Oldcastle Infrastructure™
A CRH COMPANY

STORM WATER

GREEN
Infrastructure

STATE OF WASHINGTON • EQUIVALENCY APPROVAL •

U.S. Patent No. 9,540,799

BIORETENTION / BIOFILTRATION

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BioMod® Modular Bioretention System

As the stormwater industry has continued to evolve, treatment systems have moved toward more natural soil- and vegetation-based designs. Though these systems have shown promising water treatment results, consistent pollutant removal, hydraulic efficiency and structural characteristics can vary depending on the consistency of the system design and construction techniques.

Oldcastle Infrastructure, an early innovator in the stormwater management industry, now combines the effectiveness of natural soil/vegetation treatment with hydraulically efficient, long-lasting and economical system designs. BioMod is a modular precast concrete biofiltration cell system that has been developed to add consistency to design, with features to enhance filter performance, structural integrity and reduced construction and routine maintenance costs.

Designed for use with local agency bioretention cell designs, the BioMod is compatible for use with all types of filter soils, including non-proprietary low-flow (5-10 in/hr) or high-flow soils (up to 100 in/hr). Contact Oldcastle Infrastructure engineers for design assistance. Software used includes Autodesk Inventor® and AutoCad®, as well as SolidWorks®.

The BioMod modular bioretention system has received equivalency approval from the Washington State Department of Ecology as a stormwater bioretention planter or planter box. By granting the BioMod "functional equivalency", Ecology has formally recognized that Oldcastle's precast bioretention system does not need to go through the Technology Assessment Protocol – Ecology (TAPE) program for approval, and may be designed using the same standards and criteria as any non-proprietary bioretention planter or planter box. Designers can work directly with Oldcastle to include the BioMod system on project plans to meet Ecology's or any other agency's requirements for bioretention in a complete and pre-assembled precast system.

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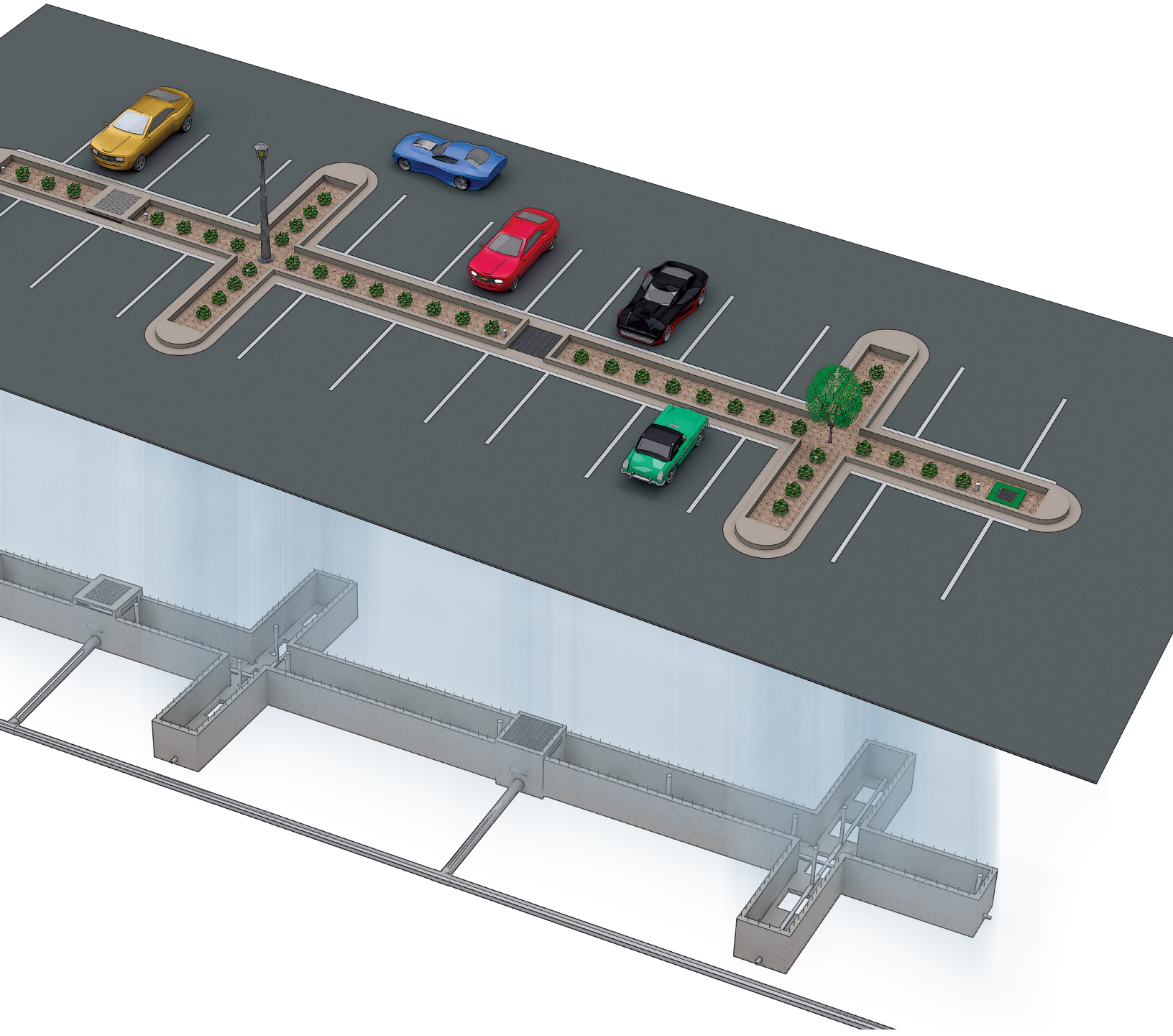

