

# STORMWATER INNOVATION EXPO 2020



RHODE ISLAND  
GREEN INFRASTRUCTURE COALITION



**10:00 WELCOME**

Lauren Carson, Eastern Rhode Island Conservation District, emcee  
Seth Magaziner, Rhode Island State Treasurer  
Janet Coit, Director, Rhode Island Department of Environmental Management

**10:20 GREEN INFRASTRUCTURE COALITION EAST BAY OVERVIEW**

*Video presentation*

**10:25 PARTNERSHIPS FOR STORMWATER MANAGEMENT**

Alisa Richardson, Managing Engineer, RIDOT Environmental Division

**10:35 PROVIDENCE STORMWATER INNOVATION CENTER**

*Video presentation*

**10:40 LESSONS LEARNED FROM MUNICIPAL GREEN INFRASTRUCTURE**

Wenley Ferguson, Director of Restoration, Save The Bay

**10:50 RESTORING RIVERSIDE PARK WITH NATURAL INFRASTRUCTURE**

*Video presentation*

**11:00 CONCURRENT DISCUSSION SESSIONS**

***State Approaches to Stormwater Management and Green Infrastructure***

Alisa Richardson, Managing Engineer, RIDOT Environmental Division  
Terry Gray, Deputy Director of Environmental Protection, RIDEM  
Sheila Dormody, RI Director of Climate and Cities Programs, moderator

***Municipal Green Infrastructure***

Wenley Ferguson, Director of Restoration, Save The Bay  
Meg Kerr, Senior Director of Policy, Audubon Society of Rhode Island, moderator

**11:25 CLOSING REMARKS**

Lauren Carson, Eastern Rhode Island Conservation District, emcee



Aquidneck Island Planning Commission  
Aquidneck Land Trust  
Audubon Society of Rhode Island  
BETA Group, Inc.  
Birchwood Designs  
Blackstone Parks Conservancy  
Blackstone River Coalition  
Blackstone Valley Tourism Council  
Brewster Thornton Group Architects  
City of Newport  
City of Providence  
Clean Ocean Access  
Clean Water Fund  
Conservation Law Foundation  
Eastern RI Conservation District  
FILARSKI/Architecture+Planning+Research  
Friends of the Moshassuck  
US Green Building Council RI  
Groundwork Rhode Island  
Grow Smart Rhode Island  
Horsley Witten  
Landscape Design  
Mass Audubon  
Narragansett Engineering, Inc.  
The Nature Conservancy  
NBNERR

Pawtuxet River Authority  
The Point Association of Newport  
Providence College  
Rhode Island Foundation  
RI Builders Association  
RI Coastal Resources Management Council  
RI Department of Environmental Management  
RI Department of Health  
RI Environmental Education Association  
RI Infrastructure Bank  
RI Nursery and Landscape Association  
Office of Governor Gina Raimondo  
Save Sand Pond  
Save the Bay  
Save the Lakes  
Sierra Club  
TREMCO  
Trust for Public Land  
Town of Portsmouth  
URI CRC / RI Sea Grant  
URI NEMO  
URI Outreach Center  
Wood Engineering  
Woonasquatucket River Watershed Council  
Office of Senator Sheldon Whitehouse

# URBAN STORMWATER SOLUTIONS BY ACF ENVIRONMENTAL

FOR MORE INFORMATION ON PRODUCTS, DESIGN ASSISTANCE,  
AND JOBSITE SUPPORT CONTACT  
LEE JONES, QSM | 508-745-7052 | LJONES@ACFENV.COM

## SPACE EFFICIENT STORAGE - R-TANK



## VEGETATED TREATMENT SYSTEMS - FOCALPOINT



## PERMEABLE SURFACES - POWERBLOCK & ECORASTER



## FILTERS & SCREENS - RAINGUARDIAN & FABCO



## URBAN STREETSAPES - GREENBLUE URBAN



**ACF**  
ENVIRONMENTAL  
LET'S GET IT DONE®



# How can BETA help you?



From project vision to implementation, BETA provides integrated engineering services that improve the communities where we live and work.

