



From Streets to Shores: Designing a Model for Resilient Stormwater Infrastructure on Folly Beach, SC

Grant Funding: SCIP/SC Rural Infrastructure Authority



JUNE 2026



Project Background



FOLLY BEACH, SOUTH CAROLINA

- Low-lying, tidally influenced barrier island
- Island-wide drainage study report issued in 2020
- This project was selected to provide the greatest benefit to the most stakeholders
- Center Street is an urban corridor with congested rights-of-way; it is also the one road on and off the island
- The City wanted to take advantage of the opportunity to reimagine stormwater management in this high-profile urban corridor with a holistic “systems approach” to replace outdated and aging infrastructure with a more resilient system



Project Funding



Funding Source: SCIIP Grant

- Funds for local SC governments to assist with **infrastructure improvements** for clean drinking water, sanitary sewer, and stormwater resilience
- This project is being funded in whole or in part by the **South Carolina Infrastructure Investment Program (SCIIP)**, which is administered by the SC Rural Infrastructure Authority (RIA) and funded by federal State and Local Fiscal Recovery Funds (SLFRF) through the American Rescue Plan Act (ARPA).



Project Goals & Benefits



- **Improve drainage and reduce flooding**
- Increase the **capacity and longevity** of the stormwater system
- **Beautification** of Center Street
- Create a **model for resilient drainage infrastructure** for coastal communities
- Improve system response to **storm events**



STORMWATER INFRASTRUCTURE IMPROVEMENTS PROJECT – SCIIP/RIA FUNDED

Community Engagement



- Four Community Engagement Sessions
- Two FAB presentations
- Informational Flyers & Postings
- Drop-ins at local businesses
- Multi-media awareness
- Water & Sewer Bill Insert