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BioMod® Filter Cell Modules

Available in a wide range of standard and custom sizes, BioMod filter cell modules are configured to meet your project-specific flow and layout requirements, ensuring consistent dimensional tolerances and structural integrity of the installed system. Supplied as a complete system, with all necessary piping and fittings, filter cell modules may be specified with open or closed bottoms to accommodate infiltration or enclosed systems.

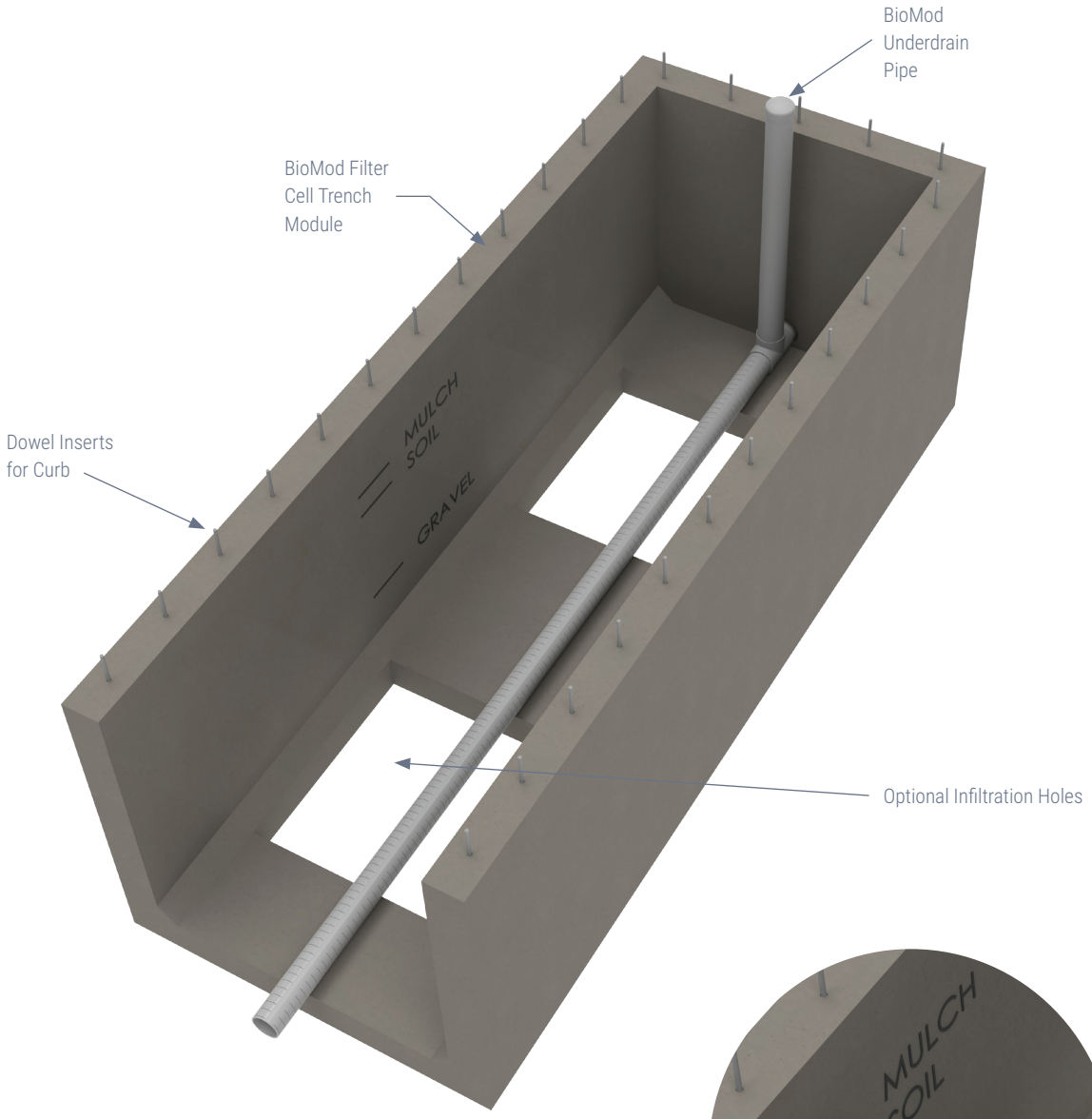
BioMod filter cell modules are designed for use with non-proprietary low-flow (5-10 in/hr) or high-flow soils (up to 100 in/hr). To address hydro-modification requirements, BioMod filter cells may be specified with integral water storage capacities, or used in conjunction with industry-standard retention or detention systems.

