District of Columbia Water and Sewer Authority
David L. Gadis, CEO and General Manager

DC CLEAN RIVERS PROJECT

Rock Creek Project Green Infrastructure Virtual Tour

Briefing for:

Environmental Quality & Operations Committee Meeting

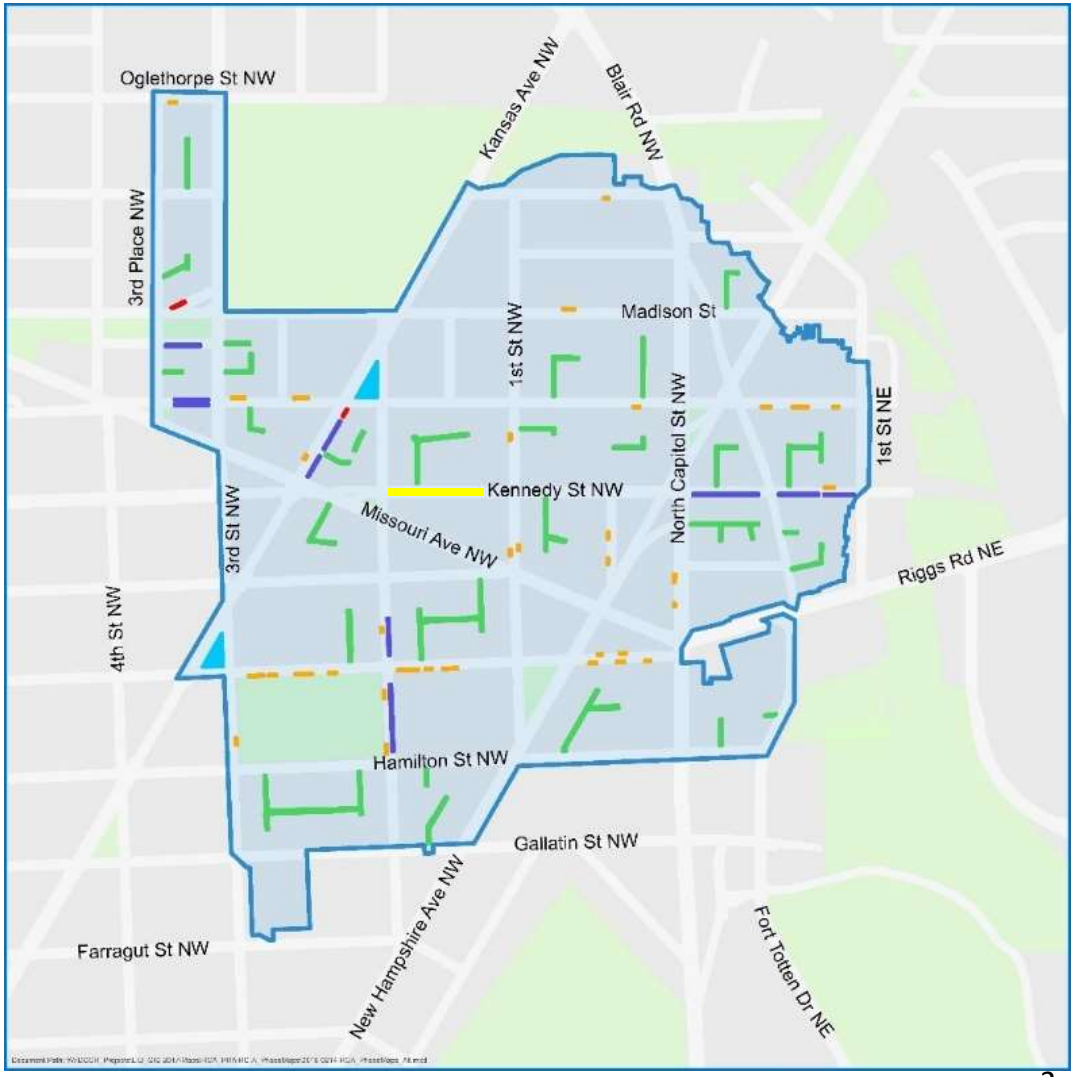
April 15, 2021

DCWATER.COM

Rock Creek Green Infrastructure

Number and Distribution of GI Facilities:

- Planter Bioretention – 36
- Curb Extension Bioretention - 2
- Parking Lane Permeable Pavement - 8
- Alley Permeable Pavement – 31
- GI Park – 2
- Kennedy Street



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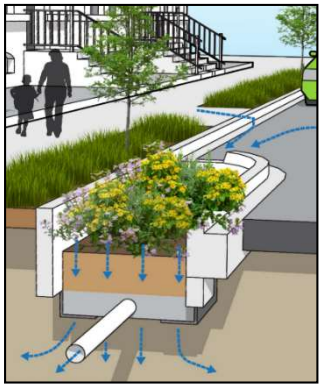
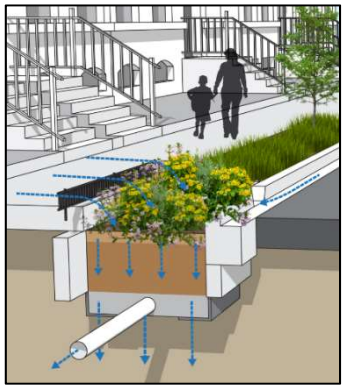
Green Infrastructure:
Program Drivers

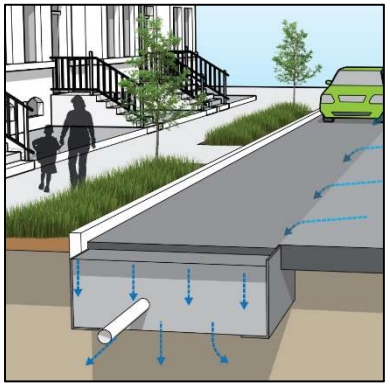
- Volume Management (Gallons)
  - Control Combined Sewer Overflows
- Cost Effectiveness
  - Responsibility to Rate Payers
- Maintenance/Asset Management
  - Safety
  - Aesthetics
  - Performance
- Outreach
  - Build Public Awareness and Stewardship
- Triple Bottom Line Benefits
  - Deliver Multiple Benefits to the Community



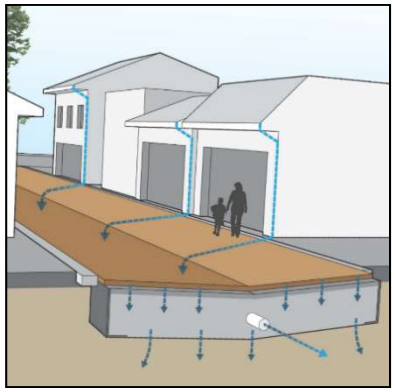
Curb Extension Bioretention



Planter Bioretention



Permeable Parking Lane

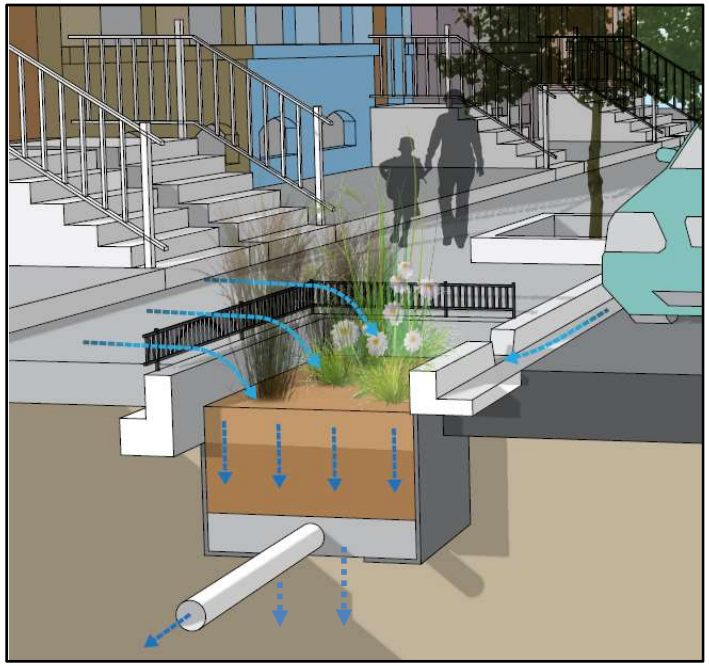


Permeable Alley

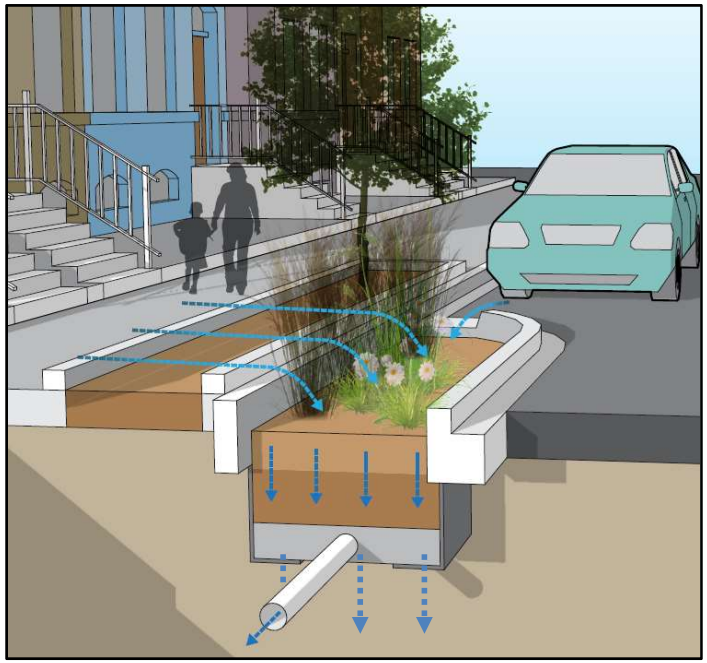
Typical Bioretention

Two Applications in Right of Way:

