filterra
Bioretention Systems

Filterra® Stormwater Bioretention Street/Shade Tree System

Features and Benefits

Aesthetics. Combine street aesthetics and canopy with effective stormwater treatment.

Versatility. Use for new construction or as an urban retrofit device for existing streetscapes and parking lots.

Green. Tree canopies produce shade, reduce thermal impacts, uptake pollutants and may reduce energy consumption, which can help toward LEED credits.

Maintenance Support. Includes a one year maintenance agreement FREE with the purchase of every unit.

Selection. Available in various configurations to meet both standard and unique site conditions.

Design. Underground slots direct root growth outside Filterra's treatment area allowing larger canopy trees to be utilized*. To ensure a healthy root system, irrigation is highly recommended for all Filterra Street/Shade Tree Systems as required by local climates.

Design Support. Our engineers are available to assist with the design of each Filterra application, including flora selection and sizing.

Sustainability. Filterra's sustainable design extends typical street tree life expectancy due to its engineered media, receiving significant street and parking lot runoff and rainfall entering above the systems tree grate.

* Slots may be left closed if root containment is desired, this may limit expected mature tree growth.

A Highly Effective Treatment System

The Filterra Bioretention System is designed for the urban environment providing a high removal efficiency for many pollutants including petroleum, heavy metals, phosphorous, nitrogen, TSS and bacteria. Similar in concept to bioretention, Filterra has been optimized for high volume/flow treatment and high pollutant removal. Filterra offers a small footprint and is well suited for highly developed sites, parking lots and streetscapes.

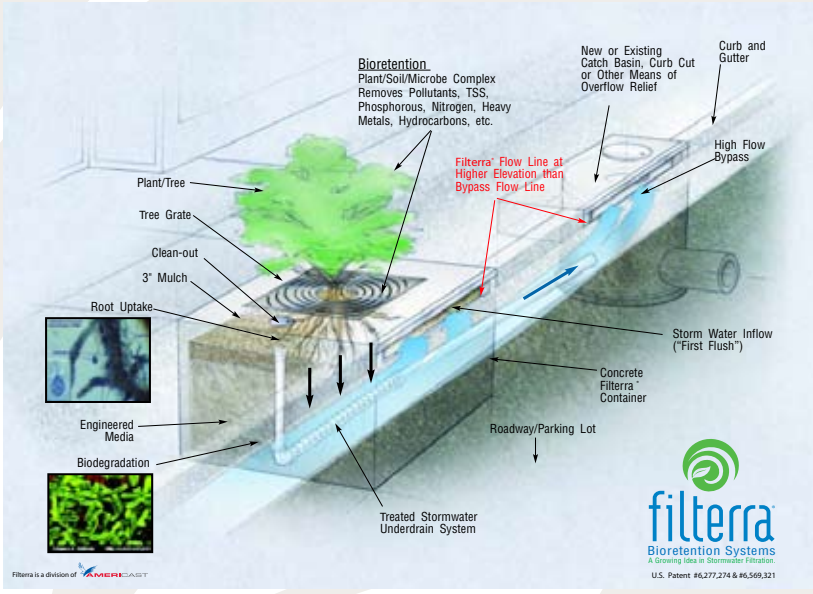
Expected Pollutant Removal

(Ranges Varying with Particle Size, Pollutant Loading and Site Conditions)

TSS	85%
Phosphorus	73%
Nitrogen	42% - 45%
Heavy Metal	33% - 82%
Fecal Coliform	57% - 76% 94% - 99%[2]
Predicted Oil & Grease	> 85%

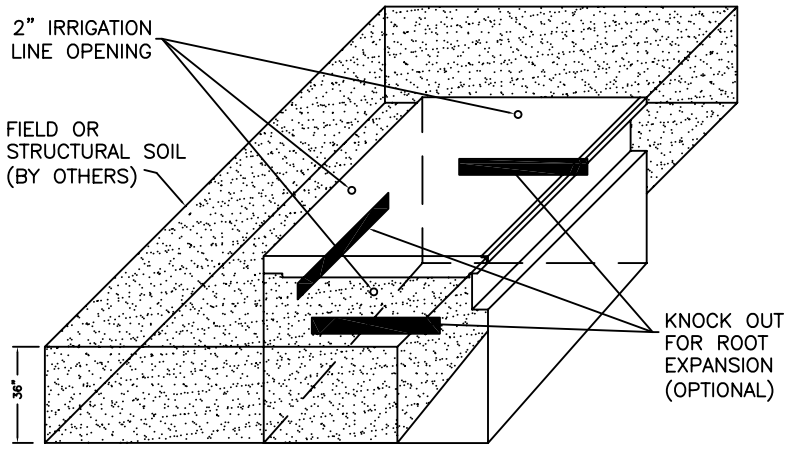
[2] using Bacterra™ media blend

Information on the pollutant removal efficiency of the filter soil/plant media is based on over three-years of lab and field studies performed by the Civil Engineering Department at the University of Virginia. Fecal coliform removal efficiency for Bacterra media blend is based on lab and field studies.

