



# The New York City Green Infrastructure Program

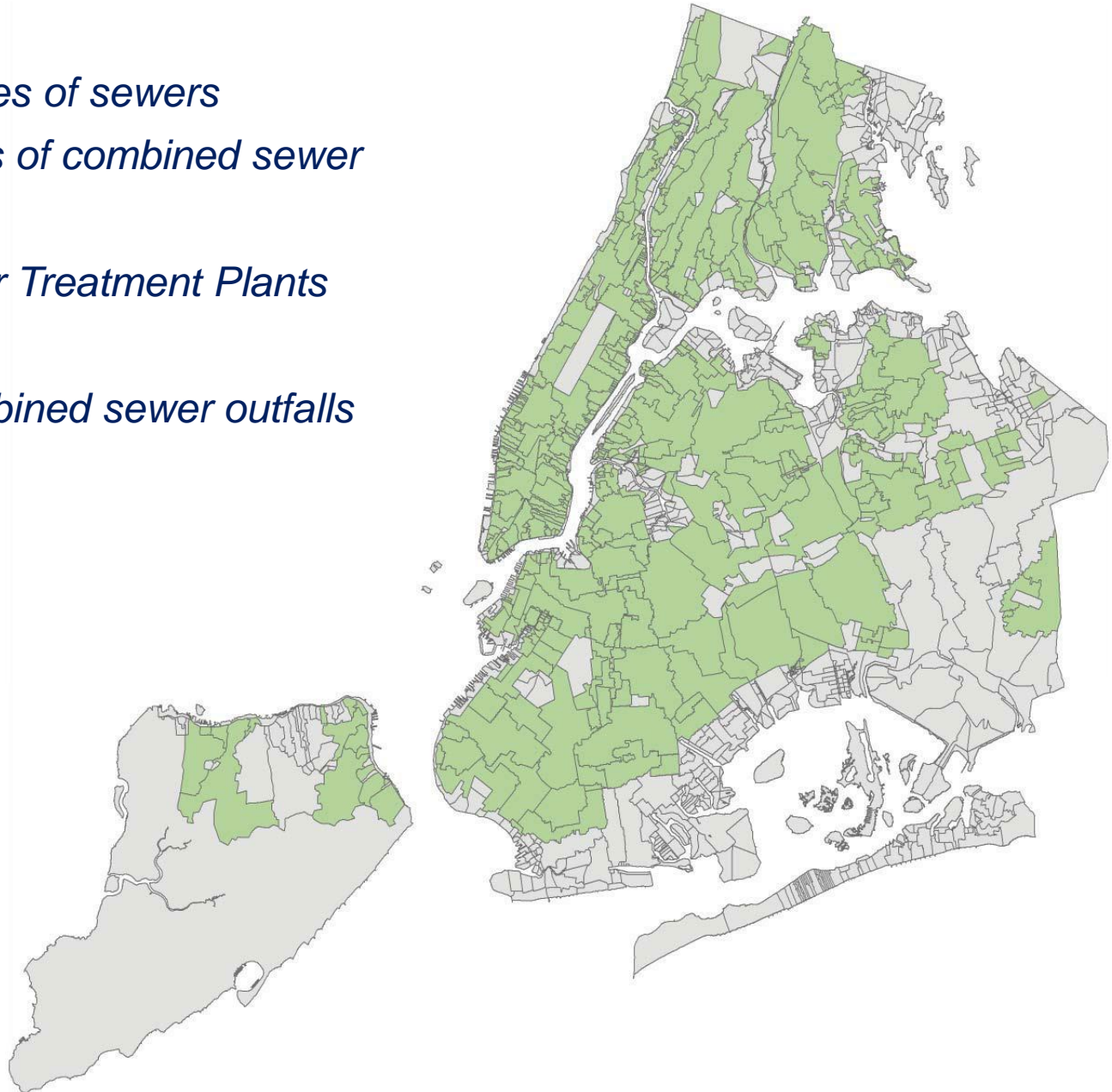
## Intro, Challenges, and Solutions

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Lower Hudson Coalition of Conservation Districts  
Southeast New York Stormwater Conference  
October 18, 2017