**Worcester, MA: Beaver Brook Stream Restoration & Flood Mitigation**



**Stormwater Asset Mapping**



**Stormwater Management Planning**

BETA has completed numerous stormwater projects that mitigate flooding problems and help plan for future capital improvement projects. Our team is comprised of individuals experienced in using software such as HydroCAD, HEC-RAS, and SWMM to evaluate flooding, and to develop improvements to alleviate flooding. Our projects incorporate Low Impact Development (LID) and Green Infrastructure designs to assist in controlling rainfall and flooding concerns. We provide stormwater asset mapping, wetland flagging, subsurface investigations, watershed analysis, hydrologic and hydraulic analysis, prepare and obtain permits, prepare construction documents and perform construction administration/inspection.

**BETA Group, Inc. | [www.BETA-Inc.com](http://www.BETA-Inc.com)**

# DIMEO

University of Rhode Island College of Engineering opened in 2019 and is a 186,258 SF state of the art facility. This project was designed to meet LEED Silver standards.



The Citizens Bank Corporate Campus was completed in late 2018 and was also awarded a LEED Gold Certification. The campus is 425,000 SF and is home to office and meeting spaces, collaborative workspaces, dining, and fitness facilities, as well as baseball fields, tennis and basketball courts, as well as walking trails for the surrounding community to use.

*This is Dimeo's 90th year in the construction industry. Over the decades we have proven ourselves to be industry leaders, masters of our craft, and always looking for new and innovative methods to deliver the best in construction services. With work spanning across New Haven, Boston, and Providence and every market sector we are excited for the future of Dimeo and construction.*



Olneyville Green Infrastructure Retrofit

# Rhode Island Green Infrastructure Experience



Providence College Green Infrastructure



Pawtuxet River Flood Resilience

Fuss & O’Neill’s experience with “green infrastructure” began well before the term was coined. In the mid-1980s, we designed a new corporate campus for a large insurance company. That design included what we know today as bioretention cells, filter strips, and vegetated swales without curbs and catch basins. We have built on our experience by developing green infrastructure solutions for both public infrastructure and large-scale private development.

Now with more than 30 years of experience, we have learned to successfully design and implement green infrastructure solutions under a wide range of conditions and environments. We have implemented these designs to cost effectively address issues ranging from water quality to improving drainage. We designed the first completed Green Street in New England (Water Street) and we are now designing what is likely to be the first Green Bridge in New England. We have successfully implemented green infrastructure in the urban environments such as in Providence, Pawtucket, and West Warwick, RI to address both stormwater management and flood resilience.



## Horsley Witten Group

*Sustainable Environmental Solutions*

We are a collaborative group of engineers, scientists, designers, and planners dedicated to doing work that moves our clients to a greater level of sustainability and resilience. Our staff manages complex projects and excels at translating technical subjects into understandable concepts for decision-makers and the public. Our team approach integrates sustainable civil engineering, urban design, community planning, training, and landscape architecture into solutions that work for our clients and the environment.

We are happy to share the following Green Stormwater Infrastructure (GSI) project:

### THREE BAYS WATERSHED STORMWATER PROJECT

The Three Bays Watershed is approximately 12,500 acres and includes land draining to Cotuit Bay, North Bay, Prince Cove, Seapuit River, and West Bay. Like many coastal embayments on Cape Cod, nitrogen and bacteria contribute to the severe degradation of the Three Bays system, causing beach and shellfish closures, impaired habitat, and poor water quality. We are working with the Association to Preserve Cape Cod, the Barnstable Clean Water Coalition, and the Town of Barnstable to address this problem by reducing stormwater pollution in the Three Bays Watershed. We have completed extensive field assessments, identifying, and prioritizing over 70 GSI retrofit opportunities! We designed and permitted eight of the top priority sites, constructed six already, and are currently constructing two more this spring. We also led numerous outreach activities including hands-on workshops teaching homeowners how to build rain gardens and municipal staff how to maintain GSI practices. Project Manager: Michelle West, P.E. Senior Water Resources Engineer

#### **Sites:**

Prince Cove Marina, Marstons Mills  
Cordwood Landing, Cotuit  
Ropes Beach, Cotuit  
Putnam Ave., Cotuit  
Cotuit Library, Cotuit  
South County Rd., Osterville  
Osterville Library, Osterville  
Eastham Library, Eastham

Sand Filter  
Bioretention  
Gravel Wetland  
Dry Swale, Bioretention  
Interactive Bioretention  
Dry Swales (coming soon)  
Rain Garden and Training  
Stormwater Maintenance Training

**Project Partners:** Association to Preserve Cape Cod, Barnstable Clean Water Coalition, Barnstable Land Trust, Town of Barnstable, Town of Eastham.

