	None Allowed
Average Surface Infiltration Rate*	ASTM C-1701/C-1701-M09; ASTM C-1781/C-140	1,000 In./Hr
Compressive Rate	ASTM D-6684/C-140	4,000 PSI (Average) 3,500 PSI (Minimum)
Freeze/Thaw Resistance	ASTM C-67/C-1645/C-936	Compliant
Abrasion Resistance	C-418	Compliant

*Post-installation, field-verified

PRODUCT ILLUSTRATION



Provide water quality treatment by incorporating a sand layer or innovative media below the surface.

MAINTENANCE

Routine maintenance is recommended to keep open joints free of sediment and debris and reduce the need for deep cleaning. Routine vacuuming should be performed using smaller handheld devices, walk-behind units or vacuum trucks, such as the Elgin Whirlwind. Adjust vacuum device settings to avoid disturbing blocks. Avoid using mechanical sweepers to perform maintenance as these may not clear joints as effectively and result in reduced performance.

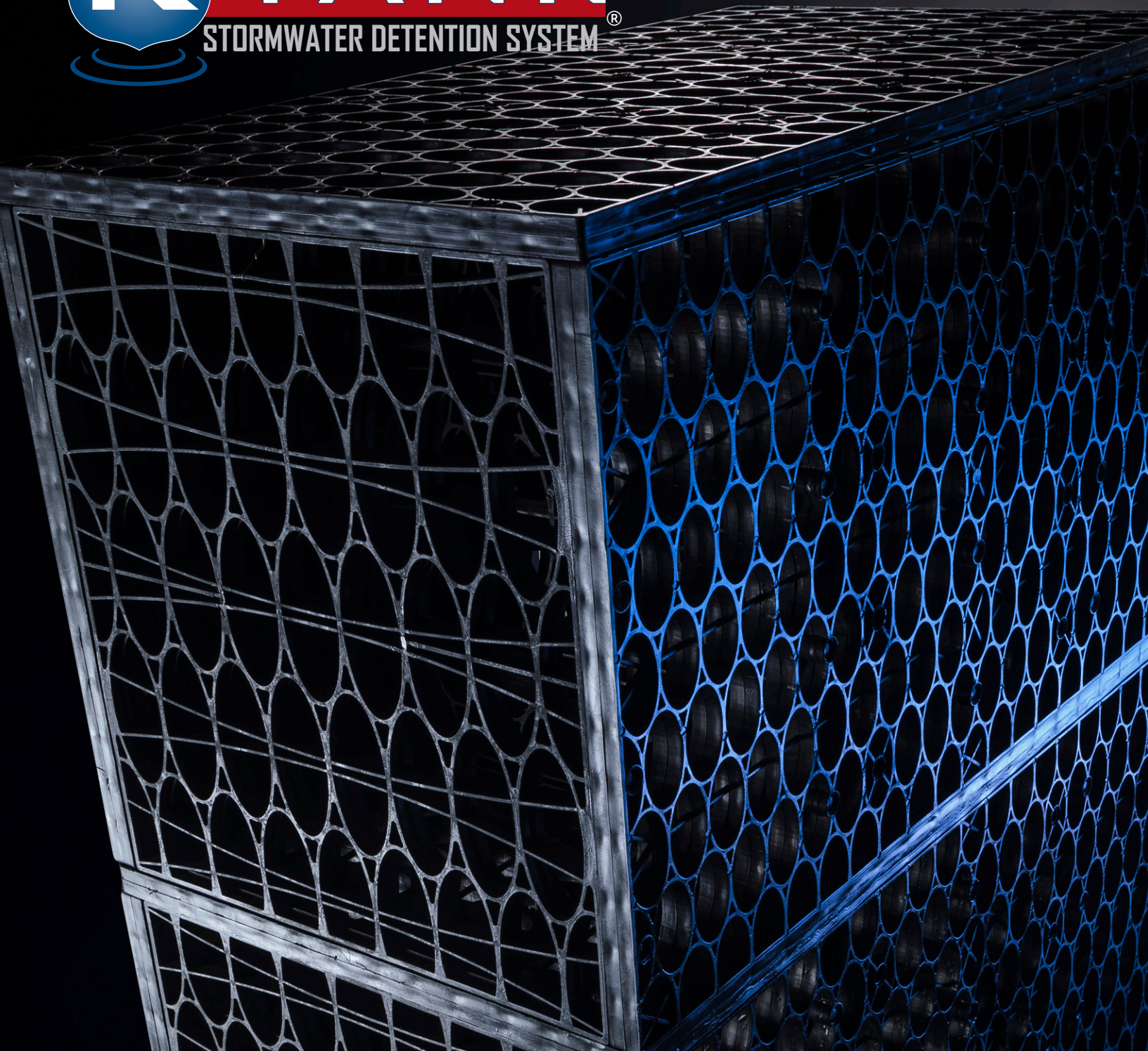
Deep cleaning should combine vacuuming with high pressure jets to loosen and remove accumulated materials.

Deep cleaning should be performed when:

- A) The surface infiltration rates across more than 75% of the surface area fall below 10% of the rate required.
- B) Ponding of water on a surface of 10 sq. ft. remains for a period longer than 24 hours.

Contact Ferguson Waterworks for recommendations on local maintenance companies capable of completing this work.

For more information, ask your local Urban Green Infrastructure or Geo/Stormwater Specialist or visit acfenvironmental.com



LET'S GET IT DONE®





STORMWATER MANAGEMENT

IS YOUR STORMWATER SYSTEM TAKING UP TOO MUCH SPACE?

Reduce the size with the R-Tank System, an efficient and versatile underground stormwater storage system. This system will reduce your underground stormwater storage system footprint to resolve a utility conflict or free up space for a future expansion.

It will also provide additional options for vehicular loading and cover depths, and deliver greater installation versatility.

DOES YOUR PROJECT REQUIRE A UNIQUE SOLUTION DUE TO DEPTH OR TRAFFIC LOADS?