- Planter Bioretention
- Curb Extension Bioretention



Planter Bioretention in Tree Planter



Curb Bioretention in Parking/No Parking Lane

Typical Bioretention

Physical Components

Inlet with Energy Dissipation
(Downstream Outlet Not Shown)

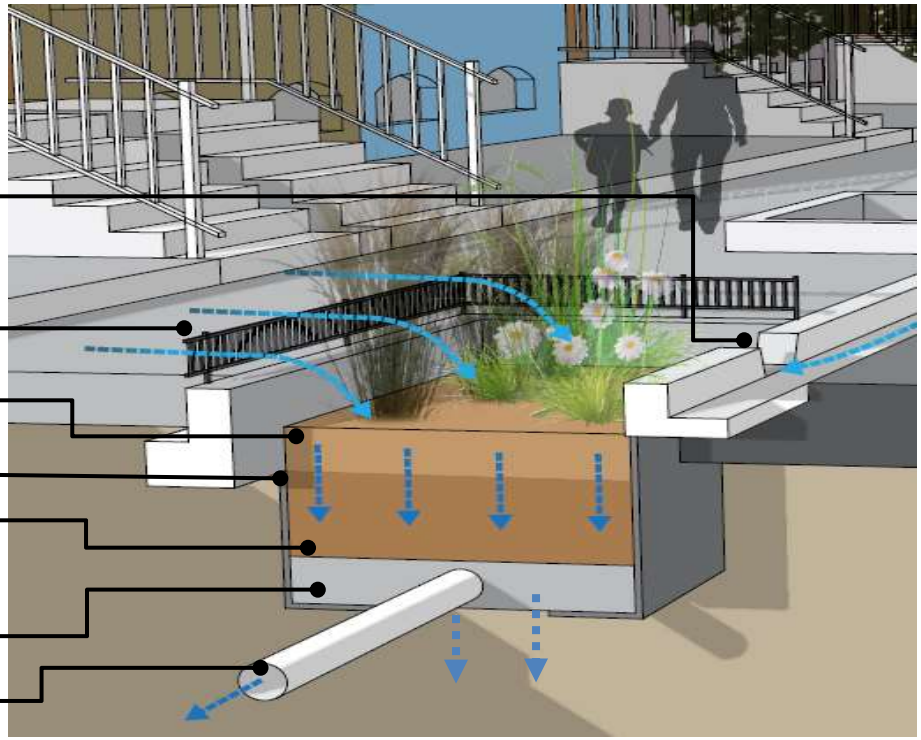
Safety Fence

Bioretention Soil Media

Impermeable Liner
Choker Layer to Prevent
BSM Migration

Aggregate Layer for Storage

Perforated Underdrain
Connects to Solid Pipe to Sewer



Planter Bioretention in Tree Planter

Typical Sizing

- Approximate width: Width of planter strip and or parking lane (for curb extension bioretention)
- Approximate Depth: 5’
- Approximate Length: 20’-40’

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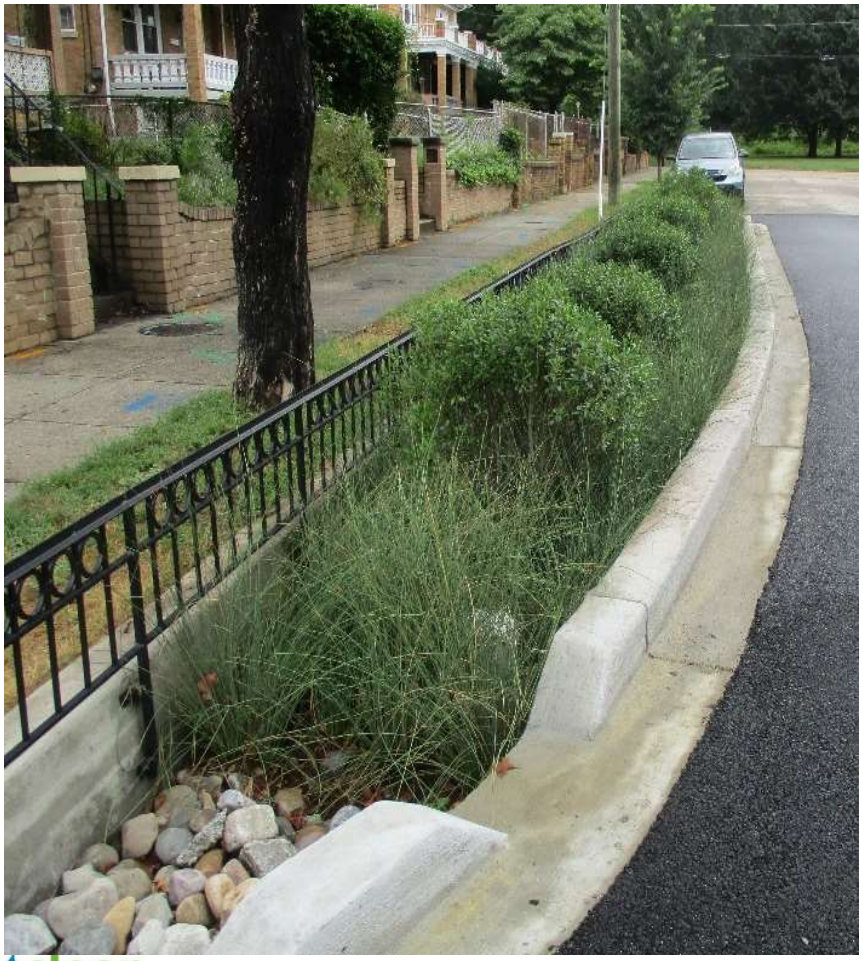
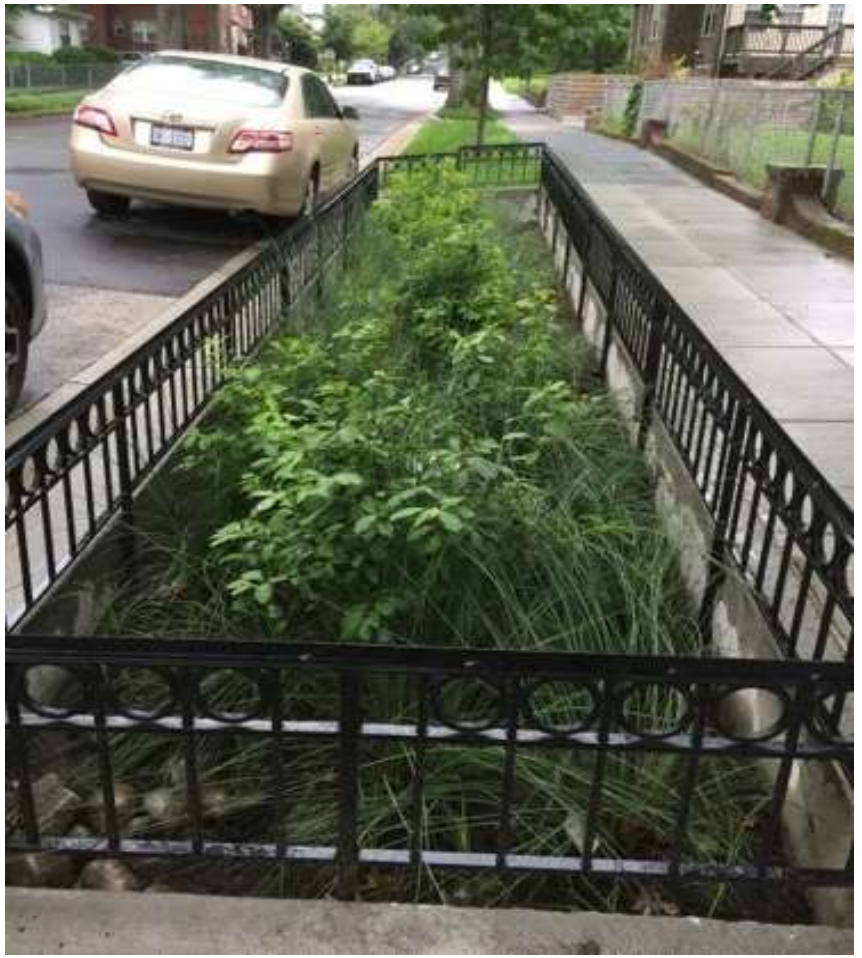
Bioretention