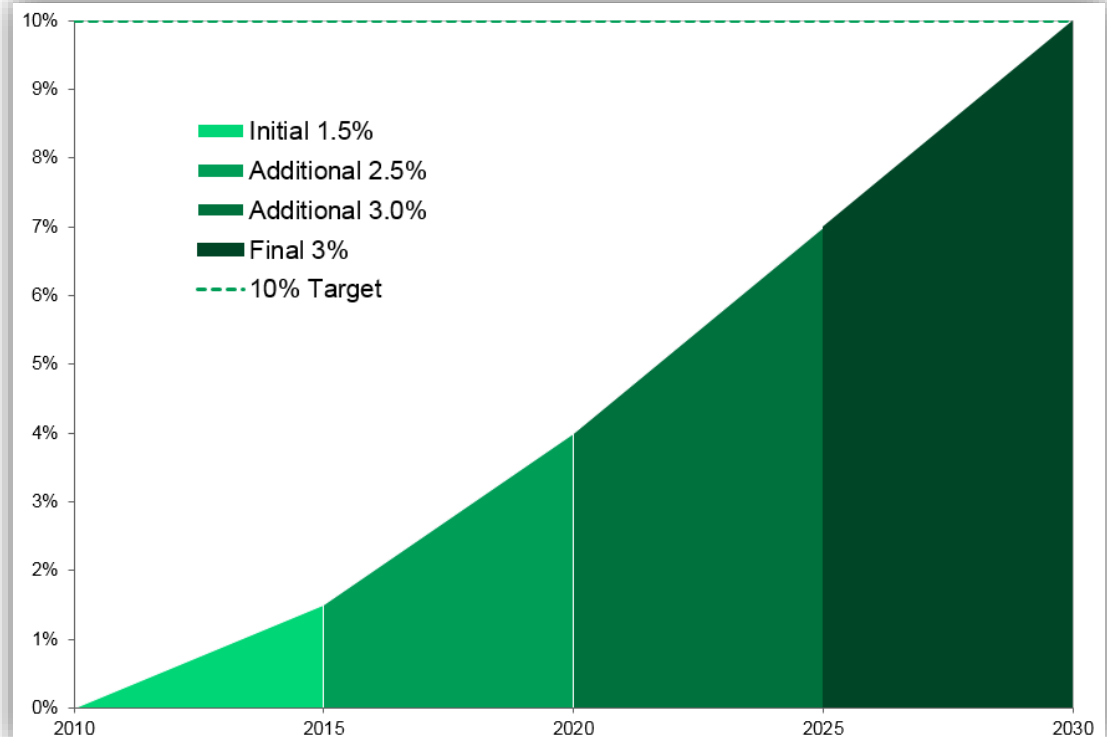
*Adriana Kocovic, New York City Department of Environmental Protection*  
*Erin Cuddihy, New York City Department of Transportation*

- *7,400 total miles of sewers*
  - *3,337 miles of combined sewer*
- *14 Wastewater Treatment Plants*
- *Over 400 combined sewer outfalls*



*In 2012, DEP and NYS Department of Environmental Conservation (DEC) signed an Amended Consent Order.*

