



# CROSS BRONX EXPRESSWAY

Repairing Historic Environmental Inequities Surrounding the CBE

Technical Assistance Panel | May 21–22, 2024

# About

## Urban Land Institute

Urban Land Institute is a global, member-driven organization comprising more than 48,000 real estate and urban development professionals dedicated to advancing the Institute's mission of shaping the future of the built environment for transformative impact in communities worldwide. ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 84 countries.

Cover photo: The Cross Bronx Expressway. (ULI)

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## ULI New York

The ULI New York District Council brings together real estate professionals, civic leaders, and the New York community for educational programs, initiatives affecting the region, and networking events, all in the pursuit of advancing responsible and equitable land use throughout the region. With over 2,900 members across the state, ULI New York furthers ULI's mission by locally delivering on the Institute's best practices in leadership development and by facilitating New York-based community service and enhancement of land use policy and practice. ULI serves the entire spectrum of land use and real estate development disciplines—from architects to developers, CEOs to analysts, builders, property owners, investors, public officials, and everyone in between. Using this interdisciplinary approach, ULI examines land use issues, impartially reports findings, and convenes forums to find solutions.

## ULI New York Leadership

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### Felix Ciampa

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## Technical Assistance Panel (TAP) Program

The objective of ULI New York's Technical Assistance Panels (TAPs) program is to provide expert, multidisciplinary, and objective advice on land use and real estate issues facing local governments, public agencies, and nonprofit organizations throughout ULI's local geographies. Drawing from its extensive membership base, ULI New York conducts one- and two-day panels, offering unbiased, pragmatic solutions, best practice advice, and market-based strategies to local decision-makers on a wide variety of complex land use challenges, ranging from site-specific projects to public policy questions. The TAPs program is intentionally flexible to provide a customized approach to specific land use and real estate issues.

Learn more at [newyork.uli.org](https://newyork.uli.org).

## This study was sponsored by:

New York City Department of City Planning  
New York City Department of Transportation  
New York State Department of  
Transportation  
New York City Department of Health and  
Mental Hygiene

## ULI Curtis Infrastructure Initiative

This a TAP was generously funded by the ULI Curtis Infrastructure Initiative, which aims to build a movement to promote infrastructure solutions that are equitable and resilient and that enhance long-term community value. By creating new global and strategic partnerships, providing technical assistance, building capacity at the local level, and acting as a feedback loop to promote the most innovative and effective best practices, the Curtis Infrastructure Initiative will ensure the success of ULI's mission to positively shape the future of the built environment for transformative impact in communities worldwide. A thoughtful approach to infrastructure planning and implementation addresses the pressing needs of today and improves diverse communities for the long term.

A building block for communities everywhere, infrastructure encompasses transportation, critical utilities, and the means of communication. But beyond these foundational physical and digital structures and facilities, infrastructure broadly includes the key spaces that build community—anchor institutions, the civic commons, and housing. Because infrastructure provides the

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The purpose of [the Curtis Infrastructure Initiative] is to contribute toward the building of a better future by providing resources of inspiration, discovery, and innovation.”

—JAMES J. CURTIS III, ULI LIFE TRUSTEE

means for connection, creative placemaking, and opportunity, smart infrastructure investment is an imperative for our cities now and in the future. Together we can build the future of equitable and resilient communities. Learn more about the Curtis Infrastructure Initiative at [uli.org/infrastructure](https://uli.org/infrastructure).

## ULI District Council Infrastructure Grant Cohort

The Curtis Infrastructure Initiative has partnered with six ULI district councils across North America to provide technical assistance as part of a cohort to help build capacity to reconnect divided communities—physically, socially, and digitally. This cohort of ULI members and staff, local leaders, and other global experts meets regularly over the course of a year to identify key issues, share best practices, and provide updates on projects to support each other in addressing complex infrastructure challenges.

# About

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## Acknowledgments

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## Executive Summary

The Cross Bronx Expressway, carved through the Bronx over 60 years ago, connects tens of thousands of drivers daily to their destinations. While the roadway was hailed as an important transportation solution in its early years, the harm it has brought to the surrounding neighborhood can no longer be ignored. Noise pollution, air pollution, and safety concerns are impacting the quality of life for the people living and working in the neighborhoods surrounding the interstate.

Recognizing the disproportionate impact the interstate highway is having on low-income communities of color, the New York City Department of Transportation, New York State Department of Transportation, New York City Department of City Planning, and New York City Department of Health and Mental Hygiene have partnered on a study process, [Reimagine the Cross Bronx](#), to reconnect the neighborhoods and repair some of the harm caused by the Cross Bronx Expressway (CBE). This two-year collaborative study will inform future planning decisions on the Cross Bronx Expressway and surrounding neighborhoods..

Turning to the Urban Land Institute New York District Council (ULI New York), the above agencies (together the Sponsors) asked for guidance in finding sustainable infrastructure solutions for the heat and flooding impacting the Bronx and, in particular, a study area along the CBE that is representative of the broader geography.

Using its objective technical assistance panel (TAP) program, ULI convened a panel of multi-disciplinary professionals to guide potential green infrastructure investments in the area. The recommendations center around the formation of a network of green infrastructure solutions, many of which can be implemented in the near term. Longer term solutions, namely capping the interstate along key blocks, will take years to progress through planning, engineering, and construction. These green infrastructure solutions are designed to mitigate heat and stormwater and have the added co-benefits of supporting resident physical and mental health and wellness, improving air quality, and supporting social connectivity and community cohesion in the surrounding neighborhoods.