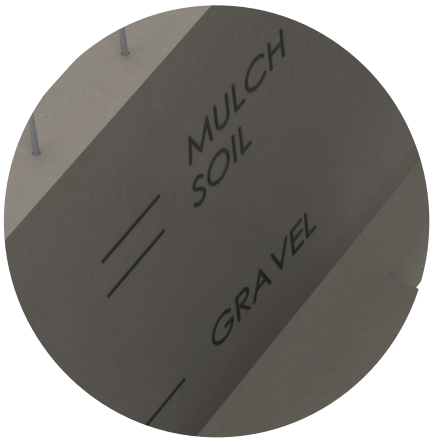
SIZING CHART			
Filter Module		**Storage Volume**	
Width (ID[1]) (ft/in)	12" Ponding Storage (cf/lineal ft)[3]	Soil/Rock Storage (cf/lineal ft)[3]	Total Storage (cf/lineal ft)[3]
3/36	3	3	6
4/48	4	4	8
5/60	5	5	10
6/72	6	6	12
7/84	7	7	14
8/96	8	8	16

[1] Filter cell modules are available in a wide range of widths and depths. Custom sizes are available.

[2] Design flow rates are listed as filtered flow rates per lineal foot of filter cell.

[3] Storage volume based on a 12-inch ponding layer, 18-inch growing medium, and a 12-inch gravel underdrain/storage layer (40% soil/gravel porosity). Other configurations available to maximize treatment and hydro-modification capture volumes to meet local agency requirements.