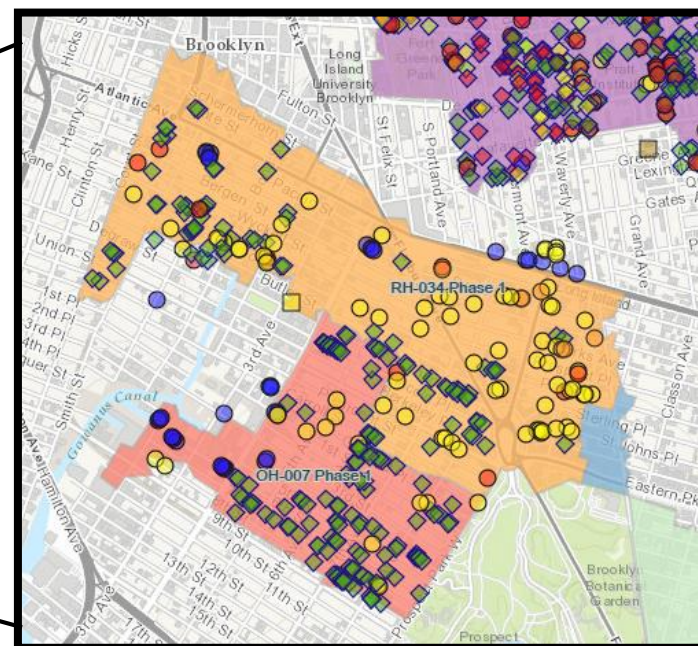
*Commitment to spend \$1.5 billion to **manage 1" of stormwater runoff from 10% of impervious surfaces in combined sewer areas by 2030.***







- *Focus resources on selected CSO tributary areas (Priority Areas)*
- *Saturate these CSO tributary areas with as much GI as practical*
- *Achieve efficiencies through standard designs, specifications and procedures*



*Bi-weekly meetings and constant communication between agencies*

Agency	GI Responsibilities
DEP	Stormwater capture effectiveness Citywide GI program management Area-wide contract management Maintenance
DOT	Maintaining street and sidewalk use Roadway safety
DPR	Planting and transplanting trees Plant health Area-wide contract management
DDC	Contracting Construction Management Area-wide contract management
EDC	Area-wide contract management



*Stormwater is captured in green infrastructure installations before reaching catch basins, reducing stormwater in the combined sewers and combined sewer overflows.*