With five different module configurations, R-Tank provides system height options from 2" to over 7' deep. It also delivers support for HS-20 and HS-25 traffic, with cover depths from 6" to over 16'.

With an unlimited array of system footprints and configurations, R-Tank solves tough stormwater problems by adapting to the needs of your site - whether you're designing a project at the beach with minimal depth over a water table or a deep system in the hills.



BENEFITS

HIGH CAPACITY

- 95% void internal area

STRENGTH

- Easily supports traffic loading from parking lots and roads
- Module options for HS-20 and HS-25 rating with cover depths from 6 inches to 16 feet

DESIGN & CONSTRUCTION VERSATILITY

- Modules can be combined into various shapes efficiently and effectively use space
- Varied height from 2 inches to 7 feet

INCREASED INFILTRATION AND EXFILTRATION

- Outer shell is 90% open
- Increases groundwater recharge, reducing post-construction discharge volumes

EASY TO TRANSPORT

- Can be supplied unassembled for reduced delivery costs

LIGHTWEIGHT AND QUICK TO INSTALL

- Installed by hand; no cranes required
- Reduces site access delays

RECYCLED CONTENT

- Manufactured with recycled polypropylene



- Light Duty module (30 psi)
- Ideal for applications in green space
- Not rated for vehicular traffic
- 12" Minimum cover, 36" maximum cover
- Four internal plates



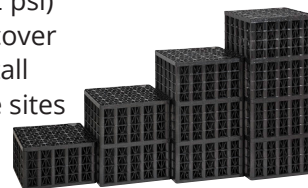
- Heavy Duty module (33.4 psi)
- Standard module for HS-20 traffic applications
- 20" Minimum cover,
- 84" Maximum cover
- Five internal plates



- Super Duty module (42.9 psi)
- Higher safety factors for shallow traffic applications and deeper cover
- 18" Minimum cover,
- 120" Maximum cover
- Five internal plates



- Ultra Duty module (134.2 psi)
- Traffic loads with 12" of cover
- Available from 14" – 66" tall
- Ideal for high water table sites



- Extreme Duty module (240.2 psi)
- Traffic loads with 6" cover
- 16.5' maximum cover
- Available from 2" - 10' tall
- 90% void



DESIGN CONSIDERATIONS

Many factors will influence the design of the R-Tank® system. While this list is not intended to be all-inclusive, the following design considerations are worth highlighting:

1. PRE-TREATMENT

Removing pollutants from runoff before they enter an underground detention system is the smart way to design & build a system. Trash Guard Plus® (see page 6) is a great tool for this. Be sure the system you select will remove, heavy sediments, gross pollutants (trash) and biodegradable debris.

2. BACKFILL MATERIALS

Backfill materials should be stone (<1.5" in diameter) or soil (GW, GP, SW or SP per the Unified Soil Classification System). Material must be free from lumps, debris and sharp objects that could cut the geotextile. See the R-Tank® narrative specification section 2.03 for additional information.

3. RUNOFF REDUCTION

Most designs incorporate an outlet to drain the system at a controlled rate and/or an overflow to prevent flooding in extreme events. Any infiltration that can be achieved on the site should also be taken advantage of. Consider raising the invert of your outlet or creating a sump to capture and infiltrate the water quality volume whenever possible.

4. WATER TABLE

While installing R-Tank® below the water table is manageable, a stable base must be created to account for the system's ability to drain water out or limit its ability to enter the system. If a liner is used to prevent ground water from entering, measures must be taken to prevent the system from floating.

5. CONSTRUCTION LOADS

Construction loads are often the heaviest loads the system will experience. Care must be taken during backfilling and compaction (see specification section 3.05), and post-installation construction traffic should be routed around the system (Install Guide step 12).

6. LATERAL LOADS

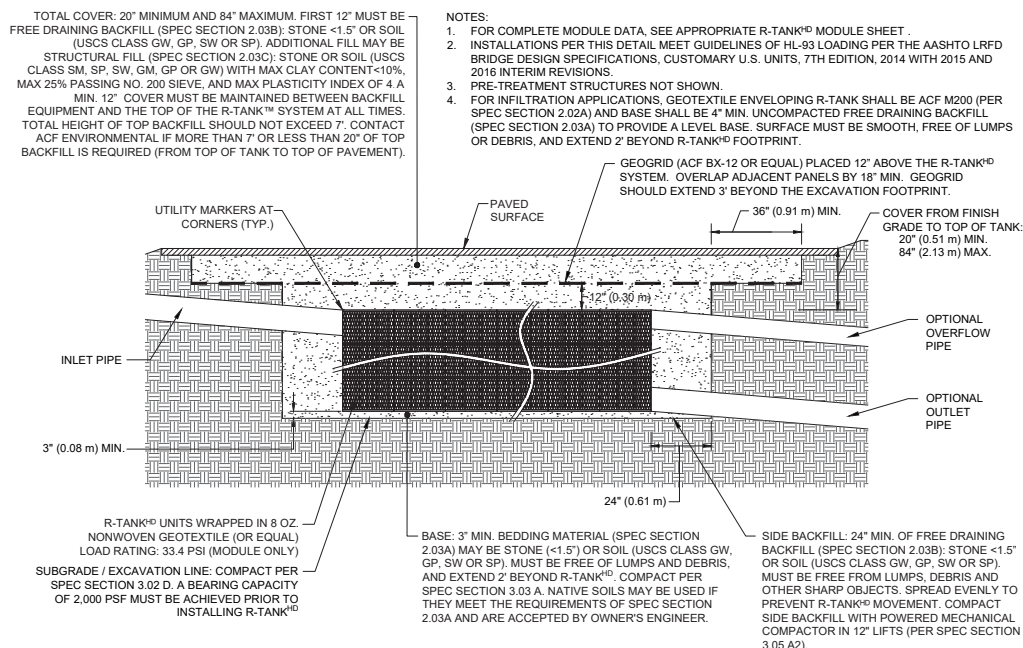
As systems get deeper, the loads acting on the sides of the tank increase. While vertical loads often control the design, lateral loads should also be considered.