BioMod filter cell modules make filling simple with integrated fill level marks for gravel, soil and mulch. There is no guesswork or time spent measuring onsite.

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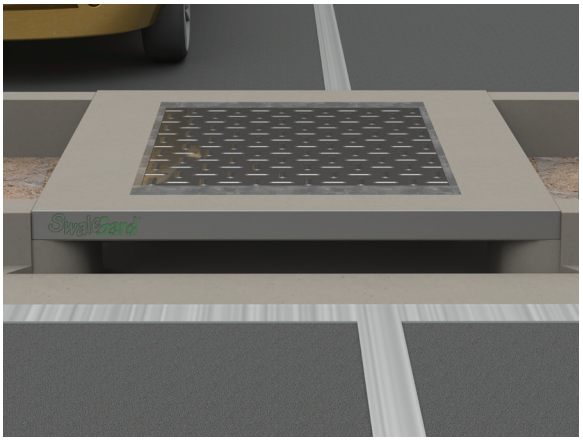
BioMod®

Enhance bioretention cell performance, increase service life and address peak flows by incorporating the BioMod pre-filter modules into your system.

BioMod pre-filter modules remove and retain gross pollutants that inhibit performance of soil-based filter systems. Pollutants such as trash, debris and coarse sediment are retained within the pre-filter chamber for easy removal by hand or with conventional vacuum equipment. BioMod pre-filter modules meet trash TMDL requirements. The BioMod pre-filter module also incorporates a unique internal high-flow bypass chamber that keeps peak flows from coming into contact with the soil surface area, eliminating scour associated with higher flows.

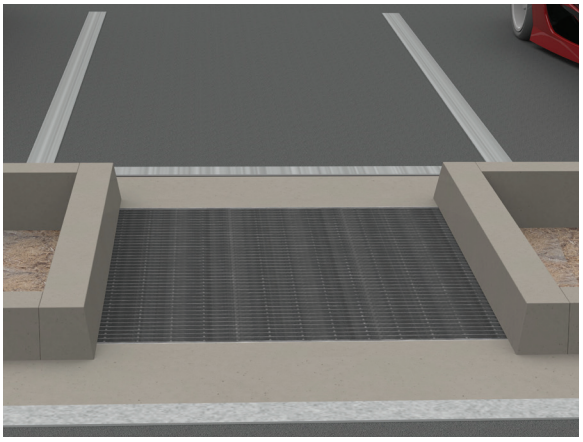
Used as a stand-alone component with built-in-place bioretention cell systems or in conjunction with other BioMod modules, the pre-filter module is incorporated into industry-standard storm drain piping systems, simplifying design and construction while eliminating the potential for localized flooding.

- Pre-filter module enhances bioretention cell performance
- Internal peak flow bypass eliminates scour or separate inlet basin
- Superior structural integrity
- Simplifies maintenance operations
- Meets trash TMDL (100% trash capture)



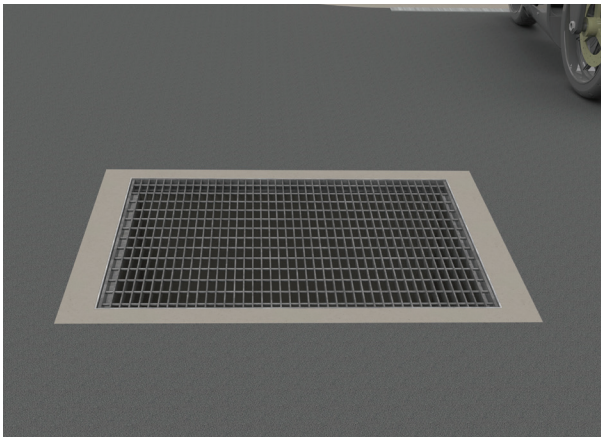
CURB INLET PRE-FILTER MODULE

BioMod curb inlet pre-filter module captures trash and debris before directing treatment flows to the bioretention cell surface, and incorporates an internal high-flow bypass that directs peak flows to adjacent storm drain piping, enhancing filter performance and eliminating surface scour. Dual-opening curb inlet pre-filter modules are available for island applications.