## Original Designs

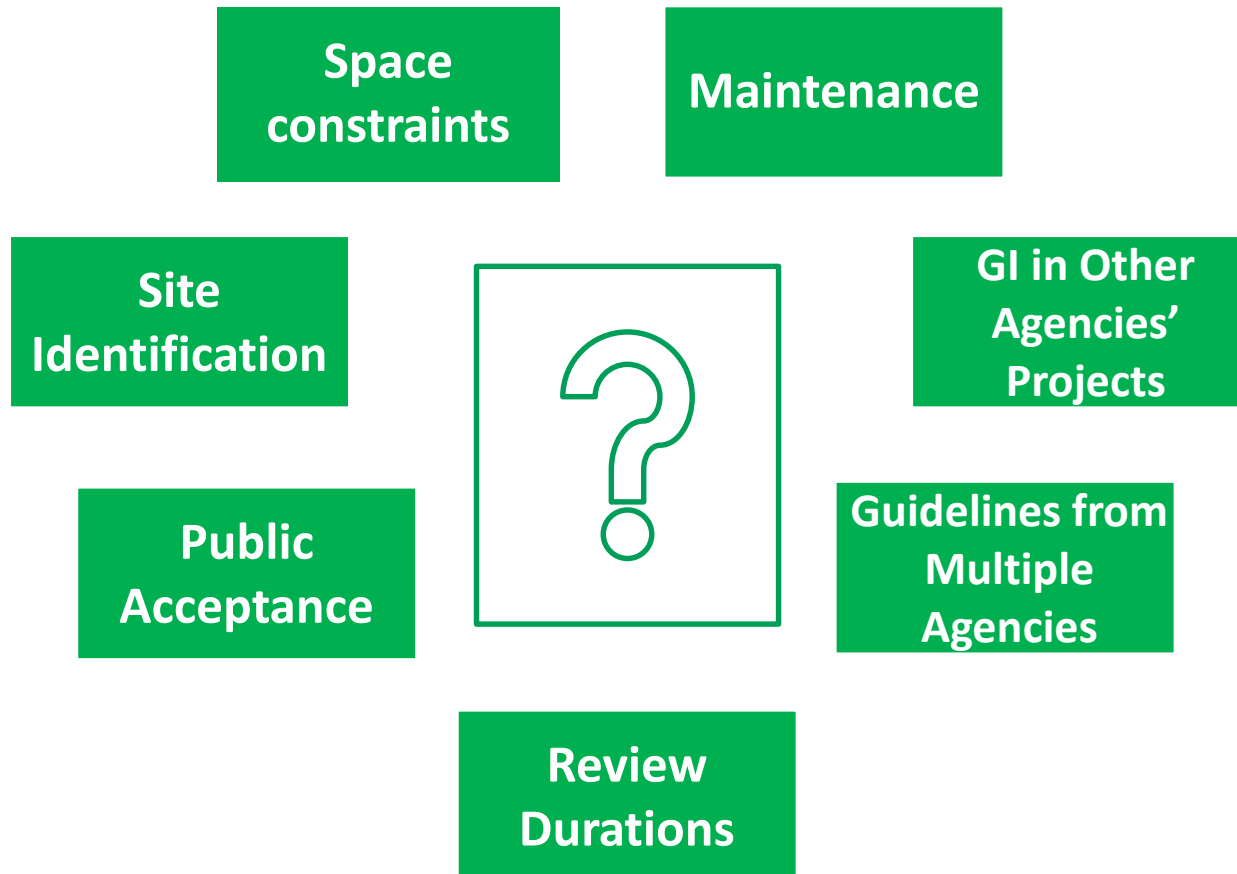


**ROW Rain Garden (ROWRG)**  
*Fully within sidewalk*



**Stormwater Green Street (SGS)**  
*Bumped out into street*

*Numerous inter-agency and intra-agency challenges  
in GI implementation*



## Problem

Pedestrian clear path requirements	Gates
ADA	Signs
Doorways	Benches
Street furnishings in sidewalk	Trees and tree canopies
Driveways	Etc...

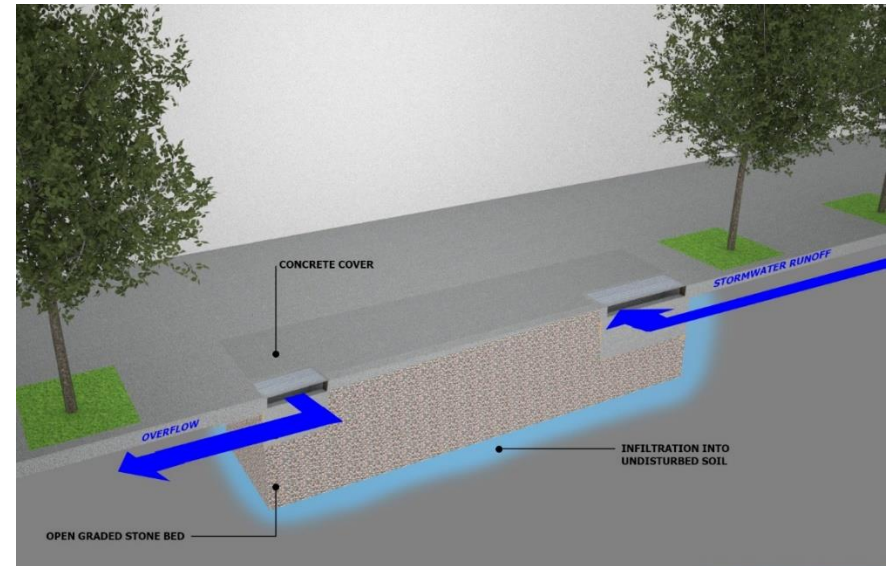
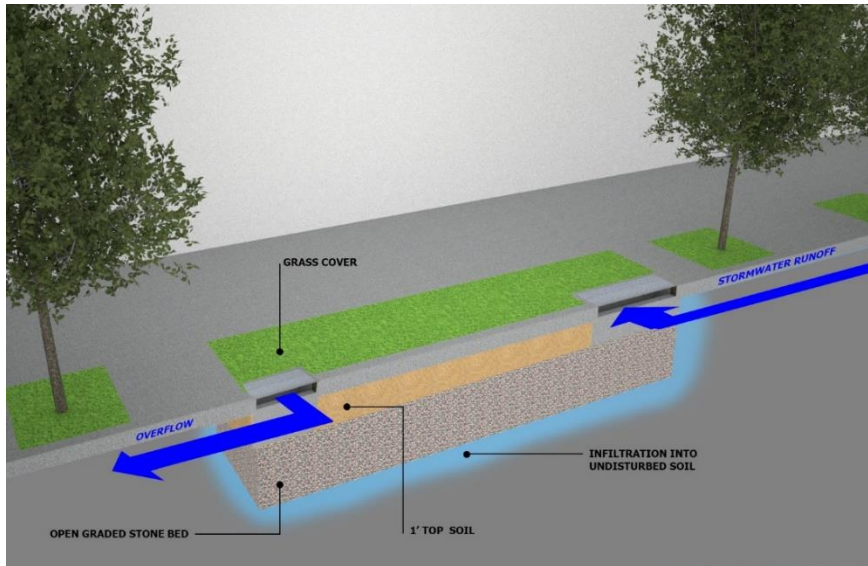