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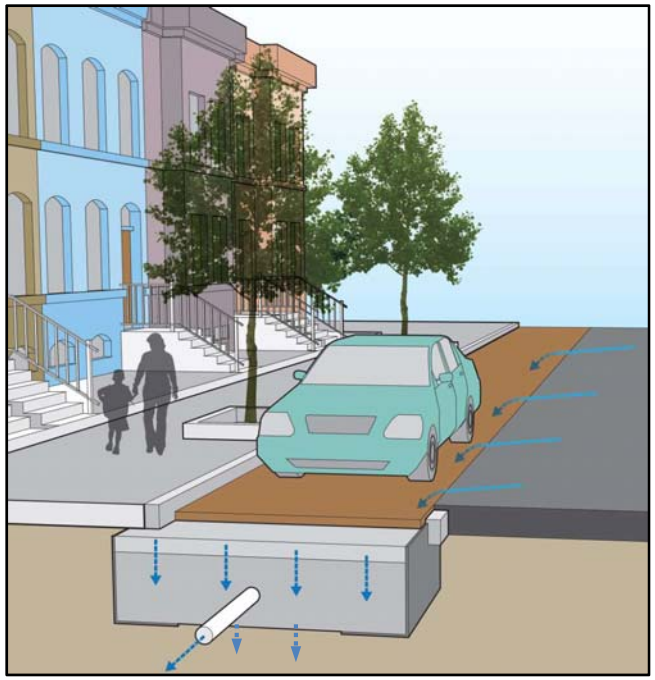
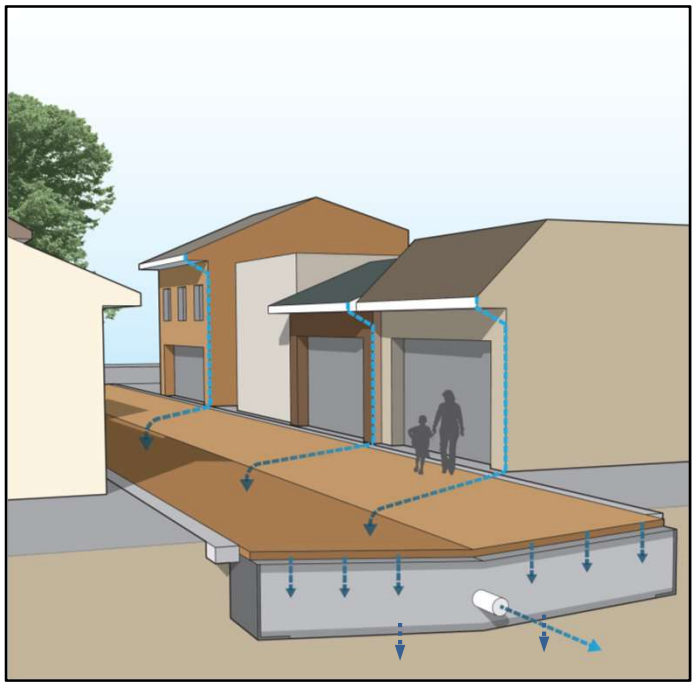
Typical Permeable Pavement

Two Applications in Right of Way:

- Parking Lane Permeable Pavement
- Alley Permeable Pavement



Permeable Pavement in Parking Lane



Permeable Pavement in Alley

Typical Permeable Pavement

Physical Components

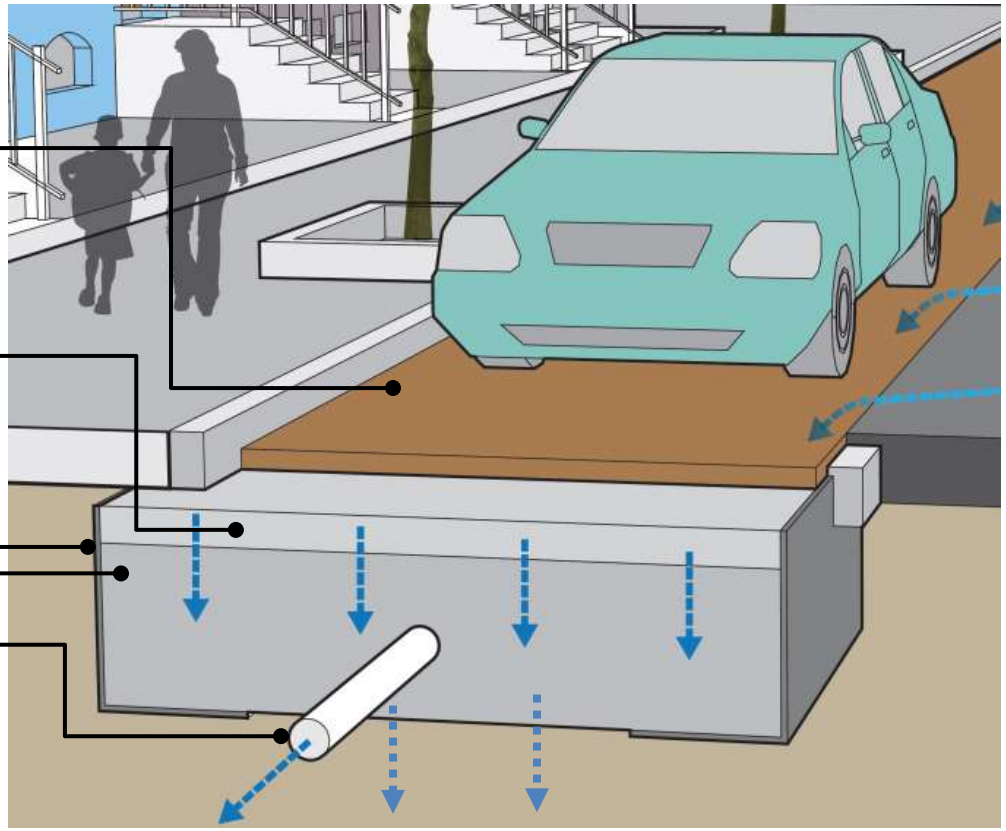
Permeable Pavement (Type to be Selected Based on Site-Specific Conditions)