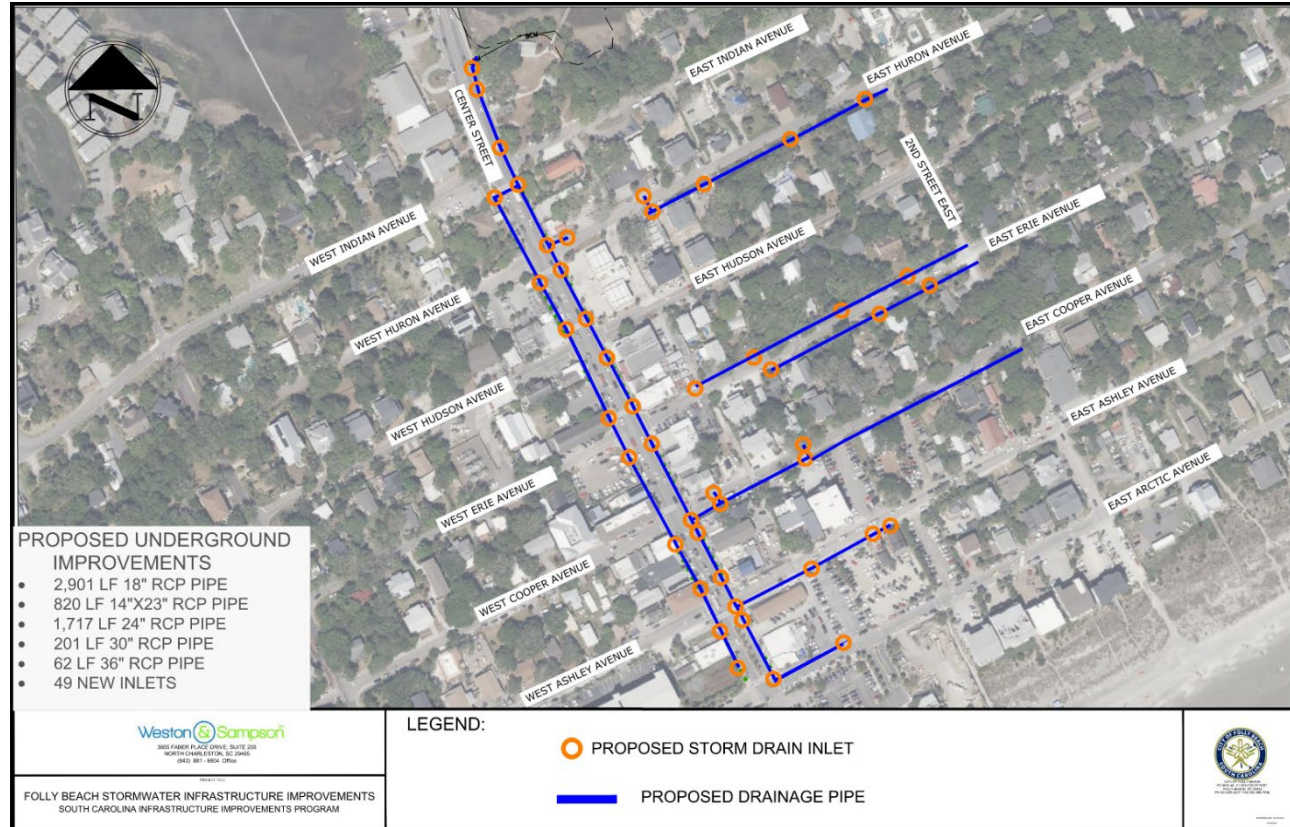




Project Timeline



What We're Doing: Underground





What We're Doing: Underground



E Huron Ave: Post Office



E Erie Ave

- Increasing **pipe sizes**
- Adding **inlets**
- Extending **pipng** to connect side streets

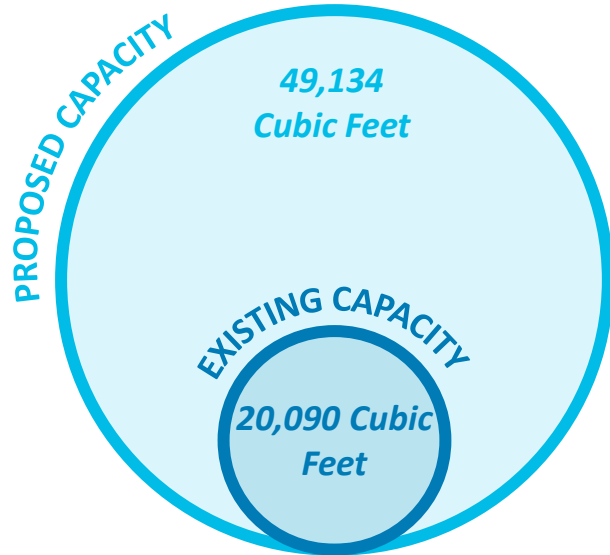
Pictured at left: photos from Tropical Storm Debby (8/6/2024)



What We're Doing: Underground

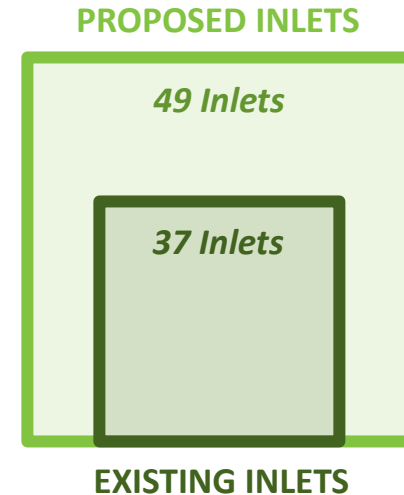
Increasing Capacity

1 : 2.4



Increasing Number of Inlets

1 : 1.3





BMP Snouts

An Inline Water Quality Approach

Where are they used?