*(CLICK TITLE TO VIEW VIDEOS)*

#### **Nature Based Solutions: An Introduction to Green Stormwater Infrastructure**

Take a tour of the various stormwater management practices that the Horsley Witten Group has designed and implemented over the past several years. These systems help maintain the valuable natural resources that the world has to offer.

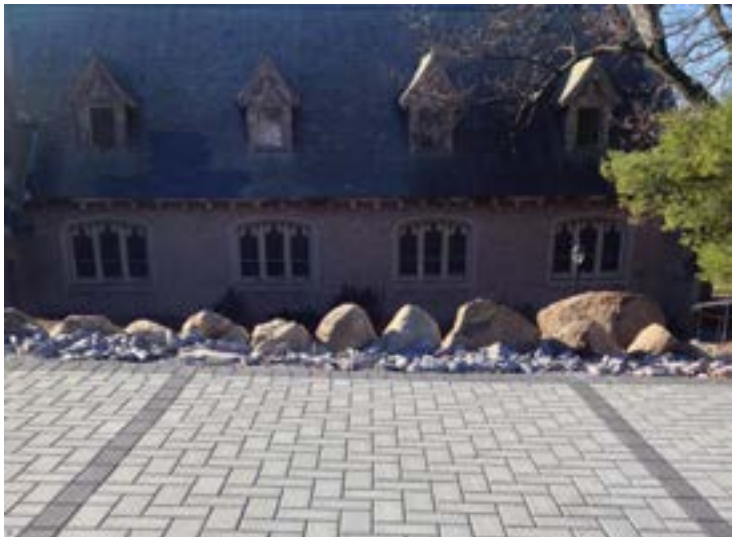
*Produced by Big Tree Productions, Manx Taiki Magyar  
Participant: Rich Claytor, P.E., HW President*

#### **Cotuit Library, Stormwater Solutions**

Stormwater is a contributor to Cape Cod's nitrogen loading issues. Several local partners are working together on a plan to create stormwater solutions in the Three Bays area.

*Produced by Cape Media News, APCC  
Participants: Michelle West, P.E., HW Water Resources Engineer, April Wobst, APCC Restoration Ecologist*





*Aqua-Bric Paver*



*Andover 5511 Paver (click photo to view a video about this product)*

As a Low Impact Development (LID) component, permeable pavers transform pavement into an efficient stormwater treatment system in a cost effective and efficient manner. Where pavements constitute a significant area on developed property, permeable pavements are a highly effective method of mitigating stormwater runoff and treating the pollutants it carries.

As a 4th generation, family-owned business manufacturing concrete products since 1923, Ideal offers a variety of high strength, durable permeable interlocking pavers suitable for residential, commercial and municipal use. Aqua-Bric® is a pedestrian friendly, ADA-compliant permeable interlocking concrete paver. Properly installed, Aqua-Bric's flat surface accommodates foot traffic, high heels, rolling scooters, and wheelchairs, while allowing rainwater to drain through the pavement and infiltrate into the soil below. The drainage openings in the four corners of Aqua-Bric facilitate cleaning to maintain infiltration. Aqua-Bric® 8 offers the same features of our 6cm thick Aqua-Bric in a larger unit with 8cm thickness suited to heavy-duty traffic loads. Our Andover Collection and Andover 5511 styles feature more design choices of size and surface profiles.

For more information and to view our full product line, we invite you to visit [www.paversbyideal.com](http://www.paversbyideal.com).



Orange Flood Control, LLC continues serve our growth in the New England area to meet the fast-growing demand of the Flood Mitigation Industry. A year ago our experience throughout the United States led us to expand our salesforce to better serve our New England clients and we're busier than ever. We represent multiple manufacturers of varied temporary and permanent flood mitigation devices and Orange Flood Control, LLC can supply, install, maintain, and service all your flood mitigation equipment.