Choker Layer to Prevent Sediment Migration

Impermeable Liner

Storage Layer

Perforated Underdrain connects to Solid Pipe to Sewer

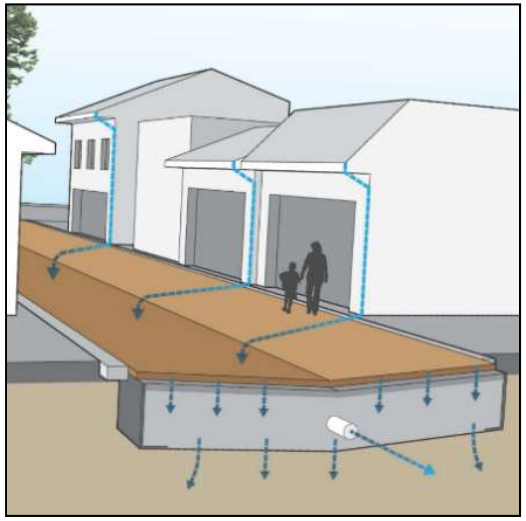


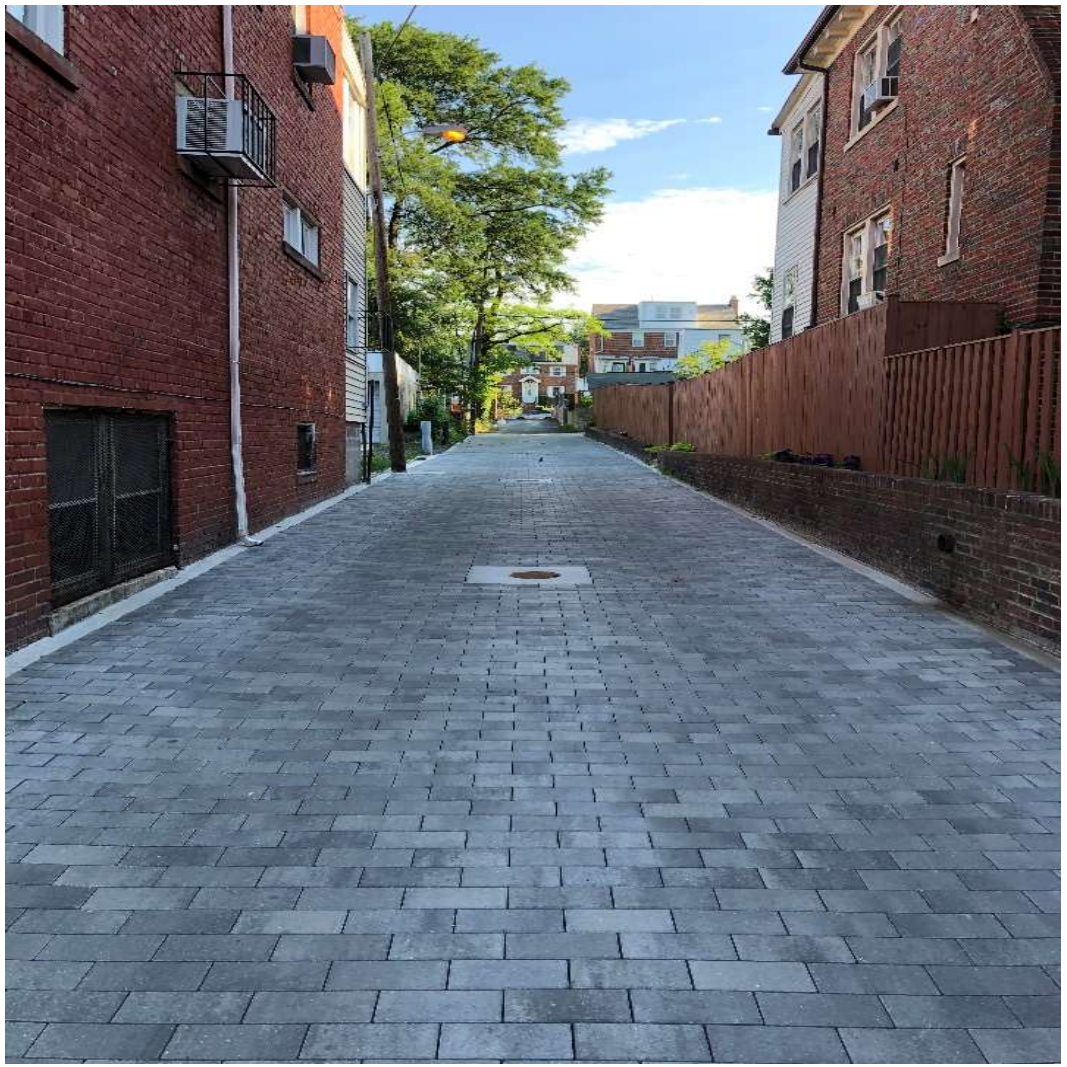
Permeable Pavement in Parking Lane

Typical Sizing

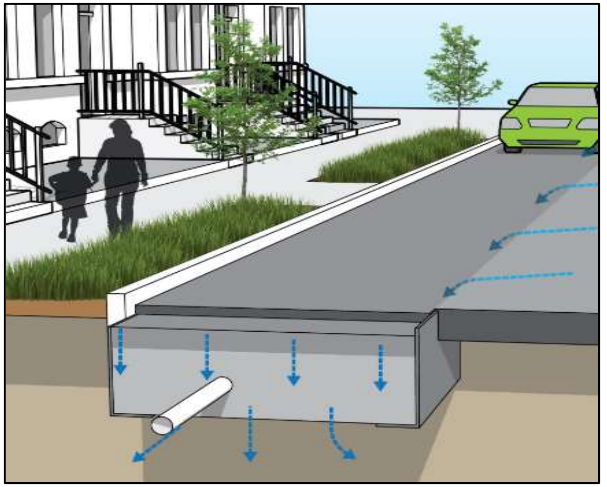
- Approximate width: Width of parking lane/alley
- Approximate Length: Up to entire length of parking lane/alley
- Approximate Depth: 3'-4'

Alley Permeable Pavement

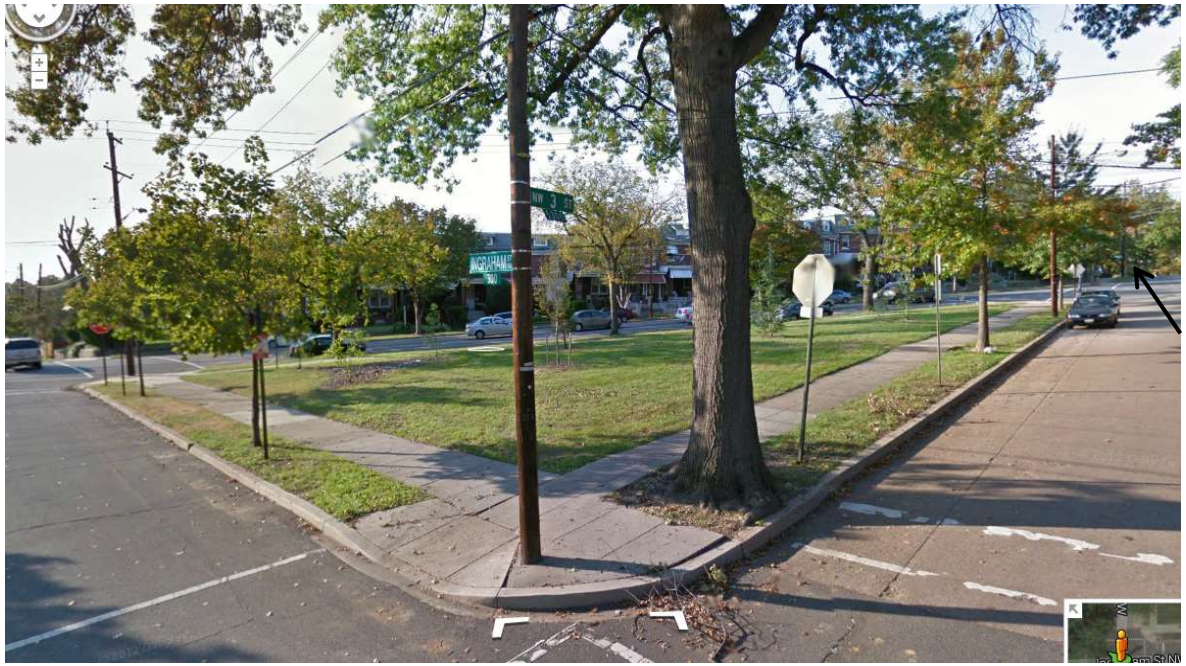




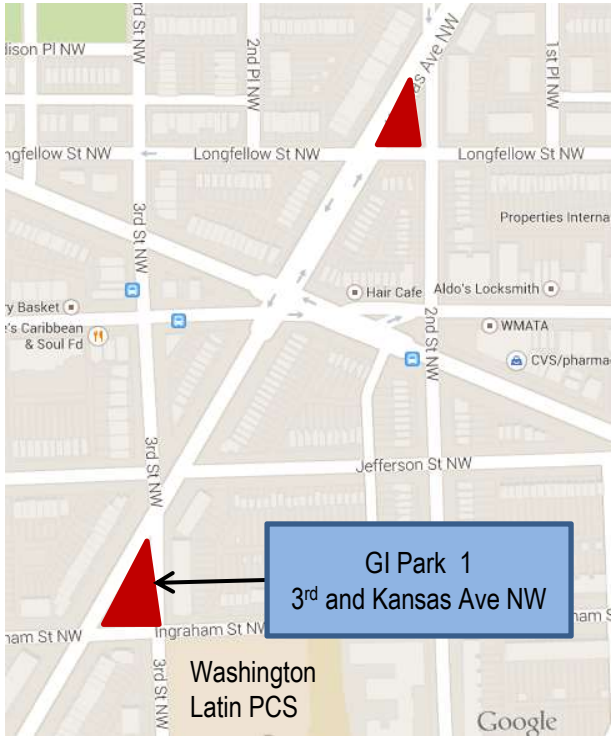
Parking Lane Permeable Pavement



Background:
Kansas Avenue GI Challenge Parks Project



3rd & Kansas Park Pre-construction condition 2013



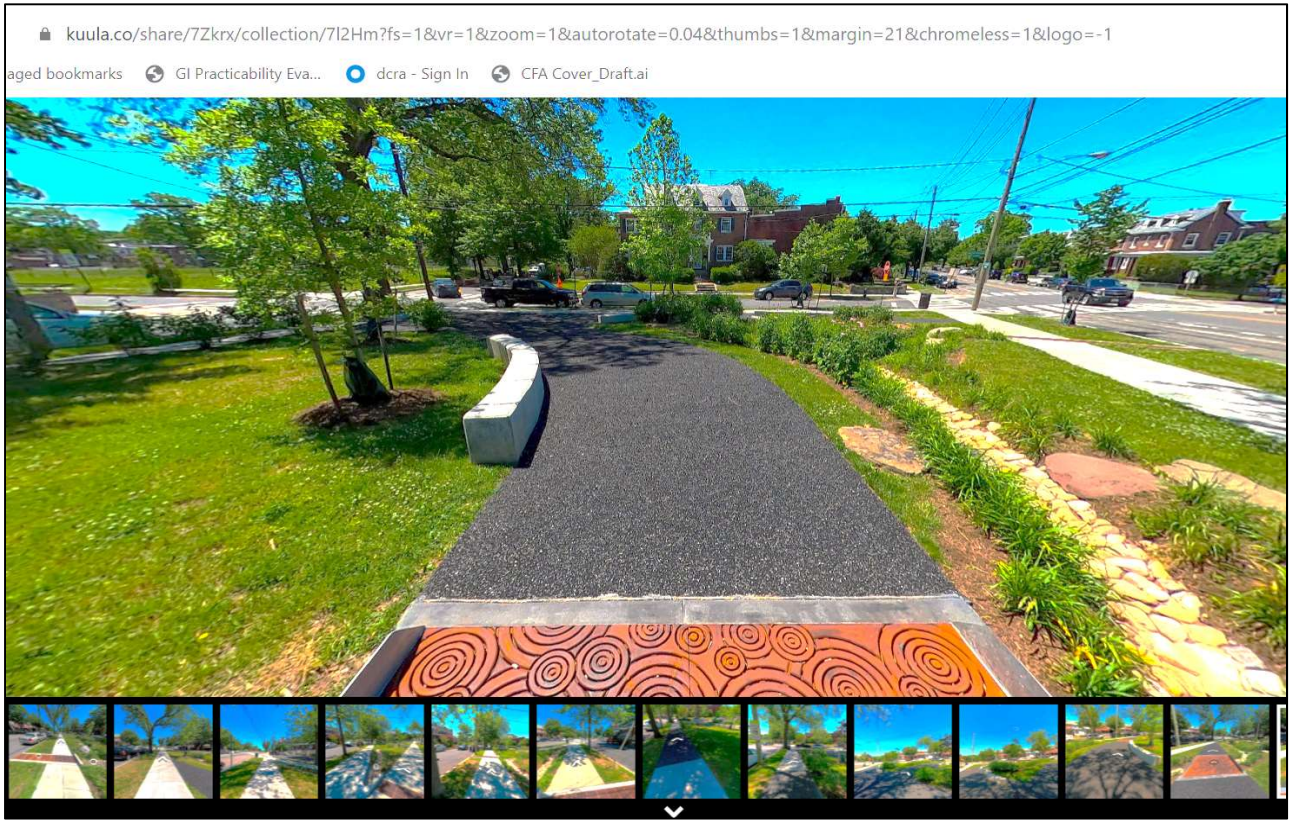
3rd Street Park Concept Plan

3rd Street Park: Post-Construction (July 2019)