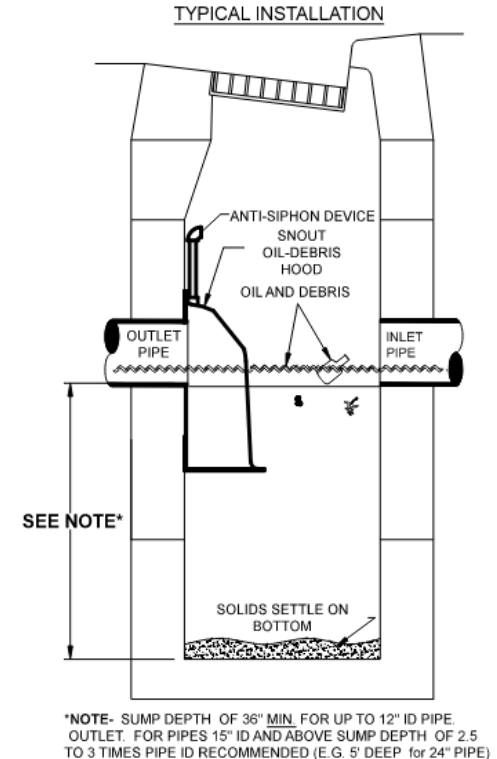
- Storm drain inlets near high-risk land uses
- Gas stations, dumpsters, bars/restaurants
- Key junction structures upstream of outfalls

How do they work?

- Installed inside sumped storm drain inlets covering outlet pipe
- Capture trash, floatables, and coarse sediment (beach sand!)
- Keeps material out of pipes and receiving waters

Why do they matter?

- Target sediment and trash
- Protect downstream coastal and shellfish waters
- Support permitting and coastal WQ goals





BMP SNOUTS



An Inline Water Quality Approach

Operation & Maintenance Benefits

- Clean out happens at the inlet, not in the pipe system
- Reduced long-term maintenance burden
- Improved system performance over time

Water Quality Benefits

- Pretreatment
- Sediment control
- Protection of shellfish waters (and turtles!)