7. R-TANK MODULES

Selecting the right module for your application is critical. See page 3 and the specs on the back of this brochure, for details. Our team is also here to help!

8. LOAD MODELING

A safety factor of >1.75 is required when designing an R-Tank System using the AASHTO LRFD Bridge Design Specifications. It is also necessary to run your own loading model with specific site requirements. Example models can be found in our Tech Note on loading capabilities, and minimum cover requirements can be found in the specs on the back of this brochure.



LOW IMPACT DESIGN & GREEN INFRASTRUCTURE

As much of the nation's Gray Infrastructure continues to decay, new concepts for rebuilding it are emerging through Green Infrastructure (GI) and Low Impact Development (LID). This type of reconstruction moves beyond traditional systems that do one thing well, to systems that accomplish multiple objectives simultaneously.

ACF Environmental has several technologies that dovetail with the goals of LID and GI and can play a significant role in the redevelopment process.



R-TANK®

Pipe and stone are used in traditional systems to move and store runoff. R-Tank accomplishes the same purpose with several additional benefits.

- Stores and moves runoff
- Moves water slowly, increasing time of concentration
- Open system encourages infiltration
- Fully accessible for maintenance
- Stores 138% more water than stone
- Maximizes storage potential of GI practices
- Easily handles traffic loads
- Ships flat to reduce site disturbance



PERMEABLE PAVEMENTS

Traditional pavements move vehicles efficiently, but are easily damaged by stormwater. ACF Environmental specializes in permeable pavements that handle traffic loads, while providing surface infiltration rates 10x higher than traditional pervious pavements, helping reduce the expense of long-term maintenance.

- Handles all vehicular loads
- Drains ten times faster than competing pervious pavements
- Reduces long-term maintenance costs
- Encourages infiltration
- Pair with R-Tank® to maximize water storage and transport

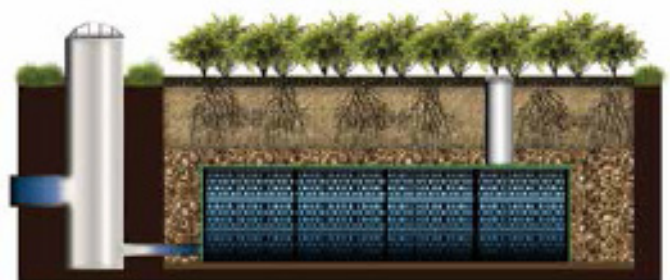


FOCALPOINT

Traditional landscaping adds aesthetic value to projects, but has more potential. Many developers turn to bioretention, but are forced to surrender massive land areas and dedicate significant future funds to maintenance. FocalPoint reduces the space requirements and maintenance costs of bioretention by up to 90% while providing similar pollutant removal.

- Adds aesthetic value to properties
- Cleans runoff to improve water quality
- Reduces space requirements and maintenance costs of traditional bioretention systems
- Encourages infiltration to reduce volume of water discharged
- Pairs with R-Tank® to maximize water storage and transport

R-Tank maximizes the storage capabilities of bioretention and permeable pavement systems.



MAINTENANCE

DESIGNING AN R-TANK SYSTEM WITH LONGEVITY & MAINTENANCE IN MIND IS A THREE-STEP PROCESS:

1. PREVENT

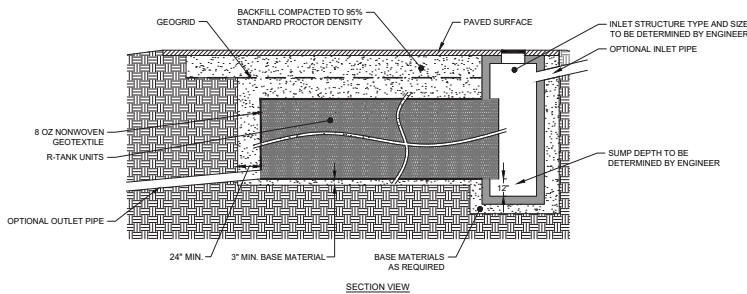
Keep debris and sediment out of the system by pre-treating runoff with the Trash Guard Plus® unit (see below). For a more centralized approach, you could consider having the R-Tank units penetrate the connecting structure, which allows the use of the R-Tank® as its own trash screen. This works best with a structure that includes a sump (see Inlet Connection drawing below).

2. ISOLATE

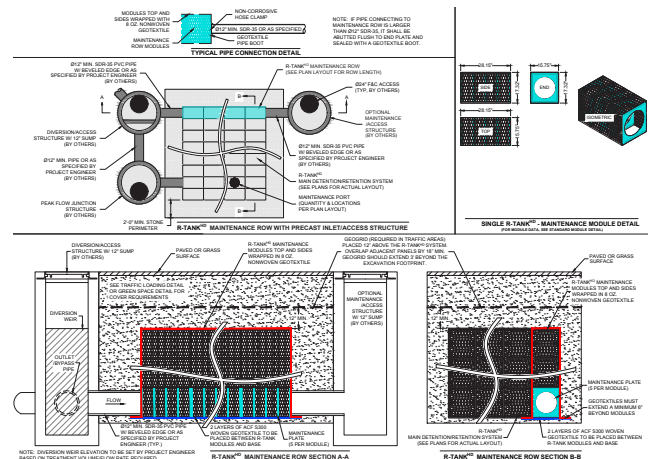
Trap solid pollutants inside the maintenance row (see Maintenance Row drawing below) where they can be easily removed, using the Maintenance Modules (available in LD, HD, and UD only). These modules are wrapped in geotextile to retain solids and are fully accessible by conventional jet-vac systems to remove captured pollutants.

3. PROTECT

Ensure a long system life by including maintenance ports to remove any pollutants that evade the pre-treatment system and maintenance row. Maintenance ports should be specified within 10' of inlet and outlet connections, and roughly 50' on center (see detail on page 7).