3rd Street Park: Post-Construction (July 2019)

GI Park: Kansas and 3rd Street NW: (June 2020) Virtual Tour Link

- https://kuula.co/share/collection/7l2Hm?fs=1&vr=1&zoom=1&autorotate=0.04&thumbs=1&margin=21&chromeless=1&logo=-1



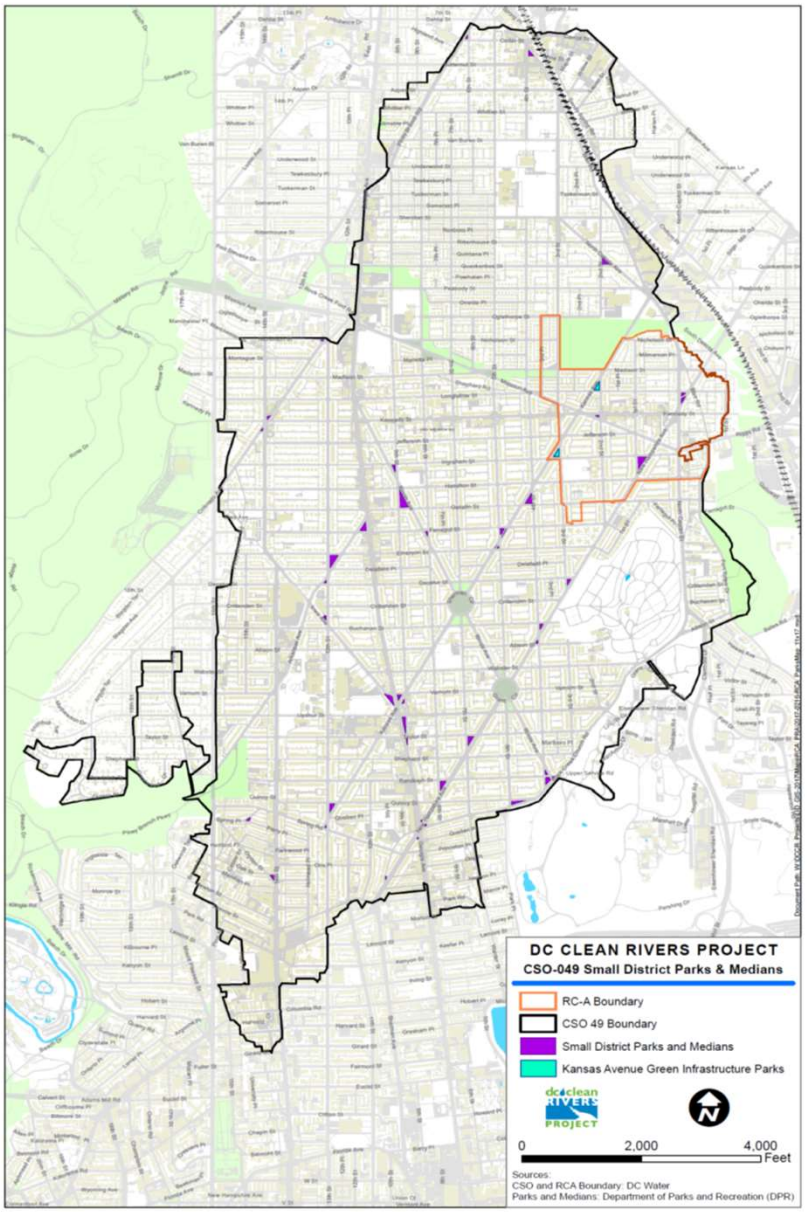
Kansas and 2nd Park – Virtual Tour Link

https://kuula.co/share/collection/7l31S?fs=1&vr=1&zoom=1&autorotate=0.04&thumbs=1&margin=21&chromeless=1&logo=-1

Future GI Parks in the Rock Creek Sewershed

Future Rock Creek Green Infrastructure Park Opportunities:

- Approximately 45 additional small parks and medians in the Rock Creek Sewershed with GI potential.
- The GI Parks submittal to the U.S. Commission of Fine Arts (CFA) introduced the option for a Master Plan approach, which was supported in concept.
- DC Water is considering various procurement mechanisms for Park implementation under future phases of the Program.