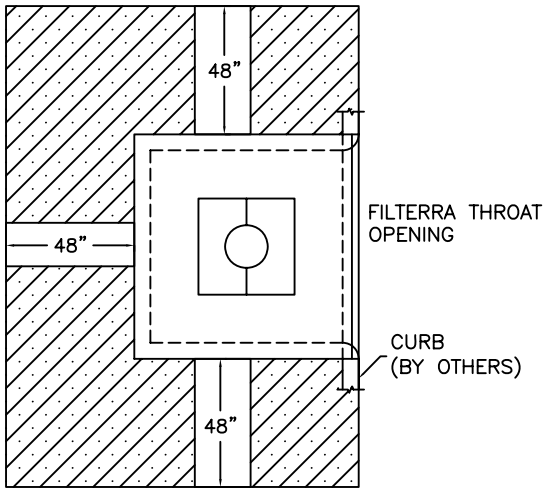


How Filterra Works

Stormwater flows through the Filterra unit via formulated media contained in a concrete landscape container. Pollutants are captured and immobilized in the container where they are then decomposed, volatilized and incorporated into the biomass of the system's micro/macro fauna and flora. Stormwater continues to flow through the media and into the underdrain system, where treated water is discharged. Higher runoff flows bypass the Filterra system via a downstream inlet source, curb cut or other relief.



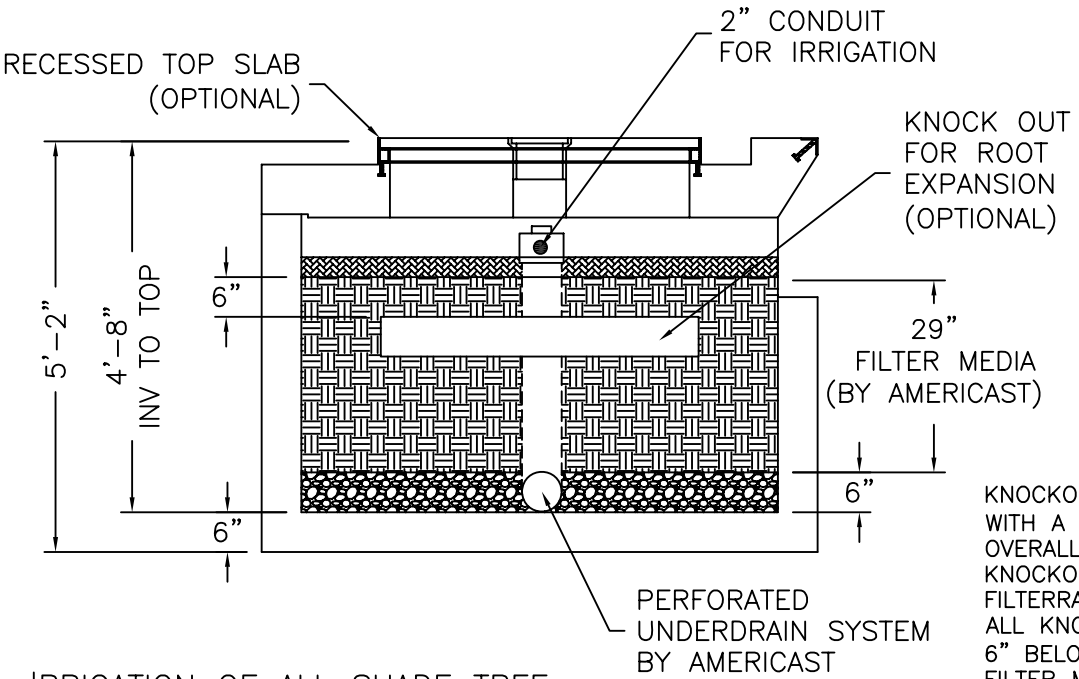
ISOMETRIC VIEW



PLAN VIEW

POSSIBLE SCENARIOS FOR ROOT EXPANSION USING KNOCKOUTS:

- THE DESIGNATED AREA AROUND THE FILTERRA UNIT PROVIDES ADEQUATE SOIL VOLUME FOR TREE ROOTS UNDER THE SURROUNDING LANDSCAPE. THESE ARE RECOMMENDED VOLUMES, SUBJECT TO SITE CONDITIONS AND ANTICIPATED GROWTH REQUIREMENTS.
- IF THE DESIGNATED AREA AROUND THE FILTERRA UNIT WILL BE PAVED, BACKFILLING THIS AREA WITH STRUCTURAL SOILS WOULD ALLOW FOR IMPROVED ROOT GROWTH DUE TO NON-COMPACTED SOILS AND AERATION, AS WELL AS STABILIZATION OF THE TREE.
- THIS DESIGN COULD BE COMBINED WITH PERVIOUS CONCRETE TO ALLOW THE ROOTS ACCESS TO MORE WATER.



AVAILABLE SIZES
4x6 OR 6x4
4x8 OR 8x4
4x12 OR 12x4
6x6
6x8 OR 8x6
6x10 OR 10x6
6x12 OR 12x6
7x13 OR 13x7

KNOCKOUTS ARE PRECASTED WITH A HEIGHT OF 6". OVERALL LENGTH OF KNOCKOUTS VARY BASED ON FILTERRA UNIT DIMENSIONS. ALL KNOCKOUTS ARE LOCATED 6" BELOW THE TOP OF FILTER MEDIA.

IRRIGATION OF ALL SHADE TREE UNITS IS HIGHLY RECOMMENDED AND IS THE OWNER'S RESPONSIBILITY

AMERICAST®

DATE: 06-19-08 | DWG: EZ FTSHADE-1

FILTERRA STREET/SHADE TREE CONFIGURATION WITH KNOCKOUTS - EAST ZONE

filterra®

US PAT 6,277,274 AND 6,569,321

Filterra® Quick Sizing Table for Type I & Type II Street/Shade Trees

Available Filterra Street/Shade Tree Box Sizes (ft.)	Maximum Contributing Drainage Area (acres) where C = 0.85
4x6 or 6x4	0.16
4x8 or 8x4	0.23
Standard 6x6	0.26
8x6 or 6x8 4x12 or 12x4	0.36
10x6 or 6x10	0.46
12x6 or 6x12	0.56
13x7 or 7x13	0.71

Available Filterra Street/Shade Tree Box Sizes (ft.)	Maximum Contributing Drainage Area (acres) where C = 0.50
4x6 or 6x4	0.28
4x8 or 8x4	0.39
Standard 6x6	0.45
8x6 or 6x8 4x12 or 12x4	0.61
10x6 or 6x10	0.78
12x6 or 6x12	0.95
13x7 or 7x13	1.21

Notes:

1. Typical street/shade tree standards recommend a 1.5” to 2.5” caliper. To accommodate these size requirements, Filterra has appropriately sized each unit at a 5’2” depth (INV to TC) for Type I and Type II Shade Trees. (3” or greater caliper trees will require a 6’2” depth unit.)

2. A standard schedule - 40 pipe coupling is cast into the wall for easy connection to discharge drain.

3. Recommended Filterra street/shade tree species are characteristic of shallow fibrous root systems preferable of well draining substrates. To aid in tree selection for your site, a list of Filterra approved street/shade tree species list showing expected mature tree height and spread with sun requirements is available upon request.

4. Dimensions shown are internal. Please add 1’ to each for external (using 6” walls)

5. In line with TR55 data, for commercial developments a minimum (runoff coefficient) C factor of 0.85 is recommended. For residential developments, use of C factors less than 0.50 require individual site review by Filterra.

6. For other target treatment goals, please contact us for Sizing Tables (e.g. uniform intensity 0.3 in/hr)

7. This sizing table if valid for VA (treating 90% of annual runoff) and typical for the Mid-Atlantic region.

Filterra® Street/Shade Tree Selections
Mid-Atlantic Region

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Crape Myrtle in Filterra

Purpleleaf Plum in Filterra

Galaxy Magnolia in Filterra

Eastern Redbud

Red Maple

Callery Pear 'Chanticleer'

Thornless Honey Locust

Japanese Zelkova

Golden Raintree

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