## Solution

New design: "Infiltration Basins"	Can site closer to furnishings and in clear path
Grass-top	
Concrete-top	Rain gardens with trees are still the first choice
Fits in existing context	



## New Designs: “Infiltration Basin”



## Problem

All agencies attending walkthroughs  
was slow

Limited siting to a few  
walkthroughs/week



## Solution

“Self-certification” for DOT and DPR

Checklists and photo logs

Consultants perform walkthroughs  
on agencies’ behalf

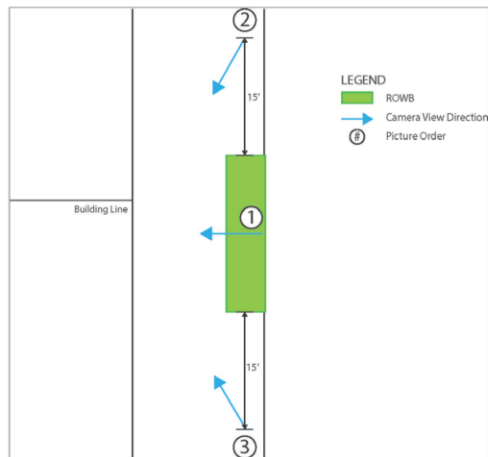
Up to 5 walkthroughs/day

## NYC DOT Walkthrough Issues Submission Requirements (November 2016)

With this guide, the NYC DOT Green Infrastructure Unit intends to make walkthrough submissions for DOT issues easier and more consistent. For each self-certification walkthrough submission the consultant shall submit a spreadsheet listing the potential conflicts (in detail) and locations thereof, as well as a photo log clearly illustrating the potential conflict in relation to the proposed extents of the Green Infrastructure asset.

### Photo Perspectives

The following diagram illustrates the photographic perspectives requested by DOT to adequately show the proposed Green Infrastructure asset in context. The photos must clearly show the corners of the proposed GI assets.



Photographic perspectives illustrated above:

1. Facing the building line/property line from the center of the proposed GI asset.
2. Diagonal toward the building line/property line from 15' away to the right.
3. Diagonal toward the building line/property line from 15' away to the left.

In addition, please provide the following images:

4. A photo showing the proposed Green Infrastructure asset ID.
5. A detail view of the sign or other issue.

The following two pages are a template for the consultant to use. The proposed ROWB location shown in the example is a mock-up using chalk. The two pages show all five of the views requested, and clearly show the proposed ROWB corners and the issue in question (in this example, the issue is a street cleaning sign). Thank you for your cooperation.