GI Challenge Streetscape
100 Block Kennedy Street NW - Concept Plan

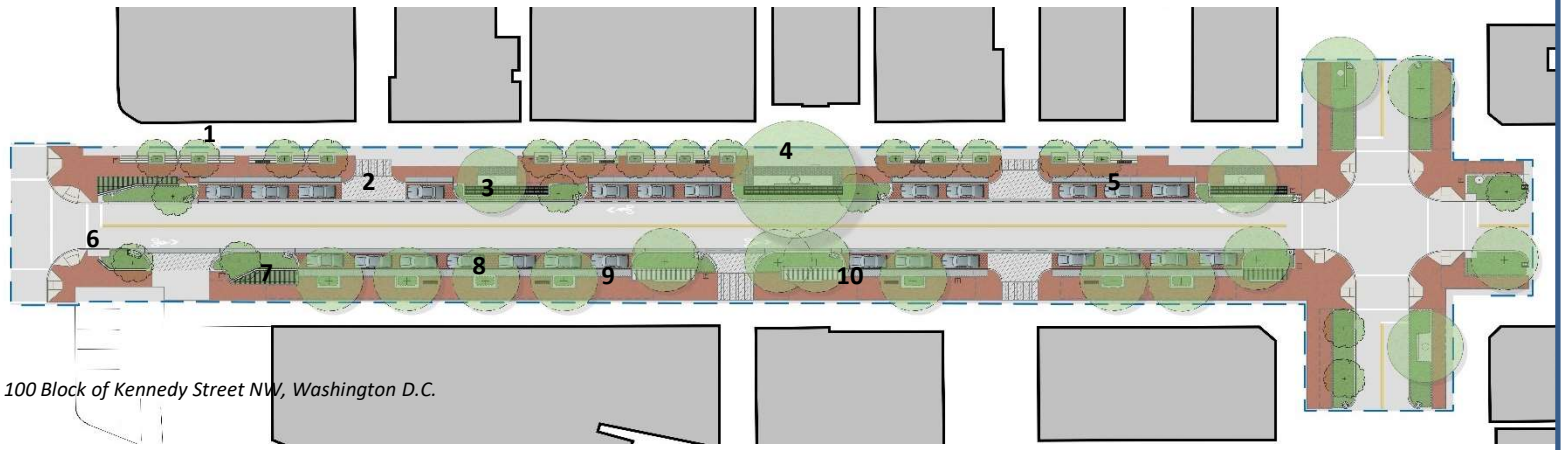
1) Landscape Infiltration Gaps

2) Shared Streets

3) Grated Boardwalk Crossings

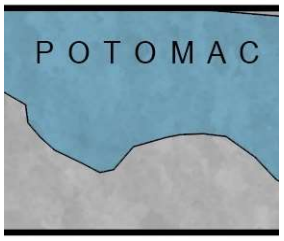
Established Trees

5) Permeable Parking Lanes



6) Bioretention Curb Extension

7)Public Art / Education



8) New Street Trees

9) Recessed Landscape Planters

Kennedy Street Background

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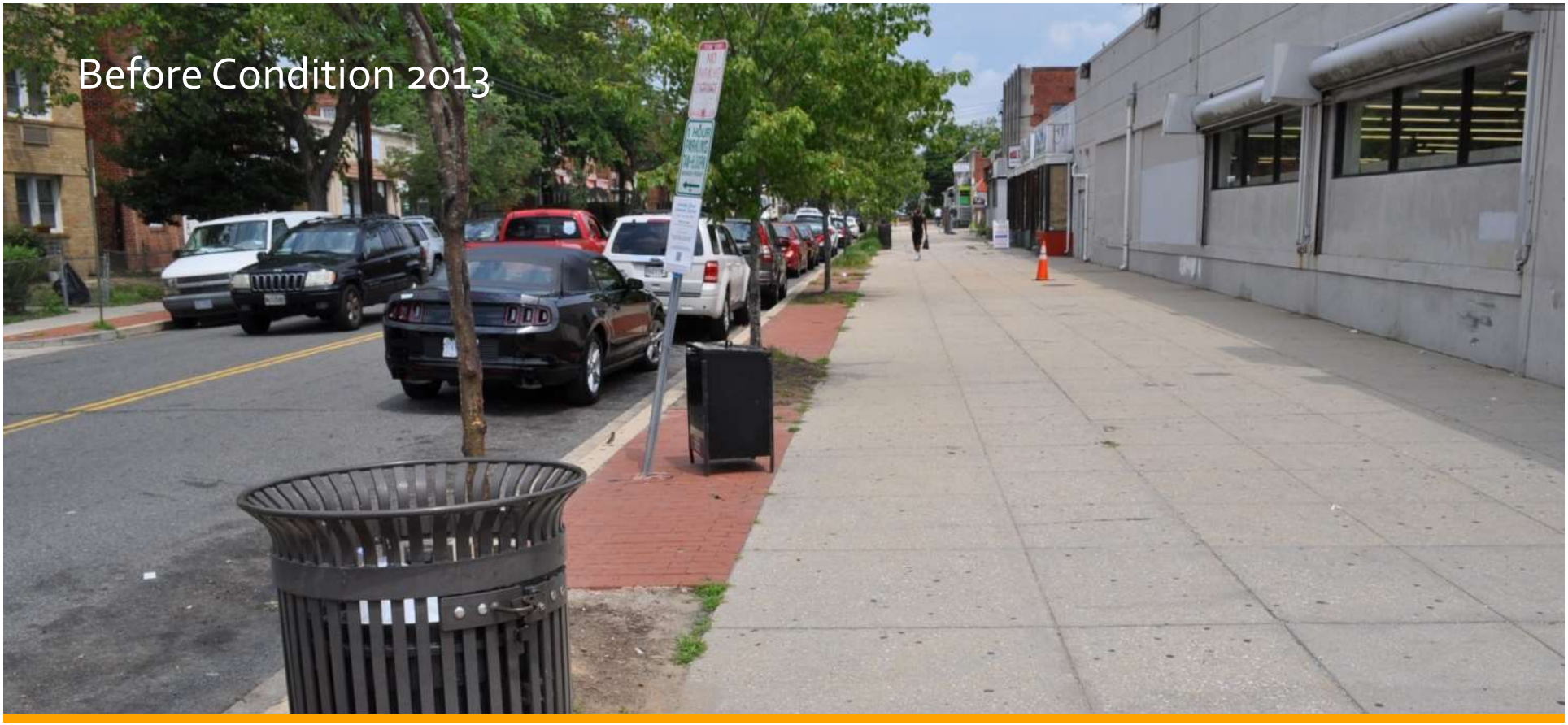

Kennedy Street

Pre-Design Conditions

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Kennedy Street

Pre-Design Conditions

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GI Challenge Streetscape
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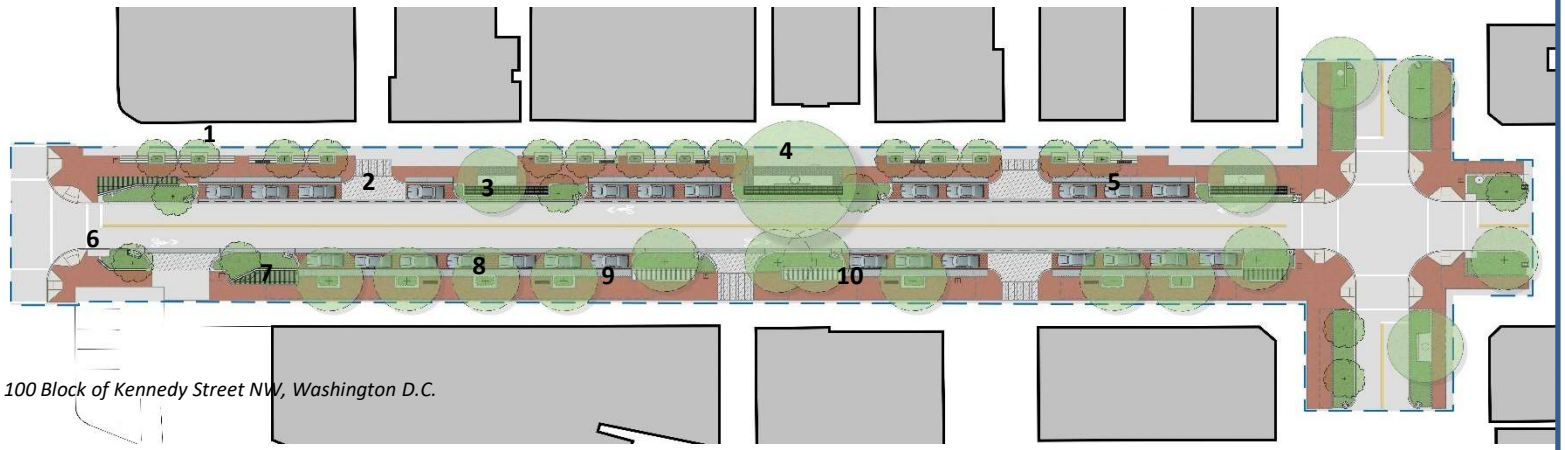

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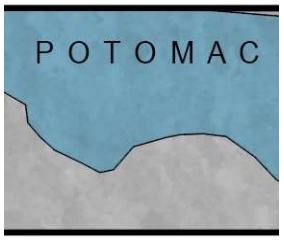

8) New Street Trees

9) Recessed Landscape Planters

Post-Construction Photos

June 2019

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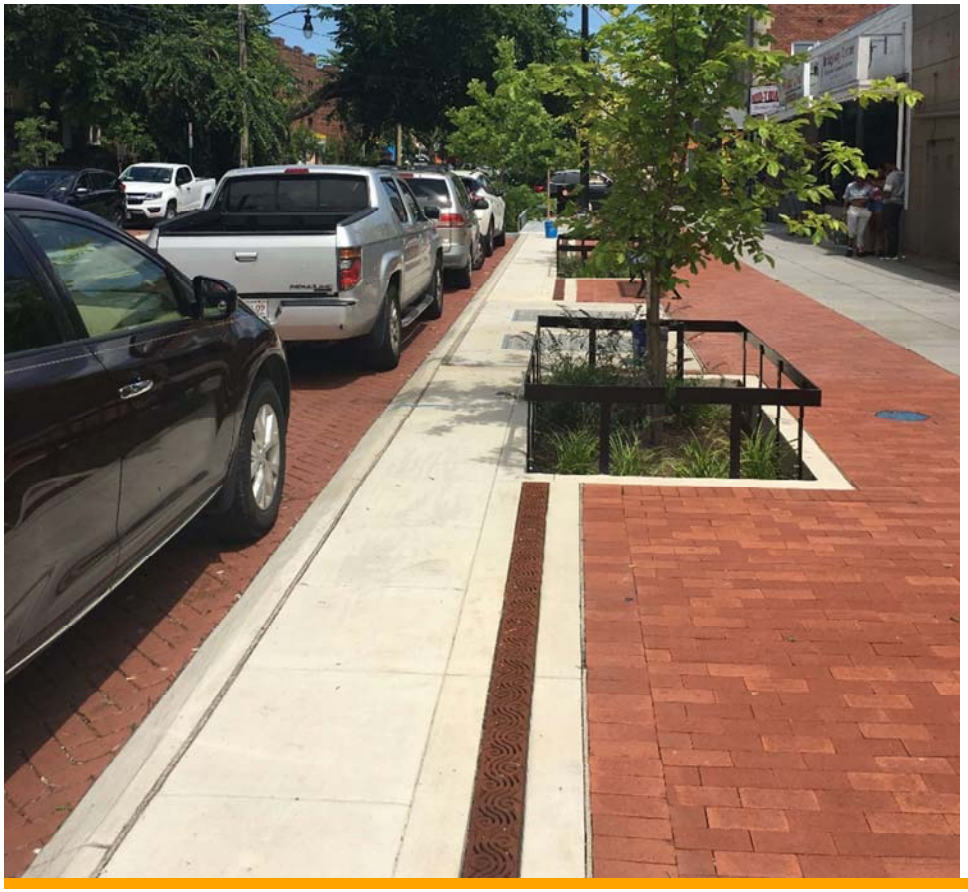
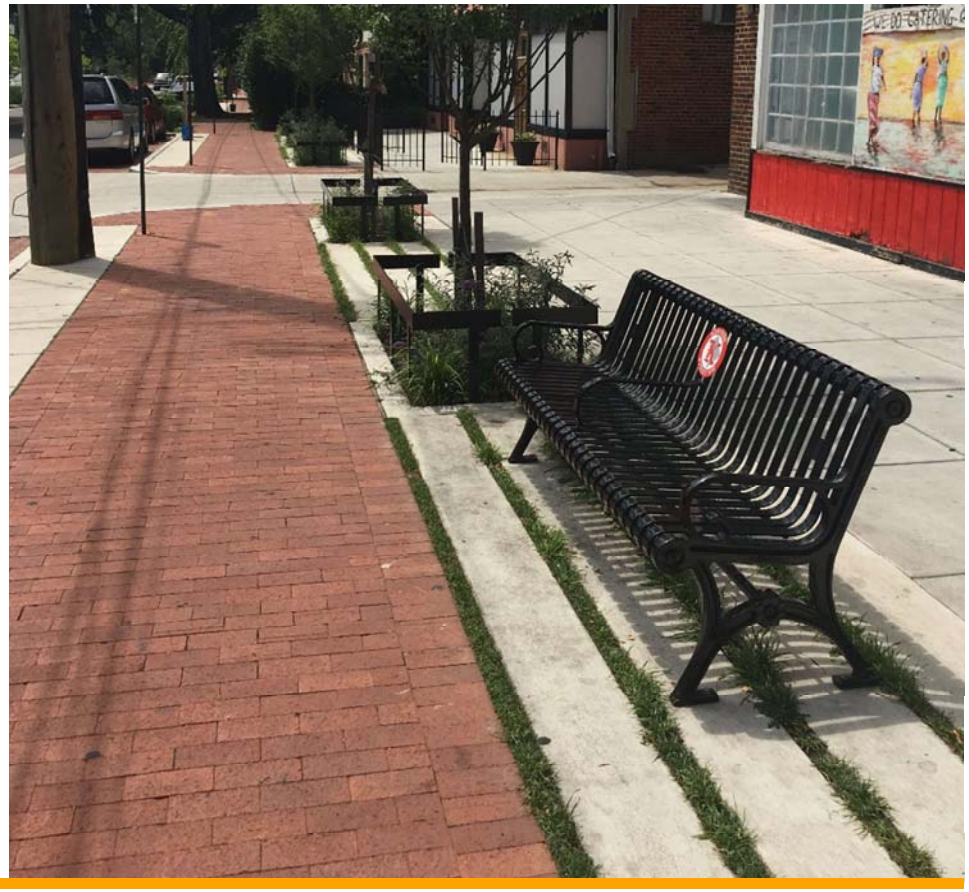
Post-Construction Photos