What We're Doing: Above Ground

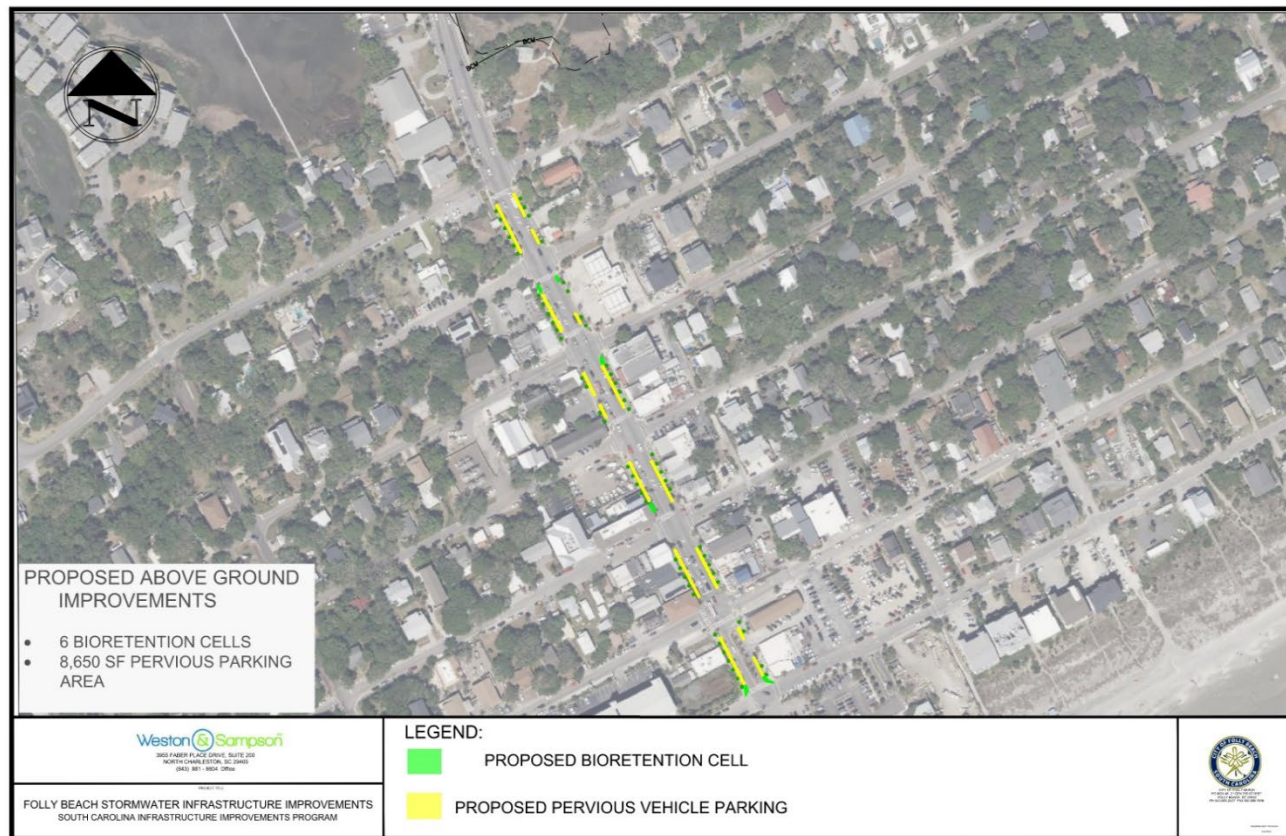


6

Bioretention
Cells

39

Pervious Parking
Spaces

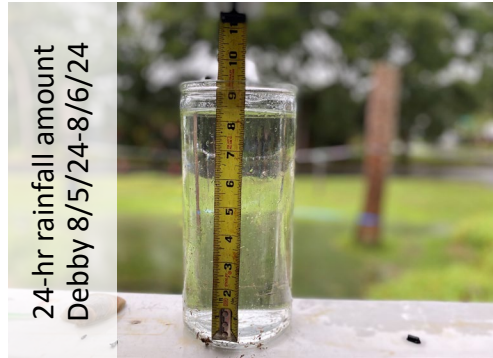




What We're Doing: Above Ground



- Creating **green infrastructure**
 - Bioretention cells
 - Permeable parking
 - Tree planting
- **Treatment Train** approach



24-hr rainfall amount
Debby 8/5/24-8/6/24



Flows to Folly River



Proof of Concept



**Treatment
Train**

approach





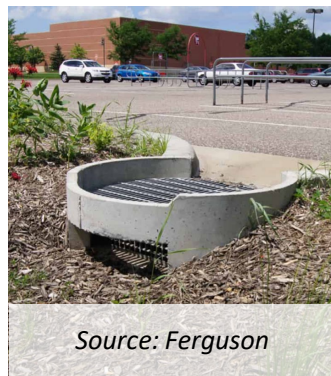
Design Considerations: Soils



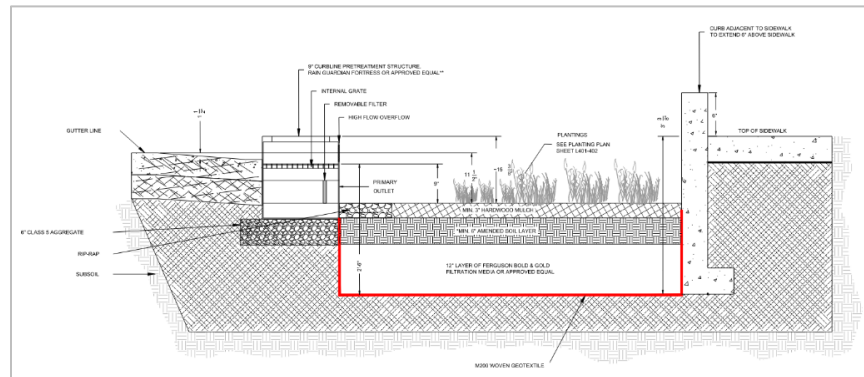
Source: NRCS Web Soil Survey

- **Predominantly sandy soils (Hydrologic Soil Group A)**
 - High Infiltration capacity, low runoff potential
- **Infiltration as a key treatment mechanism**
 - Supports LID and runoff-reduction strategies
- **Seasonal High Water Table is a governing factor**
 - Limits BMP depth and requires conservative design
- **Design balances opportunity and constraint**
 - Use infiltration where feasible while protecting groundwater