(Walkthrough Photos Example)  
HP0012-01, ROWB 620A, 11/10/2016



## Problem

DOT and DPR internal reviews taking too long



## Solution

DOT Borough Engineering training for DOT GI staff

DPR GI employees trained and dedicated to providing GI reviews on DPR's behalf

Identify signs that can be relocated



Determination: OK to site in “No Standing Anytime” zone



Determination: Signs cannot be moved

## Problem

Mobility challenges

Preference for the status quo



## Solution

Updated standard designs to include  
GI assets with flush surface

Increased emphasis on public  
outreach: CB meetings, letters, phone  
calls, door hangers

Opt-out being developed

## Opt-out program

NYC

Environmental Protection

NYC Resources311Office of the Mayor

Home

Customer Services

Water Utilities

The Watershed

Citywide Initiatives

Pay Online

Ways to Pay Your Bill

eBilling

Account Information

Customer Assistance

Service Line Protection Program

Water Rates

Property Managers & Trade Professionals

Drinking Water

Wastewater

Stormwater

Types of Sewer Drainage Areas in New York City

Combined Sewer Overflows

Flooding in New York City

NYC Green Infrastructure Program

Other Stormwater Management Investments

Harbor Water

Long Term Control Plan

Watershed Protection

Watershed Recreation

Environmental Education

Conservation Programs

Air Pollution Control

Rain Garden Opt-Out

Green infrastructure, such as a rain garden, improves the environment by creating opportunities for rainwater to be naturally absorbed into the ground instead of flowing along the street and into a sewer. It can also benefit your property by reducing ponding on the roadway, providing shade, and greening your community. To date, DEP has successfully installed more than 4,000 green infrastructure systems across the City.

The curb in front of your property was selected after DEP engineers thoroughly evaluated the conditions on and beneath your street to ensure that the green infrastructure will function properly and will not affect parking. After the work is complete, DEP staff will continually inspect and maintain the rain garden.

We understand that having green infrastructure along the curb may pose concerns to some homeowners, particularly those with special situations. DEP will not install green infrastructure in front of one, two, or three family houses where: a resident of the home possesses a valid parking permit for people with disabilities; or an in-ground sprinkler system that has been installed in the grass strip along the curbline.

If one of these two categories apply to your property, and you prefer to maintain the current look of your grass or cement area along the curb, you must fill out the form below within 30 calendar days of receiving notice.