June 2019





Post-Construction Photos

June 2019

Post-Construction Photos

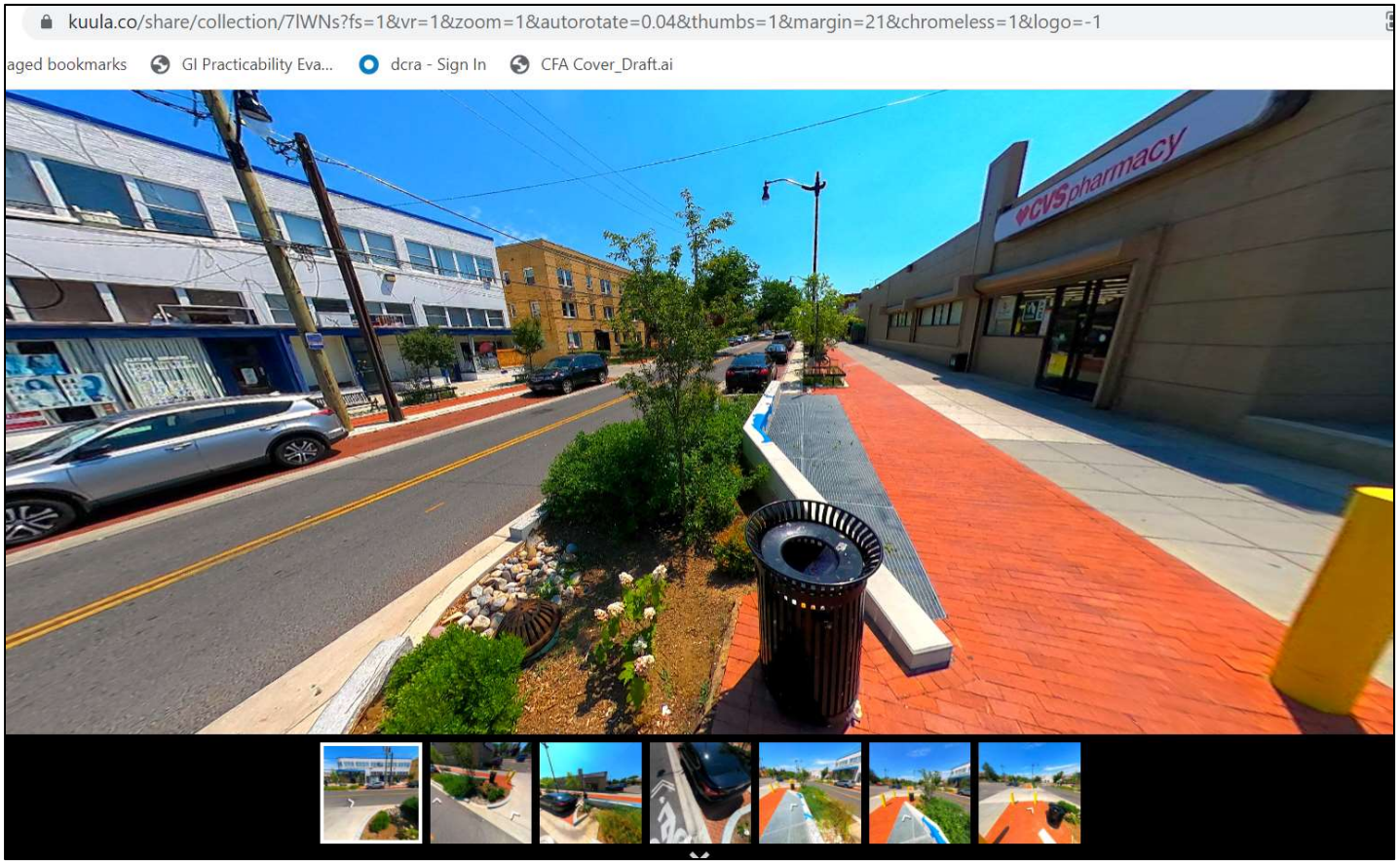
June 2019

Post-Construction Photos

June 2019

Kennedy Street Virtual Tour Link (June 2020)

- https://kuula.co/share/collection/7lWNs?fs=1&vr=1&zoom=1&autorotate=0.04&thumbs=1&margin=21&chromeless=1&logo=-1



Performance

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Post-Construction
Performance

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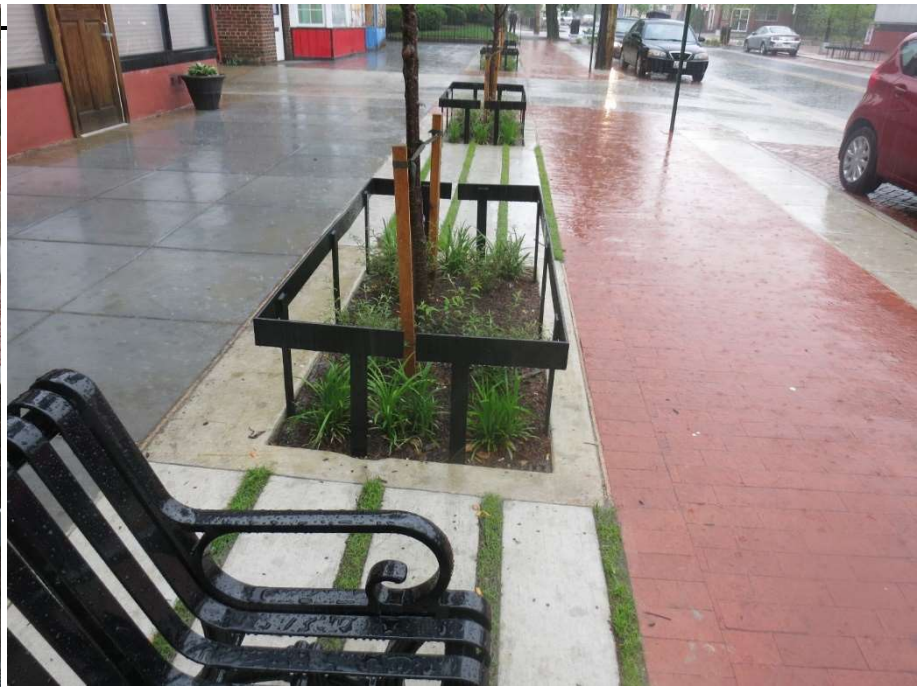
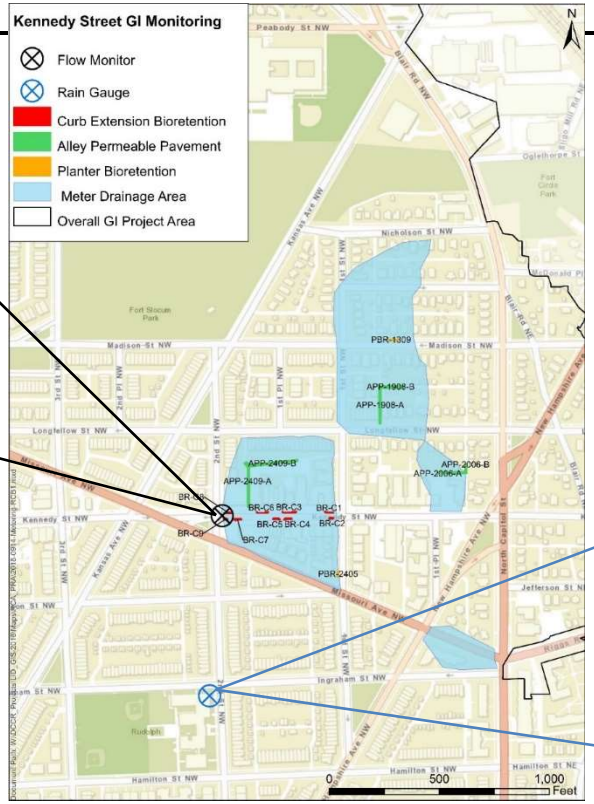