## DESIGN & SUPPLY

Orange Flood Control can work with your Engineer, Architect, and builder as your flood equipment supplier, or we will direct design, build or supply equipment as requested.

## INSTALL

Years of installation experience with our factory-trained and certified installers provide clients of Orange Flood Control, LLC trusted, skillful flood device installation. Our team is fully insured and OSHA certified. No job is too small or too large for our staff to provide personalized service for your project.

## MAINTAIN

All products require regular maintenance. Let our experts assess and maintain your flood equipment.

### AUTHORIZED DISTRIBUTOR FOR:



**Pare Corporation provides comprehensive stormwater management, environmental planning, Green Infrastructure evaluation, and resilient design services. Pare's expertise also includes flood control structures and wetland science.**

A low-impact stormwater management system that includes a rain garden, stormwater stream feature, and a green roof for the treatment and reduction of stormwater runoff.

University of Rhode Island Kingston Campus



Improvements to Old Tower Hill Road  
South Kingstown, RI



Brookside Hall, URI  
Kingston, RI



Hammetts Wharf Hotel  
Newport, RI



## Southeast New England Program

The Southeast New England Program (SNEP) is a bi-state geographic program administered by the U.S. Environmental Protection Agency (EPA) across Rhode Island and southeast coastal Massachusetts. The Program works with regional environmental stakeholders to develop an overall planning framework and action agenda that builds on and complements their on-the-ground presence and local knowledge and informs the Program's direction, science, and funding decisions.

The Program strives to restore and enhance water quality, ecosystem function, and community resilience in the region through collaboration, communication, grants, contracts, and interagency agreements. To learn more about SNEP please visit: <https://www.epa.gov/snecwrp>.

Note: The U.S. Environmental Protection Agency and/or its Southeast New England Program are not sponsoring this event nor endorsing any of the sponsoring or participating entities or their products or services.



## **Stormwater Management, Healthy Trees, and the Urban Environment**

StormTree is a RI-based, SBA Woman Owned Small Business located in Pawtucket, RI doing business nationally and internationally providing green infrastructure solutions for the “built environment” by combining plant systems with stormwater runoff reduction and pollutant removal. Our systems serve the dual function of providing healthy and thriving trees, coupled with stormwater management for streetscape revitalization and improvement applications as well as land use development projects allowing for healthy tree growth while remediating pollutants in rainwater “stormwater”.

In addition to the tree filter systems, StormTree now offers:

- DrainGarden™, the “urban raingarden”. A low and narrow profile shrub planter system for sites where space is a premium. A unique plant “socket” design and stone mulch base provides for a virtually weed-free stormwater management system.
- StreetRoots™ our tree pit system for growing healthy and mature tree communities in the urban landscape. A low-cost alternative to underground structural support systems -- suspending pavements naturally.

**[Click here for a video overview of StormTree solutions](#)**

### **FEATURES:**

- Designed for heavily paved urban streetscapes and parking lots
- Suspended pavement naturally without structural support; prevents sidewalk upheaval
- Multiple configurations
- Cost-efficient, less labor intensive alternative to modular soil systems; maintenance friendly
- Open design (open sides and open bottom) allows for unrestricted tree root growth promoting healthy and vigorous growth

### **2020 RI PROJECTS:**

In collaboration with the Woonasquatucket River Watershed Council, RIDEM, RIDOT, and the Providence Parks Department

- Pleasant Valley Parkway (4 StormTree tree filter systems)  
<https://www.providencejournal.com/news/20200828/little-stream-in-providence-provides-model-for-making-bay-cleaner>
- Manton Avenue, across from Atlantic Mills, Olneyville (4 StormTree tree filter systems)

**[www.storm-tree.com](http://www.storm-tree.com)**

**(401) 626-8999**

**[info@storm-tree.com](mailto:info@storm-tree.com)**

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Unilock was the first company to introduce unit pavers to North America in 1972 and the first to introduce permeable pavers in 1991. Today we continue to lead the industry in style, product technology and innovation. Combined with our committed and collaborative reps we understand exactly what you need for success.