Asset ID \*

Name \*

Email \*

Phone Number \*

Address \*

Address Number

Street Name

Borough

Submit

Rain Gardens Hotline

Rain Gardens Email

GI Program Map

GI Program Flickr

Grant Program

GI Annual Reports

Updated Design Standards

NYC Green Infrastructure Video

Problem

Consultants must consider DEP, DOT,  
DPR siting requirements



Solution

Multi-agency combined siting guidelines  
for GI consultants



## Combined Guidelines

Citywide Siting Criteria for Green Infrastructure - Required Clearance to Street Features					
Features	ROWB/ROWGS	SGS	Infiltration Basin (Concrete)	Infiltration Basin (Grass)	Tree Spacing for GI
Bus stops	<ul style="list-style-type: none"> <li>• 100' back from posted bus stop sign</li> <li>• 20' ahead of posted sign</li> <li>• Do not install GI aprons in concrete bus pads</li> </ul>	<ul style="list-style-type: none"> <li>• 100' back from posted bus stop sign</li> <li>• 20' ahead of posted sign</li> <li>• Do not install GI aprons in concrete bus pads</li> </ul>	Do not install GI aprons in concrete bus pads	Do not install GI aprons in concrete bus pads	Do not plant within bus stops
MTA facilities	25'	25'	25'	25'	Avoid blocking
Schools	<ul style="list-style-type: none"> <li>• 25' from center of main entrance (50 feet total clear space required in front of entrance)</li> <li>• Do not site in school bus loading areas</li> </ul>	25' from center of main entrance (50 feet total clear space required in front of entrance)	N/A	N/A	Do not plant in front of entrances
No Standing Zones	N/A	N/A	N/A	N/A	Do not plant within no standing zones
Building lines	7'	7'	7'	7'	Minimum distance from tree trunk to building line is 7'
Projections into pedestrian clear path	Diagonal clearance at 45° of 7'	Diagonal clearance at 45° of 7'	N/A	N/A	N/A
Building vaults	7'	7'	7'	7'	No Tree between Vault and curb
Crosswalks (marked and unmarked)	5'	5'	5'	5'	N/A
Driveways/legal curb cuts	5'	5'	5'	5'	Minimum distance to tree trunk is 7'
Doorways	<ul style="list-style-type: none"> <li>• Do not site in front of door</li> <li>• Precast concrete walkway can be in front of door</li> <li>• Do not site in front of gate</li> <li>• Provide 5' clearance from gate swing</li> <li>• For small residential gates in low-density neighborhoods, provide 3' clearance from gate swing</li> </ul>	Provide pedestrian path in front of door	N/A	N/A	Do not plant in front of entrances
Gates	<ul style="list-style-type: none"> <li>• Provide 5' clearance from gate swing</li> <li>• For small residential gates in low-density neighborhoods, provide 3' clearance from gate swing</li> </ul>	N/A	N/A	N/A	N/A
Street lights	5'	Check with street light unit if light in sidewalk behind SGS	3'	3'	25' from tree trunk
Utility poles and guy wires	5'	Check with utility if utility pole/guy wire in sidewalk behind SGS	3'	3'	25' from tree trunk
Tree pits	5'	<ul style="list-style-type: none"> <li>• Tree pit can be on sidewalk behind SGS</li> <li>• If tree pit is not directly behind SGS, then provide 5' between tree pit and edge of SGS</li> </ul>	N/A	N/A	Minimum distance between trees (trunk to trunk) shall be 20' - 30' depending upon the tree species and other local conditions
CityBench	5' (may be relocated with DOT unit approval)	N/A	Do not site under street furnishings	Do not site under street furnishings	N/A
Muni-Meter	<ul style="list-style-type: none"> <li>• Only bioswales set back several feet from the curb in Muni-Meter parking areas are permitted</li> <li>• 5' clearance required between meters and set-back bioswales</li> <li>• Meters may be relocated with DOT unit approval</li> </ul>	N/A	Do not site under street furnishings	Do not site under street furnishings	Suggested distance from a parking meter back to tree trunk shall be no more than 5 ft. to allow for the swing of car doors
Fire hydrant	3'6" from edge of hydrant or bollards	15'	3'-6"	3'-6"	No minimum as long as GI spacing is followed
Catch Basins	4' 6"	4' 6"	4' 6"	4' 6"	4' 6"
Valves (Gas, Water, Oil Fill)	1' 6"	1' 6"	1' 6"	1' 6"	7' from tree trunk
Coal Chute	N/A	N/A	N/A	N/A	7' from tree trunk
FDNY SGS Rules	N/A	In no instance may a ROWSGS reduce an unobstructed roadway width to no less than 18'	N/A	N/A	N/A
Phone Booths	5'	5'	3'	3'	No minimum as long as GI spacing is followed
Manholes	5'	5'	5'	5'	N/A
Monitoring Wells	50'	50'	50'	50'	N/A
GI Spacing	<ul style="list-style-type: none"> <li>• 5 ft. between hydraulically connected sites</li> <li>• 10 ft. between non-hydraulically connected sites</li> </ul>	N/A	10 ft. between all Infiltration Basins	10 ft. between all Infiltration Basins	N/A
Existing Grass Strip	Match existing width of grass strip while ensuring 5 ft. of clear walking space is maintained	N/A	N/A	Match existing width of grass strip	To site a tree, GI must be at least 4' wide
Bike Racks	5'	N/A	2'	2'	No minimum as long as GI spacing is followed
DEP Water/Sewer Main	3'-6"	3'-6"	3'-6"	3'-6"	Minimum horizontal distance from DEP water main to tree trunk is 6 ft.
Existing Tree to Proposed Tree	N/A	N/A	N/A	N/A	Minimum distance between trees (trunk to trunk) shall be 20' - 30' depending upon the tree species and other local conditions
Edge of GI to center of adjacent Existing Tree	minimum 10' and avoid driplines	N/A	minimum 10' and avoid driplines	minimum 10' and avoid driplines	N/A
Signs	5'	5'	2'	2'	Stop sign to tree trunk is 30 ft. Other street signs to tree trunk is 6 ft.
Corner of Street Intersection	N/A	N/A	N/A	N/A	Minimum distance to tree trunk is 40 ft.