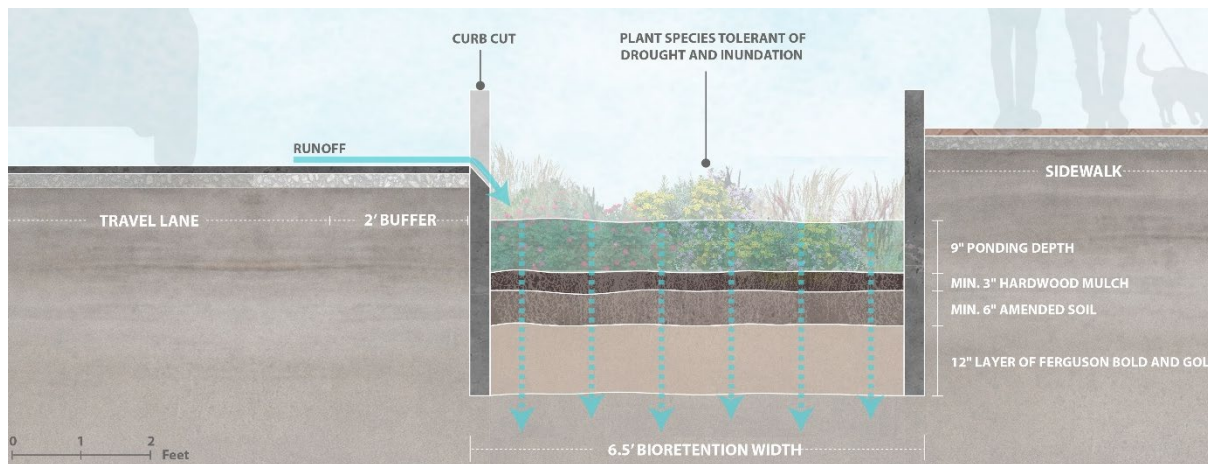
What We're Doing: Above Ground



Source: Ferguson

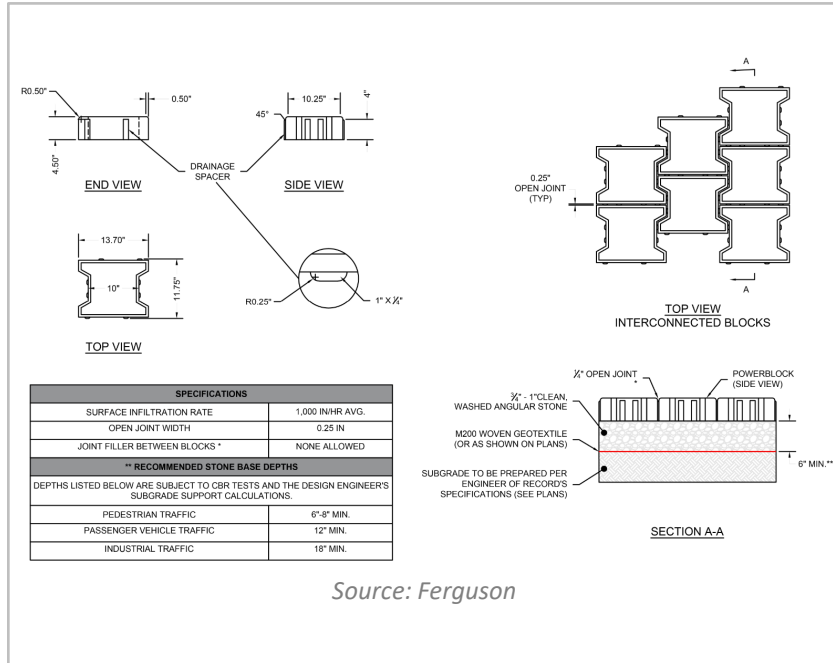


Bioretention Cells

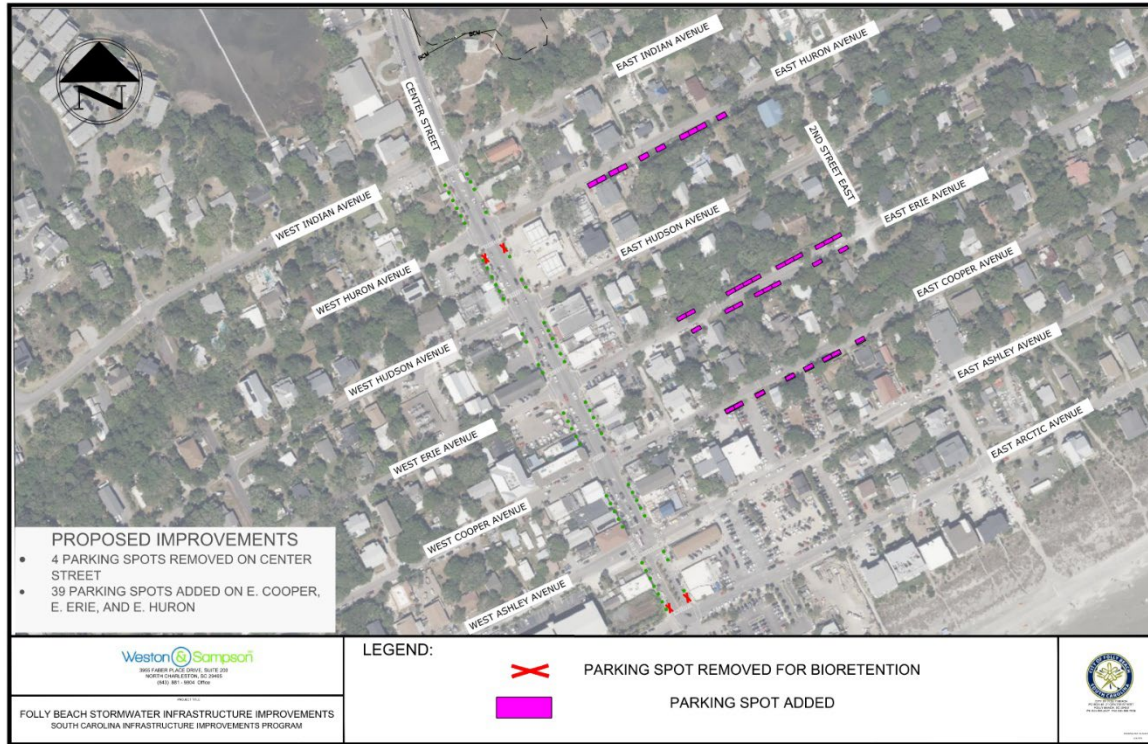


What We're Doing: Above Ground

Permeable Pavers



What We're Doing: Above Ground



- **4** parking spots removed on Center St
- **39** parking spots added on E. Cooper, E. Erie, and E. Huron