Post-Construction
Performance

Post-Construction
Performance

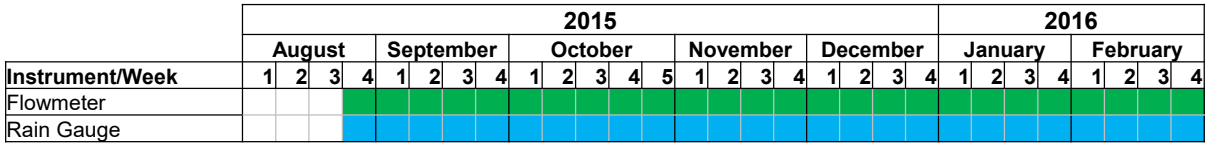
Flow and Rainfall Monitoring Sites



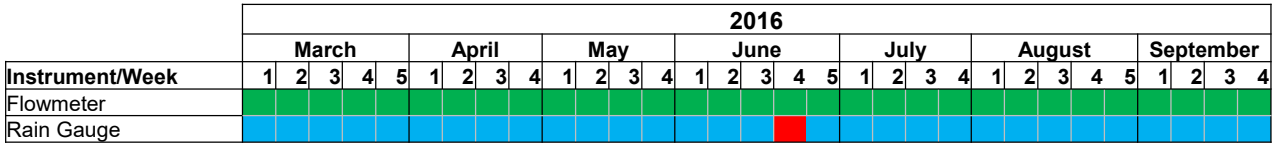
Post-Construction
Performance

Periods of Record

Pre-construction



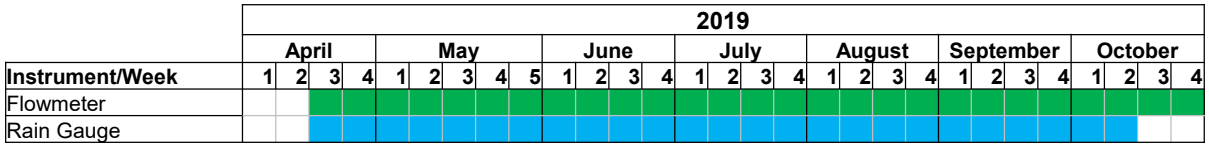
	2015																				2016							
	August				September				October					November				December				January				February			
Instrument/Week	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Flowmeter																													
Rain Gauge																													



	2016																															
	March					April				May				June					July				August					September				
Instrument/Week	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
Flowmeter																															
Rain Gauge																															

Uptime
Flowmeter: 100%
Rain gauge: 98.2%

Post-construction



	2019																															
	April					May					June				July				August				September				October				
Instrument/Week	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Flowmeter																																
Rain Gauge																																

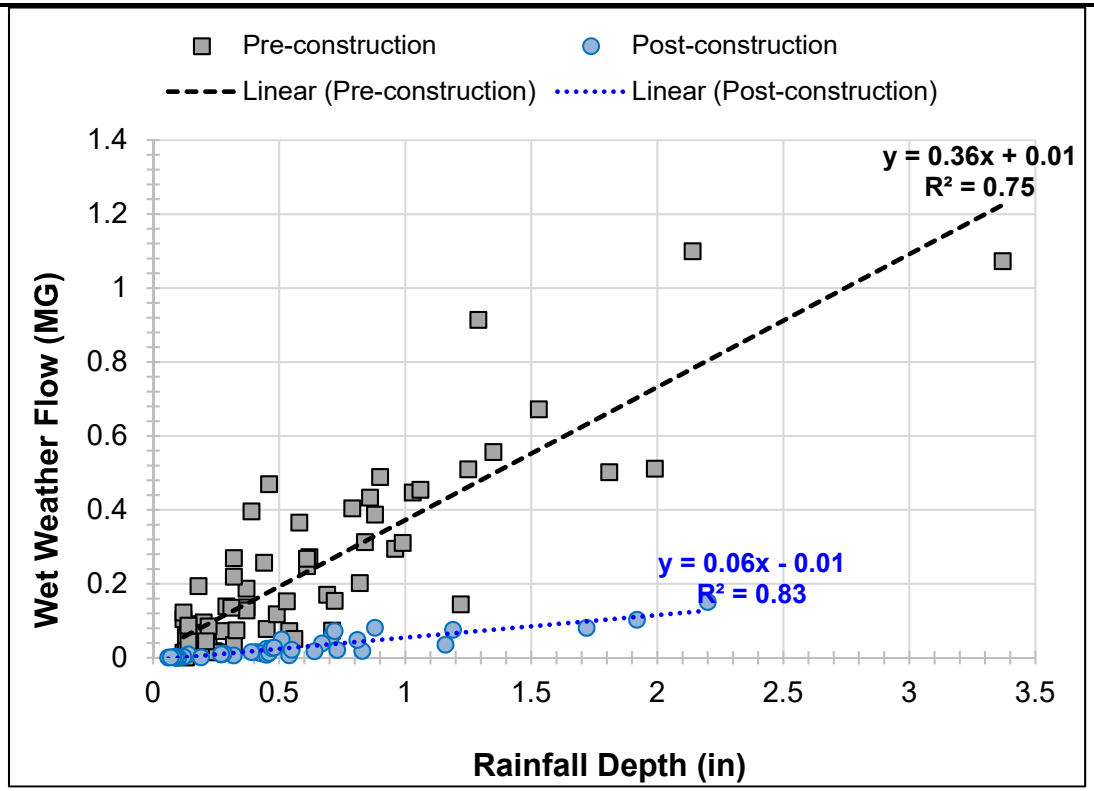
Uptime
Flowmeter: 100%
Rain gauge: 100%

Legend

- Continuous flow signal
- Continuous rainfall signal
- Rain gauge out-of-service

Post-Construction Performance

Pre- vs Post- Construction Performance

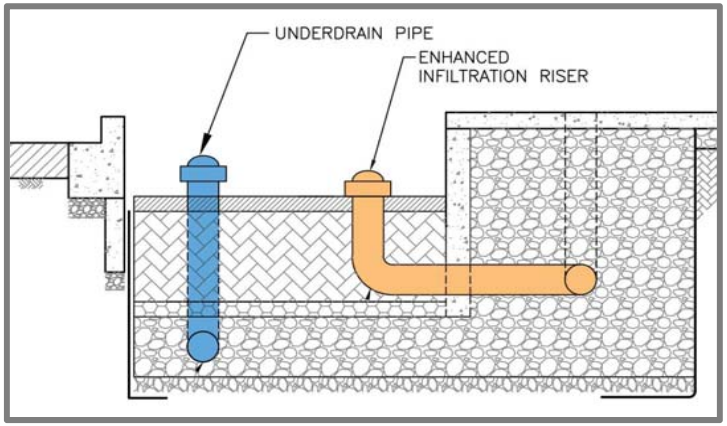


83% REDUCTION IN THE VOLUME OF WET WEATHER FLOW!

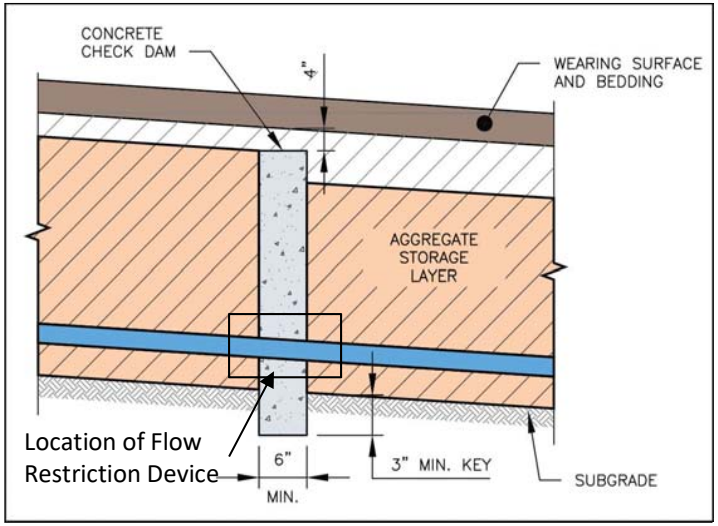
Post-Construction Performance

GI Challenge and the Long Term Control Plan:
Informing the DC Clean Rivers GI Program

- Design Standards
  - Sediment Control (Filter baskets, Sump Inlets)
  - Underdrain Disconnect Valves
  - Subsurface Weirs/Check Dams
  - Surface Capture and Distribution
  - Subsurface Distribution
  - Tree Protection and Soil Volume
  - Aggregated capture
  - Treatment Train
  - Plant Selection
  - Maintenance Optimization
  - Revealed Stormwater Management



Example of Enhanced Infiltration System in a Bioretention Facility



Example Check Dam to slow flow in a GI Facility

Questions?

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Email: Seth.Charde@dcwater.com