## Problem

To reach CSO goal, other agencies must also include GI



## Solution

Streamline addition of GI to DOT Capital projects

DEP On-Site projects with NYCHA, Dept. of Ed.

DPR + DEP "Parks Without Borders"

## Adding GI to other agencies' projects

JHS 185Q Edward Bleeker  
Flushing, Queens

**Before**

**After**

Problem

Contractor maintenance of constructed sites



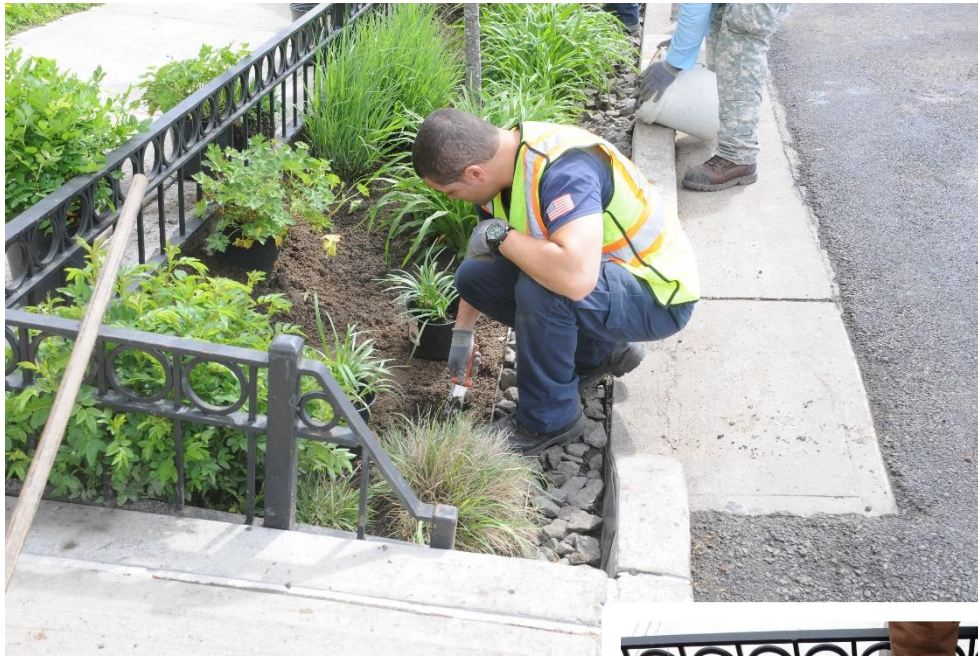
Solution

Update contract language to be more specific

Update tree guard design

DEP provide supplemental maintenance between guarantee period cleanings





Problem

Protection during street resurfacing

Working with new consultant teams

Rolling out GI program fast enough to meet CSO goal milestones

Empty constructed assets awaiting planting season



Solution





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**Thank you!**