INLET CONNECTION



MAINTENANCE ROW

MAINTENANCE PREVENTION

TRASH GUARD PLUS®

Trash Guard Plus® is a patented stormwater pretreatment device that captures debris, sediment and floatables. Easy to install and maintain, it is a fraction of the cost of other pretreatment devices.

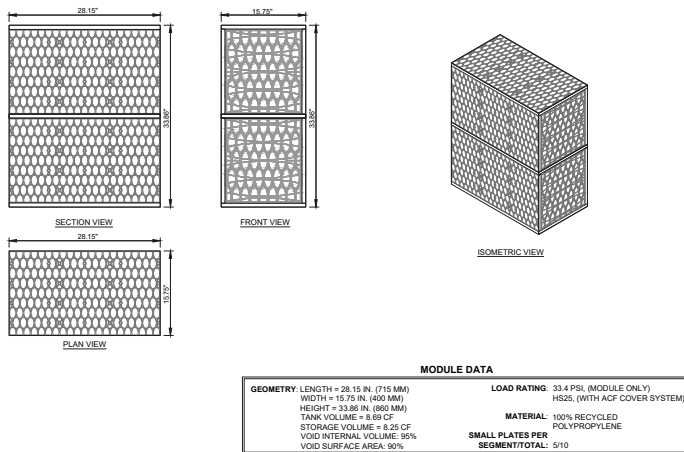
BENEFITS

- Simple retrofit to existing catch basins
- Installs without heavy equipment
- Quick and easy assembly
- Adjusts to irregular catch basin bottoms and/or walls
- Eliminates stormwater trash at public parks, beaches, and waterways
- Removes harmful nutrients and regulated metals

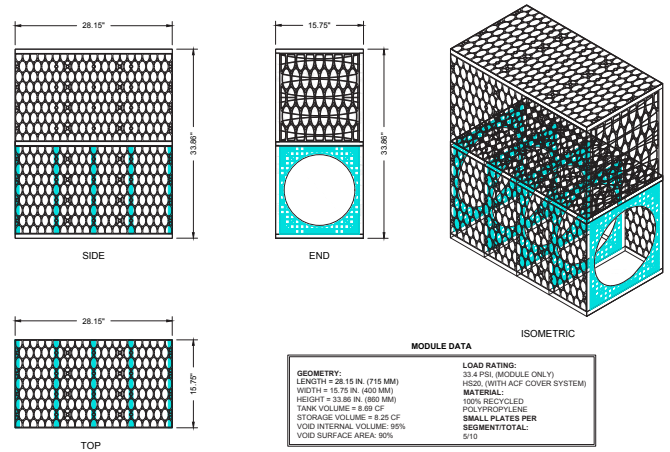


TYPICAL DESIGN

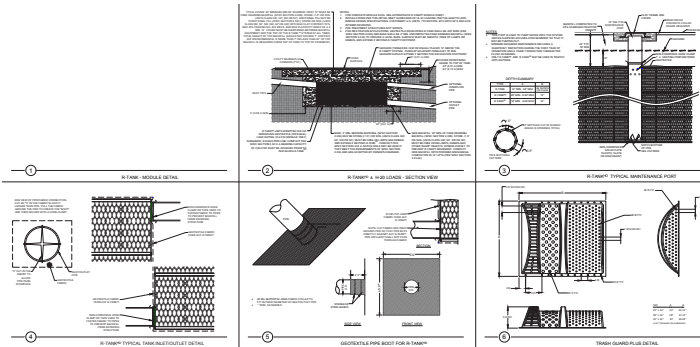
MODULE DRAWING - DOUBLE



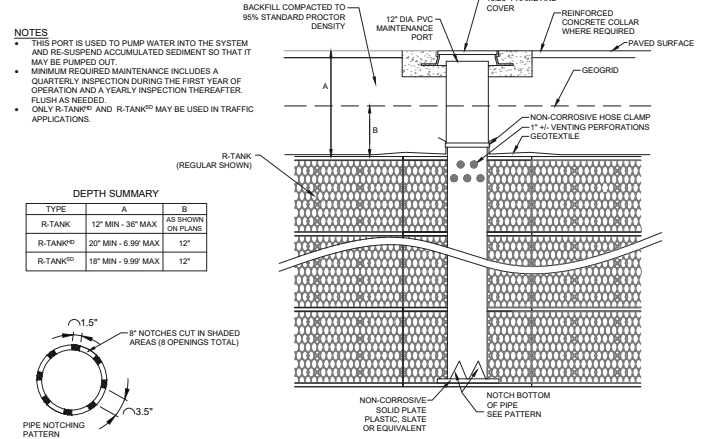
MAINTENANCE MODULE - DOUBLE



COMPOSITE DETAILS



MAINTENANCE PORT



SELECTING THE RIGHT R-TANK MODULE

Cover Depth (inches)*

LD

HD

SD

UD

XD

Cover Depth (inches)*	LD	HD	SD	UD	XD
Min. 6"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20
12"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20**	HS-20
14"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20
18"	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20	HS-20
20"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
24"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
36"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
48"		HS-20	HS-20	HS-20	HS-20
60"		HS-20	HS-20	HS-20	HS-20
72"		HS-20	HS-20		HS-20
84"			HS-20		HS-20
120"			HS-20		HS-20
160"					HS-20
Max. 200"					HS-20

HS-20 designation based on AASHTO LRFD Bridge Design Spec for single lane traffic. HS-25 loading is available. Call ACF for details.