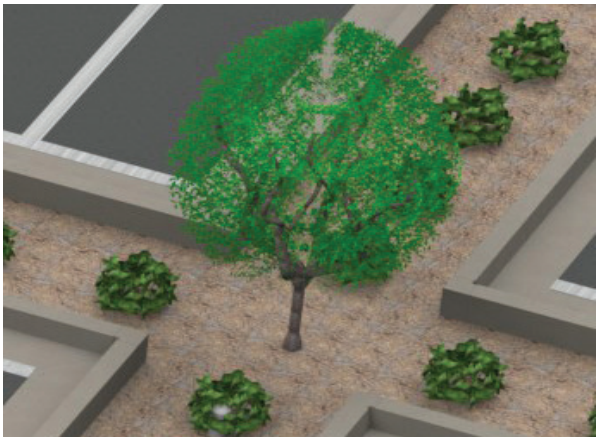
GRATED PRE-FILTER MODULE

BioMod grated pre-filter module provides the same features and benefits as the BioMod grated pre-filter module but also allows for pedestrian access over the BioMod system with ADA-compliant features for easy and safe access.



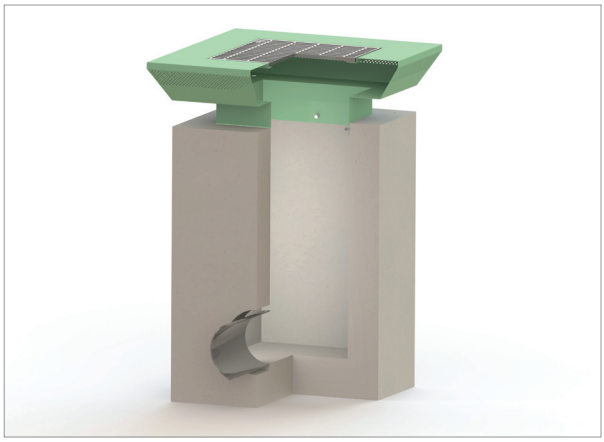
TRASH MODULE

Trash, debris and other pollutants are collected and retained within the BioMod trash module, without impeding peak flows. Ideal for use as a bioretention cell overflow drain or stand-alone surface drain.



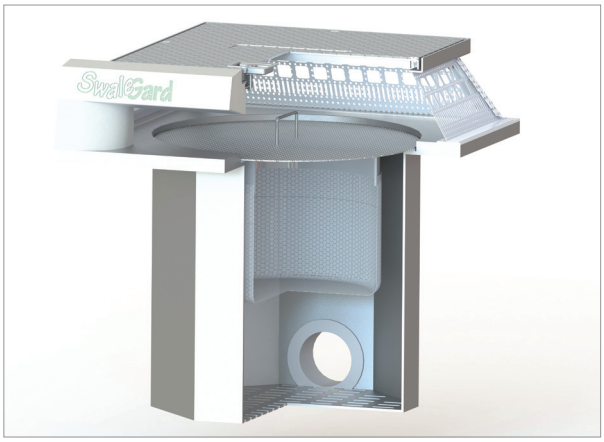
TREE MODULE

Trees are easily incorporated into the system with the use of the BioMod tree module.



SWALEGARD® OVERFLOW FILTER

A simple, effective, field-adjustable screening device for swale and bioretention system overflow drains that allows excess flows to bypass the system while retaining gross pollutants as well as mulch and soil that may scour during peak flows.



SWALEGARD® PRE-FILTER

Improves treatment performance and service life of all vegetated treatment systems. The device provides pre-treatment to prevent sediment, trash and petroleum hydrocarbons from entering swales or downstream receiving waters.

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Water