What We're Doing: Above Ground

Permeable Driveway Aprons

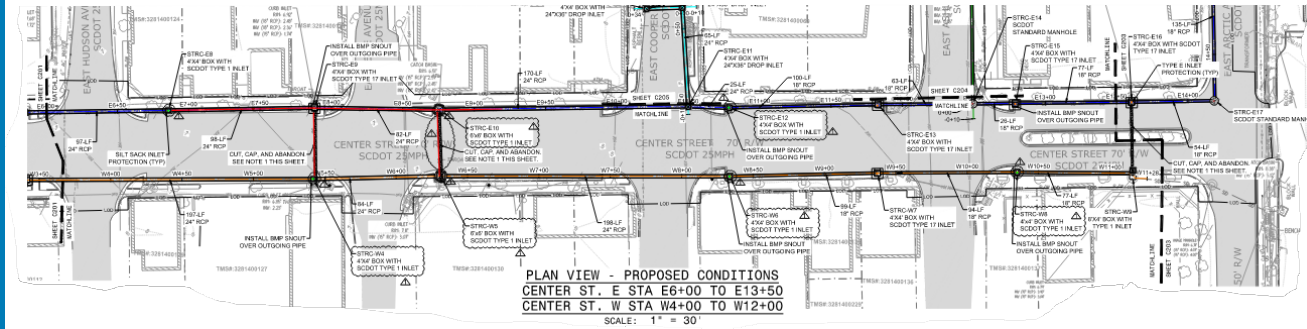
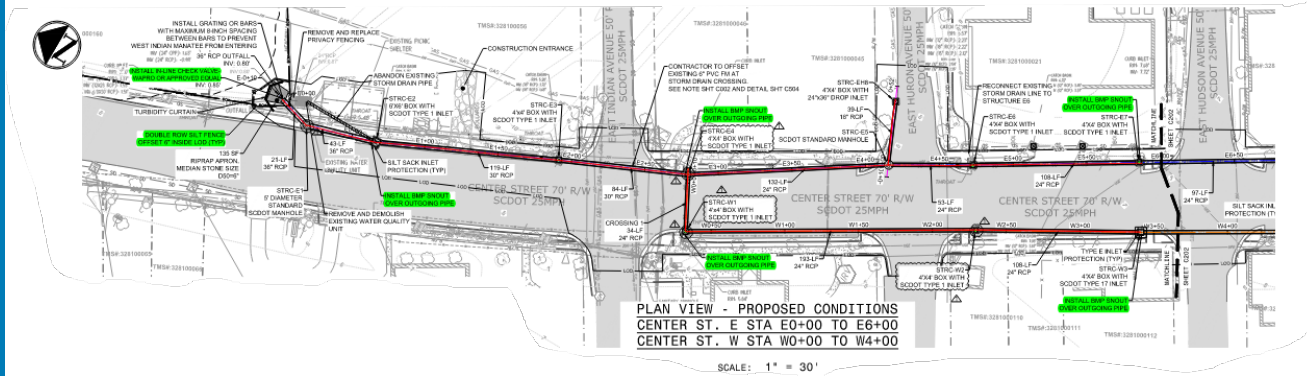


Fun Facts!

- The City of Folly Beach requires all driveway aprons being replaced in the SCDOT right-of-way to be replaced with pervious/permeable hardscape.
- Unlike permeable pavers, pervious concrete utilizes void space in the concrete matrix to allow water to infiltrate into the soils.
- When using the interlocking permeable pavers and lattice style/turfstone pavers, a stone reservoir is required under the pavers to allow for structural support. This is not necessarily required when using pervious concrete.

STORMWATER INFRASTRUCTURE IMPROVEMENTS PROJECT – SCIIP/RIA FUNDED

JECT
**What
We're Doing:
Construction!**





What We're Doing: Construction





What We're Doing: Construction





What We're Doing: Construction

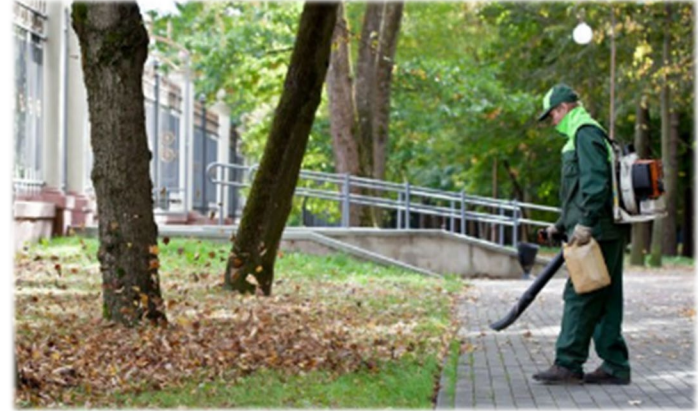




What's Next: Maintenance!