*Cover depth is measured from top of module to finished grade or top of pavement

**The UD module requires STONE backfill (not soil) on sides at this depth

R-TANK SPECIFICATIONS



DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight* (lbs)
Mini	15.75	28.15	9.45"/0.79'	2.42	2.30	10.1/10.9
Single(1)	15.75	28.15	17.32"/1.44'	4.44	4.22	15.7/17.3
Single + Mini(1.5)	15.75	28.15	25.98"/2.17'	6.67	6.33	23.6/25.9
Double (2)	15.75	28.15	33.86"/2.82'	8.69	8.25	29.1/32.3
Double + Mini(2.5)	15.75	28.15	42.52"/3.54'	10.91	10.36	37.0/41.0
Triple (3)	15.75	28.15	50.39"/4.20'	12.93	12.28	42.5/47.4
Triple + Mini(3.5)	15.75	28.15	59.06"/4.92'	15.15	14.39	50.4/56.0
Quad(4)	15.75	28.15	66.93"/5.58'	17.17	16.31	55.9/62.4
Quad + Mini(4.5)	15.75	28.15	75.59"/6.30'	19.39	18.42	63.8/71.0
Pent(5)	15.75	28.15	83.46"/6.96'	21.41	20.34	69.3/77.4

*Weights shown are for LD/HD modules.



DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	15.75	28.15	9.45"/0.79'	2.42	2.30	10.95
Double (2)	15.75	28.15	18.12"/1.51'	4.64	4.41	19.58
Triple (3)	15.75	28.15	26.79"/2.23'	6.86	6.52	28.21
Quad (4)	15.75	28.15	35.46"/2.96'	9.08	8.63	36.84
Pent (5)	15.75	28.15	44.13"/3.68'	11.30	10.74	45.47
Hex (6)	15.75	28.15	52.80"/4.40'	13.52	12.84	54.10
Septa (7)	15.75	28.15	61.47"/5.12'	15.74	14.95	62.73
Octo (8)	15.75	28.15	70.14"/5.85'	17.96	17.06	71.36
Nono (9)	15.75	28.15	78.81"/6.57'	20.18	19.17	79.99
Decka (10)	15.75	28.15	87.48"/7.29'	22.40	21.28	88.62



DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	23.62	23.62	14.17"/1.18'	4.57	4.35	21.2
Double (2)	23.62	23.62	27.17"/2.26'	8.77	8.33	39.0
Triple (3)	23.62	23.62	40.16"/3.35'	12.97	12.32	56.8
Quad (4)	23.62	23.62	53.15"/4.43'	17.16	16.30	74.6
Pent (5)	23.62	23.62	66.14"/5.5'	21.35	20.29	92.4



DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (inch)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	19.68	23.62	1.97	0.53	0.48	4
Double (2)	19.68	23.62	3.94	1.06	0.95	8
Triple (3)	19.68	23.62	5.91	1.59	1.43	12
Quad (4)	19.68	23.62	7.87	2.12	1.91	16
Pent (5)	19.68	23.62	9.84	2.65	2.38	20

Note: XD modules may be stacked up to 10' tall (60 layers).

SPECIFICATIONS

Item	Description	Value	Value	Value	Value	Value
Void Area	Volume available for water storage	95%	95%	95%	95%	90%
Surface Area Void	% of exterior available for infiltration	90%	90%	90%	90%	90%
Compressive Strength	ASTM D 2412/ ASTM F 2318	30.0 psi	33.4 psi	42.9 psi	134.2 psi	240.2 psi
Unit Weight	Weight of plastic per cubic foot of tank	3.29 lbs/cf	3.62 lbs/cf	3.96 lbs/cf	4.33 lbs/cf	7.55 lbs/cf
Rib Thickness	Thickness of load-bearing members	0.18"	0.18"	0.18"	-	-
Service Temperature	Safe temperature range for use	-14 - 167° F	-14 - 167° F	-14 - 167° F	-14 - 167° F	-14 - 167° F
Recycled Content	Use of recycled polypropylene	100%	100%	100%	100%	100%
Minimum Cover	Cover required for HS-20 loading	Not traffic rated	20"	18"	12" - 14"	6"
	Cover required for HS-25 loading	Not traffic rated	24"	18"	15" - 17"	6"
Maximum Cover	Maximum allowable cover depth	36"	6.99'	9.99'	5.0'	16.7'

SPECIFICATIONS

MODEL TYPE

MATERIAL PROPERTY	TURRET	FOXHOLE
Weight of steel reinforced, cold joint secured monolithic concrete structure	1,030 lbs	2,570 lbs total (inlet, middle, outlet)
Concrete minimum compressive strength	4,000 psi at 28 days	4,000 psi at 28 days
Concrete air entrained	4-8% by volume	4-8% by volume
Manufacturing & design standard	ASTM C858	ASTM C858
Standard exterior dimensions	46" x 50" base, 19.5" total height	2' - 11" x 1' - 7" x varies based on sidewalk width

PROPERTY OF RECYCLED PLASTIC LUMBER	BUNKER
Plastic lumber shall be manufactured with recycled HDPE, post-industrial and post-consumer	95%+
Flexural Strength	ASTM D6109, 1,350 psi
Flexural modulus secant @ 1% strain	ASTM D6109, 79,000 psi
Thermal expansion	ASTM D6341, 0.000058 in/in/°F
Lb/ft of recycled plastic lumber	1.5 lbs
Dry filter box total weight	54 lbs
Standard exterior dimensions of dry filter box	(51.25" L) x (20" W) x (16" H)

MEASUREMENT	TURRET	FOXHOLE	BUNKER
Typical drop from edge of pavement grade to outlet into bioretention	10.5"	7.5"	7.5" and 10.5" options



RAIN GUARDIAN

PRETREATMENT FOR BIORETENTION SYSTEMS





EXTEND THE LIFE OF YOUR BIORETENTION/RAIN GARDEN/VEGETATED BMP SYSTEM BY KEEPING TRASH, LEAVES AND OTHER DEBRIS OUT

Rain Guardians provide effective pretreatment for stormwater/bioretention/rain garden/vegetated BMP systems and are available in various configurations to meet both commercial and residential needs. The grate, filter and chamber combination captures leaves, trash and other debris with overflow points preventing inlet debris from causing bypass before the bioretention system reaches capacity. These pretreatment devices are often used in urban curbline applications that lack the space for typical sediment forebays.

