2016 MAFSM Fall Conference
“Gray Within Green”
Bioretention Retrofit / Stormwater Management Case Study
Anne Arundel County, MD
2016

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PREVENTATIVE STORMWATER MANAGEMENT

Natural Soil Bioretention

Permeable Pavement

Rain Garden

Green Roof

Planter Boxes

Rainwater Harvesting

Reduce Stormwater Runoff & Offsite Discharge
PREVENTATIVE STORMWATER MANAGEMENT

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- Permeable Pavement
- Rain Garden
- Green Roof
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Reduce Stormwater Runoff & Offsite Discharge
SITE OVERVIEW

- Location: Annapolis, MD
- Site Use: Flex Office Space
- Built: Phased Beginning in 2003
- SWM in Service 2006
BIORETENTION CELL

- Native Soil
- Drain Rock Layer
- Perforated Underdrain Pipe (Each Cell) With Cleanouts
- 24”-48” Thick Soil Layer
- Selected Plantings
- River Rock Surface Cover
- Riser Overflow Outlet
- Direct Pavement Drain Along Perimeter
 ✓ Aesthetics; Impact on Curb Appeal to New and Existing Tenants
 ✓ Surface Ponding After Rainstorms and During Snowmelt
 ✓ Cost of Regular Maintenance of Bioretention Facility
 ✓ Deterioration of Concrete and Adjacent Asphalt Pavement
 ✓ Anticipated Cost to Renovate Facility and Pavement Back to Original Condition
INNOVATIVE WQ CONTROL PRACTICES

www.bayengineering.com

www.ContechES.com
Engineered Bioretention
Engineered Bioretention

- High Flow (140” per hour) Functionality
- Minimal Surface Footprint
- Prefabricated “Plug-N-Play” Package System Technology
- 175+ Approved Plant Species
- Approved by MDE for Stand Alone WQv Control
- Remove and Replace Mulch Layer Every 6-9 Months
Retrofit Plan

PROPOSED 1 STORY OFFICE BUILDING 1
24,000 SQ. FT.
F.F. ELEV = 68.0
#2629 RVA ROAD

PROPOSED LIMIT OF DISTURBANCE = 3,100 SQ. FT. ±

EXISTING 1 STORY OFFICE BUILDING
16,000 SQ. FT.
F.F. ELEV = 68.0
#2635 RVA ROAD

CONTECH
ENGINEERED SOLUTIONS

Bay Engineering Inc.
Engineers, Planners and Surveyors
CONCLUSIONS

- Bioretention Replaced with Filterra for WQ Control
- Bioretention Cell Replaced with Grass and Trees Behind New Curbing; Filterras as Curb-and-Gutter Inlets
- Standard Pavement Edge to Curb Now in Place
- Predictable Maintenance for Two Filterra WQ Control Facilities – Remove and Replace Mulch in October and May; Care for Grass and Trees
- Improved Aesthetics and Curb Appeal; Well Maintained Look
- Worry Free Pavement and Curbing Aging
Bioretention Facilities Susceptible to Surface Clogging & Regressive Failure; As Such,

- Vegetation Density Matters
- Vegetation Selection Matters
- Storage Capacity Above Surface Matters
- Type of Ground Cover Matters
- Drainage Area Ratio Matters
- Subsoils Matter
- Regular Maintenance Matters
- In Highly Urbanized Environments – All of These Elements Difficult to Line Up

Combination of Technology and Natural Processes Can Work
Thank You

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