PowerBlock Maintenance (Post-Construction):

- Regular Inspection
- Maintenance Staff / Public Awareness
- Blowers
- Vacuum Sweeping
- Remove, Restore & Reset
- Winter Maintenance/Snow Removal





What’s Next: Maintenance

PERMEABLE PARKING INSPECTION & MAINTENANCE

INSPECT

- Year One: Once a quarter
- Perform annual inspections after year one.
- Keep inspection and maintenance records in a known location
- Perform infiltration testing



MAINTAIN

Conditions	Response
Sediment is accumulating on surface	Determine the source of upstream erosion and stabilize (add groundcover and/or mulch). Temporary erosion prevention may be necessary until ground cover can establish. Ensure landscaping activities are not directing debris towards site Utilize a leaf blower on a weekly basis to remove sediment. High pressure wash and vacuum. Clean impacted porous area by vacuum sweeping (suction and sweeping). Sweeping alone without suction is ineffective.
Trash and debris are present	Remove on a weekly basis
Surface does not dewater between storm events (standing water is present more than 24 hours). Rates are declining during inspection.	The system is clogged. Regenerative air sweeper should be used. Adjust frequency of maintenance. Address sediment source as possible.
Weeds are growing on surface	Spot treat with herbicide. Avoid hand pulling.
The surface is cracked, damaged, or mis-aligned	Repair using the original pavement specifications.





What's Next: Maintenance

BIORETENTION INSPECTION & MAINTENANCE

MAINTAIN

Conditions

Plants are unhealthy (diseased or dying)	Determine the source of the problem, remedy and replace. Soil test if necessary.
Annuals are dying back/Pruning is needed	Prune according to best practices per species.
Weeds are present	Remove weeds by hand, avoid herbicides. If herbicides are needed, assure aquatic label.

Response

Conditions

Areas of bare soil/signs of erosion	Re-grade if needed. Add mulch or vegetation.
Sediment has accumulated to a depth of greater than 3".	Determine the source of the sediment & remedy. Remove sediment with bucket + shovel.
Mulch is breaking down or floated away	Spot mulch. Maintain 3" layer.

Response

INSPECT

Year One: Once a quarter & after every storm event greater than 1.0 inch.

Perform annual inspections after year one.

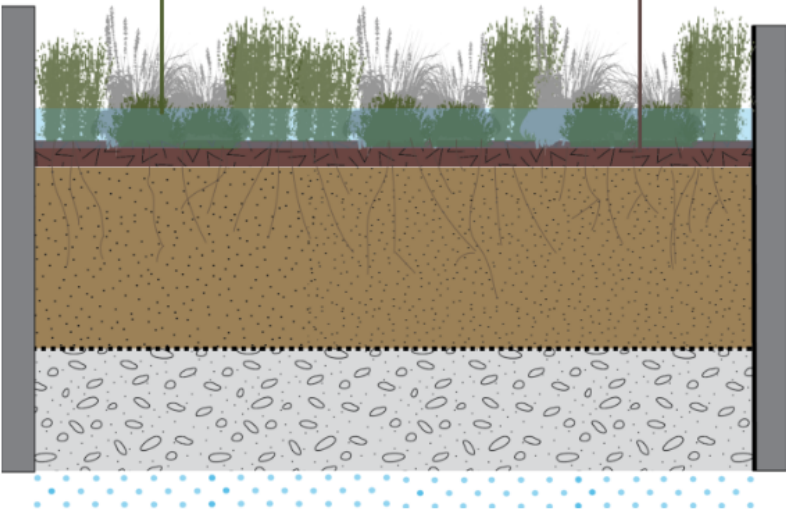
Keep inspection and maintenance records in a known location

Conditions

- Trash/debris is present
- Stone entrance is clogged or covered in sediment
- The structure has been damaged

Response

- Remove trash and debris
- Remove sediment, replace with clean stone if needed
- Replace





Thank you!

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