Maintenance is simple with Rain Guardian pretreatment devices, as sediment and debris can be easily removed from the chamber with a shovel and the drop-in filter can be cleaned with a broom or hose.



BENEFITS

- Maximizes capacity and extends the life of bioretention systems
- Installation (placement and securing) takes minutes
- Works well with new construction, retrofits and tight urban spaces
- Maintenance is simple and only requires a shovel and broom or hose
- Helps eliminate bypass and sediment build-up, protecting surrounding vegetation
- Simplifies visual inspections of accumulated sediment depth

MODELS AVAILABLE

All functional elements apply to all chambers



Applications:
Commercial - no sidewalk

RAIN GUARDIAN TURRET

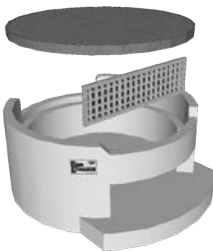
Top grate: Captures leaf litter and coarse debris

Chamber base combination: Serves as settling chamber for heavier particles

Filter wall: Allows chamber to dry between rain events

Debris walls: Restrict floatable debris from entering or exiting garden

Configurations: Available in 90, 135 and 180 degree turn configurations



Applications:
Commercial - with sidewalk

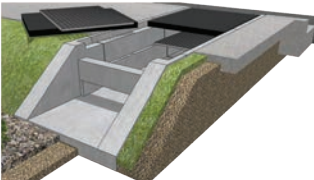
RAIN GUARDIAN FOXHOLE

High-strength composite lid:

- Easily supports pedestrian and bike passage (unit rated for concentrated loads of up to 11,200 lbs)
- Lightweight design - 38 lbs/lid
- Easily maintained

Modular design:

- Suitable for any length inlet - 3' increments
- Units are easily connected
- Adaptable to sidewalk widths



Applications: Residential

RAIN GUARDIAN BUNKER

Metal grate:

- Captures leaf litter and coarse debris
- Lightweight design
- Easily maintained

Anodized aluminum filter:
Corrosion resistant

Pre-assembled recycled plastic chamber:
Ultra-resistant to rotting



STORMCRETE®

PRECAST POROUS CONCRETE STORMWATER SYSTEM



Porous concrete slabs are manufactured and cured in a controlled environment, allowing for reproducible strength and flow characteristics. Because they arrive on site fully cured, just place them and park/drive/walk on them immediately! The permanent lifting points set into the surface of the slabs make them removable and reusable, providing an extra factor of safety when routine maintenance isn't enough.

BENEFITS

- Modular, removable, reusable
- Precast in controlled conditions
- Delivered cured and ready to use
- Easy to install - reduced labor
- Install year-round in any type of weather
- Provides runoff reduction within the right-of-way

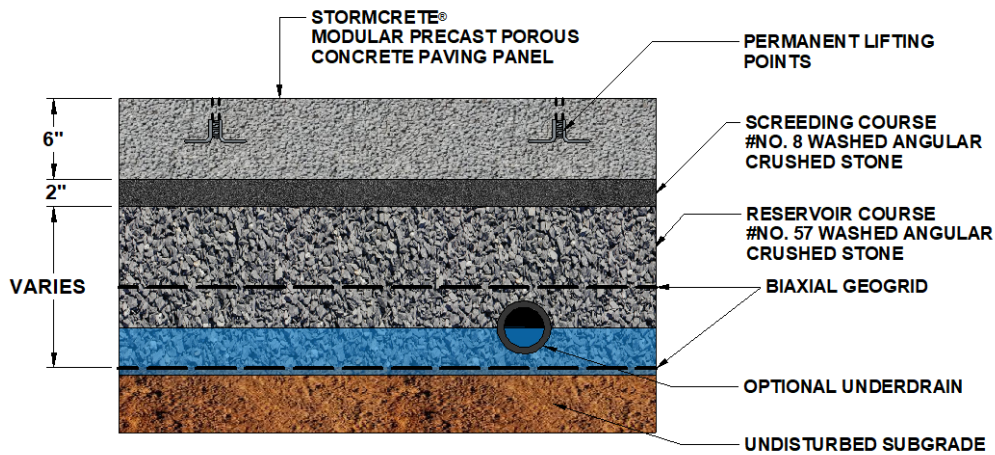


STORMCRETE GUTTER APPLICATION

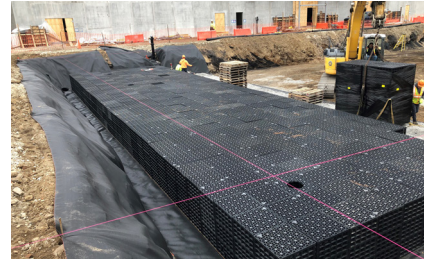
Have questions? Contact your local Ferguson Stormwater/Geo Specialist or Urban Green Infrastructure BMP Specialist for assistance with your next design.

STORMCRETE® PANEL TYPICAL CROSS SECTION

Available in standard and enhanced configurations



ENHANCE THE RESERVOIR COURSE WITH R-TANK



High void space, less excavation and less stone—perfect for shallow vertical profile systems