Your designs are original, even when they are permeable. Unilock offers the broadest range of textures colors and finishes in the paver marketplace today. That includes our line of permeable paving solutions. From planned reuse of brownfield sites to maximizing infill developments, permeable pavers are a best management process that contributes to a natural ecosystem.

Explore the many design possibilities with your Unilock representative today.

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**Contact Information:**

**Ashley Allard-LaCroix**

Unilock Commercial Sales

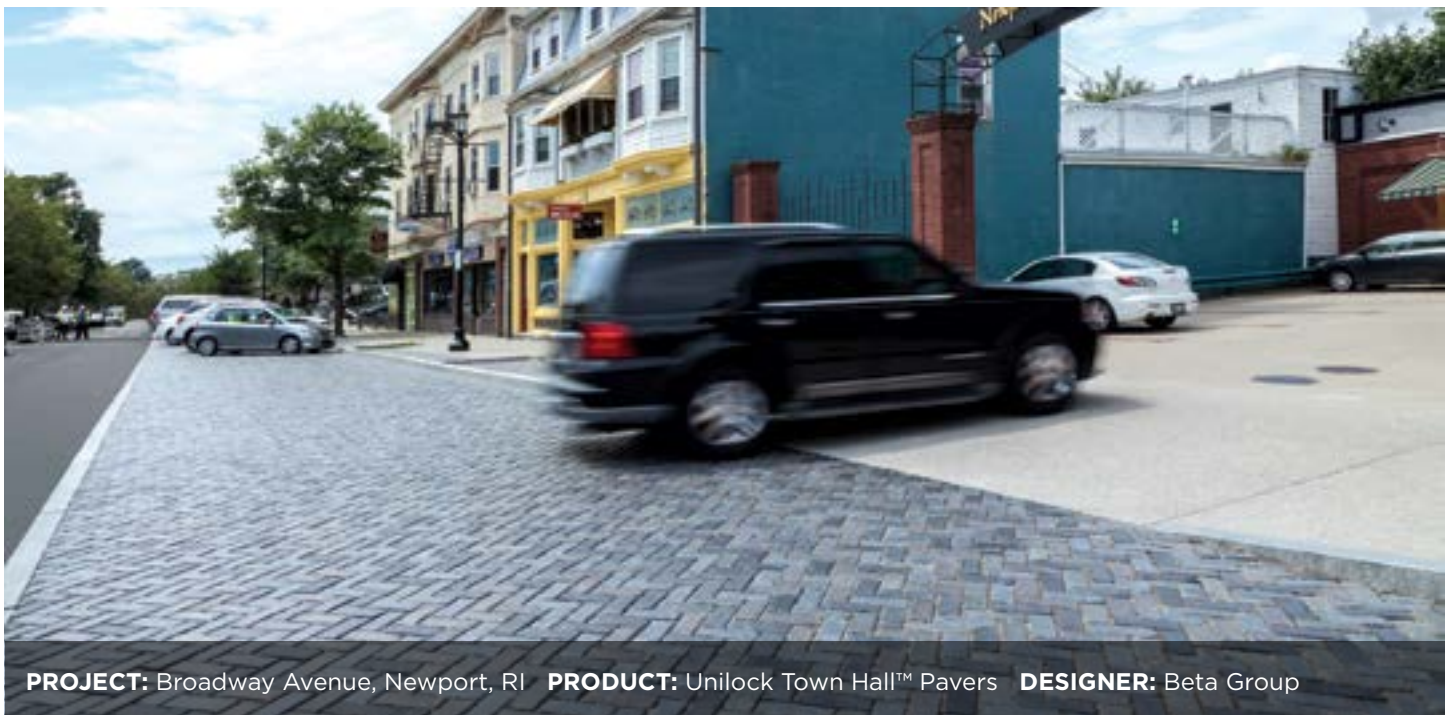
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www.commercial.unilock.com



**PROJECT:** Rhode Island Public Transit Authority. Providence, RI  
**PRODUCT:** Unilock Eco-Optiloc™ Pavers  
**DESIGNER:** The Robinson Green Beretta Corporation



**PROJECT:** Broadway Avenue, Newport, RI **PRODUCT:** Unilock Town Hall™ Pavers **DESIGNER:** Beta Group