R-Tank XD – min. cover 6 inches
R-Tank UD – min. cover 12 inches

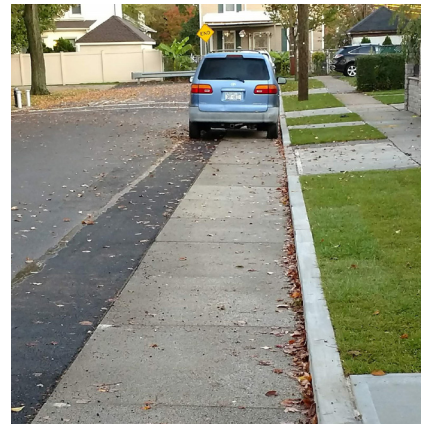
APPLICATIONS



SIDEWALKS



PARKING LOTS



GUTTERS



GREEN ALLEYS



PEDESTRIAN PLAZAS



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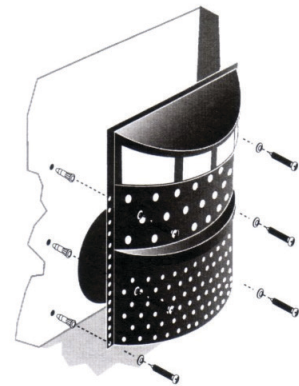
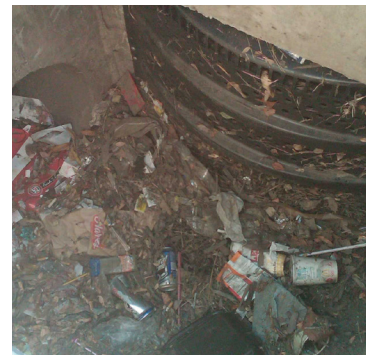
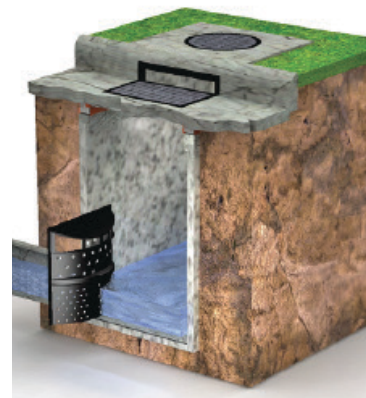
TRASH GUARD PLUS® STORMWATER PRETREATMENT DEVICE

PATENTED STORMWATER
PRETREATMENT FOR CAPTURING DEBRIS,
SEDIMENT AND FLOATABLES

The Trash Guard Plus® is available in three screen sizes for in-place or newly formed catch basins that utilize discharge pipes of 24 inches or less in diameter. Each screen can be adjusted at installation to accommodate low-flow stormwater events of 10 cfs or more.

ADVANTAGES:

- Simple retrofits to existing catch basins
- Installs without heavy equipment
- Quick and easy assembly
- Adjusts to irregular catch basin bottoms and/or walls
- Eliminates eyesore stormwater trash at public parks, beaches and waterways
- Removes harmful nutrients and regulated metals



For more information about inlet protection,
contact your local Geo and Stormwater specialist.

Call **800-448-3636** or visit **acfenvironmental.com** to get started.

TRASH GUARD PLUS® STORMWATER PRETREATMENT DEVICE

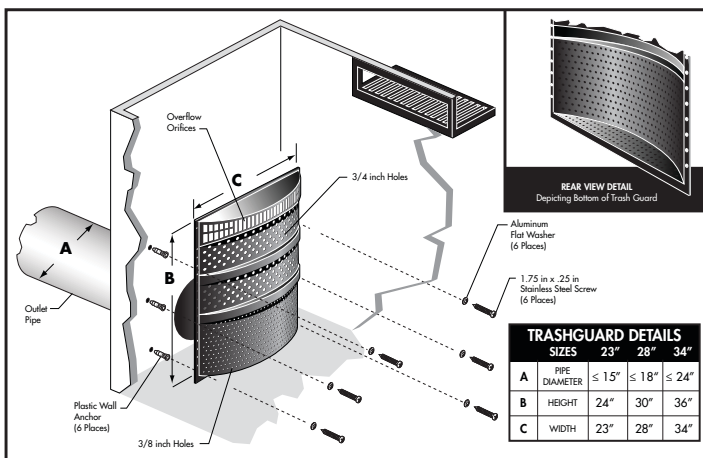
INSTALLATION REQUIREMENTS

The Trash Guard Plus® can be installed in a variety of catch basin configurations (or field conditions). In general, the Trash Guard Plus is mounted on the catch basin wall, centered over the outlet pipe.

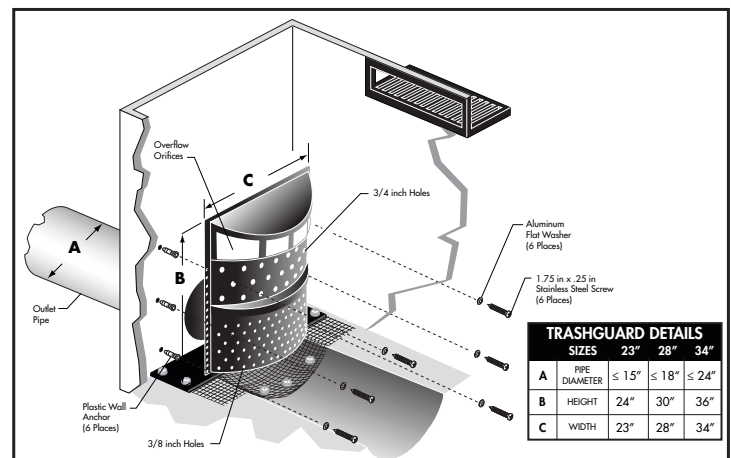
Before installing Trash Guard Plus, a hydraulic calculation should be performed to determine the maximum flow rate based on the depth of the catch basin and the size of Trash Guard Plus used. This calculated model will determine the maximum flow rate with no obstructions or varying amounts of trash build-up and determine the drainage area required to support the calculated flow rate. Allowable trash build-up and drainage area required for trash build-up will determine maintenance frequency.

If catch basin conditions allow an increased flow rate and additional vertical capacity is desired, a model can be calculated to determine flow rate when extending Trash Guard Plus from 1-7 inches from the catch basin wall. As above, this calculated model will determine the maximum flow rate with no obstructions or varying amounts of trash build-up.

FLAT-BOTTOM CATCH BASIN



ROUNDED-BOTTOM CATCH BASIN



Several other installation options are available.

WARNING: Improper installation of the Trash Guard Plus or failure to keep the area around the Trash Guard Plus free from sediment, debris and litter after installation may result in clogging of the stormwater drainage system and increase the risk of flooding during times of heavy rainfall. It is important to clear sediment, debris and litter from around the Trash Guard Plus at least four (4) times a year and more frequently in areas with large amounts of vegetation or litter. Please contact your local Trash Guard Plus distributor with any questions regarding installation or regular maintenance requirements.

For more information about inlet protection,
contact your local Geo and Stormwater specialist.

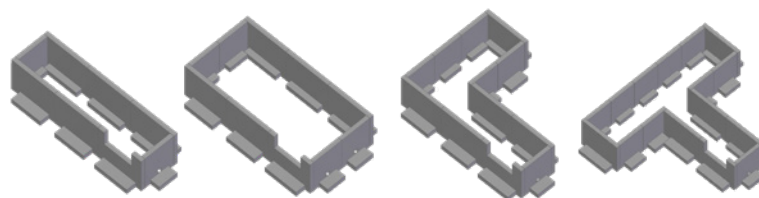
Call **800-448-3636** or visit **acfenvironmental.com** to get started.





THE URBAN RAINGARDEN™

Developed by Porous Technologies, distributed by
Ferguson Waterworks



The Urban RainGarden™ is the complete green infrastructure solution for managing stormwater runoff in space-limited urban settings. The fully customizable, precast concrete biofiltration system is designed to capture, reduce, and treat stormwater runoff; improve water quality; and enhance streetscapes.

ADAPTABLE FOR ANY SPACE

Built from a system of interconnected precast concrete T-walls, the Urban RainGarden™ can be sized and configured to address the demands of any residential, commercial or municipal application and installs to your exact specifications without the use of a crane.

A SIMPLER SOLUTION

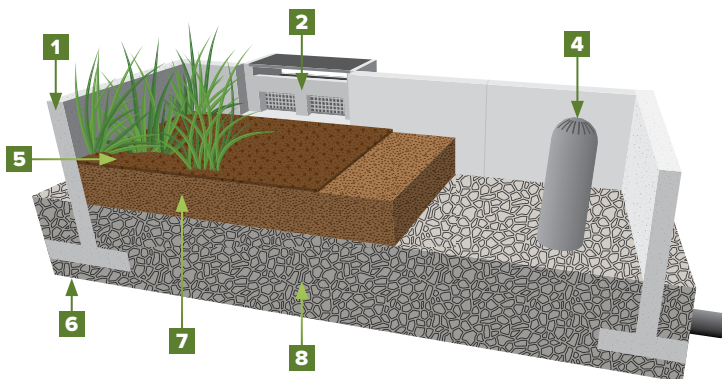
While many curbside urban vegetated surface treatment systems rely on deep-curb perimeters or cast-in-place concrete walls, the Urban RainGarden™ provides simplicity in both design and efficiencies for the contractor by eliminating these methods.

Have questions? Contact your local Ferguson Stormwater/Geo Specialist or Urban Green Infrastructure BMP Specialist for assistance with your next design.

THE URBAN RAINGARDEN™

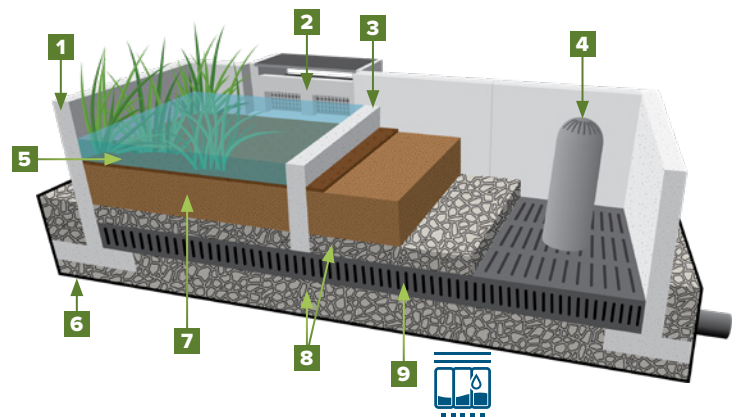
Available in standard and enhanced configurations

STANDARD SYSTEM



- 1. Precast Concrete T-walls:** Modular interconnecting T-walls with inlet (shown) and/or outlet openings
- 2. Inlet Options:** The Rain Guardian™ pretreatment device (shown); rip-rap filter strip
- 3. The Garden Baffle™:** Vertical precast porous concrete baffle wall (shown). Option to create an inlet forebay or assist with curbline systems along steep streets to help as terraced baffle walls.
- 4. Outlet/Bypass/Overflow Options:** PVC riser with domed cover with underdrain/outlet pipe (shown); outlet curb cut; in-curb bypass. Option to include filter bag in overflow riser.
- 5. Landscaping Options:** Locally sourced native plants, shrubs or small trees; hardwood fibrous mulch

ENHANCED SYSTEM



- 6. Infiltration/Retention Options:** Open bottom retention system w/beehive grate internal bypass (shown); open bottom infiltration system without bypass; closed bottom detention system, including 30 ml PVC liner, beehive grate, and underdrain
- 7. Soil Media:** Locally sourced or certified bioretention soil media; customized high-flow-rate media for enhanced approach
- 8. Reservoir Stone:** Locally sourced AASHTO #57 stone—40% void
- 9. Enhanced Storage (optional):** R-Tank modular stormwater system by Ferguson Enterprises

	STANDARD SYSTEM FEATURES	ENHANCED SYSTEM FEATURES
T-wall precast structure	✓	✓
Rain Guardian® pretreatment filter	*	✓
Garden Baffle™		✓
Internal domed overflow riser**	*	✓
R-Tank modular stormwater system		✓
Innovative high-flow media***		
30 ml PVC liner		✓

*recommended for most applications based on experience with maintenance needs and longevity of curbline vegetated BMPs

**recommend installing permanent filter bag in domed overflow

***media type, flowrate and sizing vary based on state regulatory approvals

Ready for a quote? Contact your local Ferguson Stormwater/Geo Specialist or Urban Green Infrastructure BMP Specialist for assistance with your next design.