The panel identified the following core characteristics of a green network that would help heal and reconnect the Bronx neighborhoods over and around the CBE while helping to reduce the impacts of extreme heat and flooding.

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Since its design and construction, the CBE has been a physical symbol of environmental injustice.”

—TAP BRIEFING MATERIALS

## Reconnect the Neighborhood

There has never been a more opportune time to advance a highway capping project designed to reconnect historically under-represented and low-income communities. Public sector interest is high, competitive federal funds are available, community members are eager to see the interstate capped, and the environmental benefits abound, including improved emissions capture, noise reduction, and opportunities to improve stormwater runoff. The new “land” created on top of the capped portions of the interstate would reconnect the street grid, enabling easier mobility across the neighborhood, and provide space upon which to create new land uses or build needed affordable housing.

## Create Cool Corridors

Pedestrian movement throughout the neighborhood can be challenging as direct routes are often interrupted by the interstate and the summer heat can create an uncomfortable walking environment. By identifying a few key east-west thoroughfares and pursuing intense green infrastructure improvements—including expanded and additional tree beds, rain gardens, plantings, and permeable surfaces—the experience of walking along these streets can be improved by lowering the temperature, creating more shade, and reducing street flooding and standing water. With an improved pedestrian experience, residents may be more inclined to walk to their destinations and leave their personal vehicles or ride share behind, which also helps reduce air pollution and traffic congestion.

## Align Commercial and Transit Corridors

The corridors with the most active commercial operations are not always those served by the most robust transit options. By ensuring that transit is readily available, frequent, and reliable in popular commercial areas, transit can become the mode of choice, again helping to reduce the number of personal vehicles on neighborhood streets.

Webster Avenue, in the heart of the area's Industrial Business Zone (IBZ), is a low point in the Bronx topography and floods frequently. With the right soil conditions, additional resources, and a focus on additional right-of-way bioswales, rain gardens, and infiltration basins, flooding along this important north-south corridor can be mitigated in the coming years.

## Adapt the IBZ to Extreme Heat

The people working in and living near the Industrial Business Zone (IBZ), which includes Webster Avenue and generally runs north and south along the corridor, face warmer temperatures than the surrounding areas and face frequent flooding. Green infrastructure elements added to the commercial buildings in the area can begin to mitigate these issues and should be encouraged. Green and blue roofing installations, solar panels, and simple white roofing material can increase the comfort level for those working inside a building as can green facade treatments and plantings alongside exterior building walls. Solar



The study area for the TAP, noted in red, contains a number of design and topography challenges that are representative of the broader geography surrounding the CBE.



The same study area with visual representations of the area's assets and the panel's recommendations: capped interstate (blue hash marks), the community loop (orange-shaded streets), cool corridors (blue dotted corridors), Webster Avenue (dark green corridor), and the area's educational institutions (in yellow).

installations above surface parking lots can harness the sun's rays while keeping cars cooler, and electronic vehicle (EV) charging in lots can make EV usage more convenient.

## Create a Community Loop and Use Placemaking

Providing improved connectivity across the interstate is important, and so, too, is improving connectivity through the surrounding neighborhoods. Leveraging the neighborhood parks, schools, and existing infrastructure, the panel envisioned a loop that would connect these existing resources to improve the pedestrian experience and enhance social connectivity. As residents turn more frequently to vehicular use for even short inter-neighborhood trips, the natural social connections and interactions that occur while walking become limited, and the social fabric for which these communities are so well known begins to fray. An easily identifiable walking path—a “community loop”—could help encourage walkability, making the choice to walk cooler, safer, and more engaging than it is today. A community loop would notably support children, families, commuters, and seniors as they walk to schools, playgrounds, places of work, and social spaces across the neighborhood.

Placemaking along the community loop and along other corridors can also improve the pedestrian experience. Programming community spaces and ensuring that the basics of public realm maintenance are met, such as litter removal and wayfinding signage, are key to supporting the health and

vitality of the neighborhood and encouraging community connectivity.

## Financing, Funding, and Operations

The strong public sector appetite for funding projects that reconnect communities and support green infrastructure makes the recommendations posed potentially more attainable and achievable than in previous years. Federal funding through the Department of Transportation, Department of Environmental Protection, and Federal Emergency Management Agency may be available to support an undertaking like capping the CBE and a number of the green infrastructure investments proposed by the panel. Various State of New York and City of New York funding opportunities may be pursued, particularly for green infrastructure improvements. More detail on these funding opportunities starts on page 34. While some of these funding mechanisms may require a local match, all avenues should be explored

fully to best understand the potential layering and leveraging of these important and timely urban investments.

The work of the Reimagine the Cross Bronx is poised to have a significant positive impact on the Bronx community. The depth and breadth of that impact will not be fully realized for years to come, but every movement to improve the experience and health of the community members living and working in these neighborhoods is a step in the right direction. The neighborhoods surrounding the Cross Bronx Expressway have been challenged by these harmful, man-made issues for too long. While the recommendations posed by the panel will require additional study, consideration, and years to address, they support the intended mission of the broader Reimagine the Cross Bronx efforts and would assist in creating an environment that is less affected by extreme heat, better able to manage stormwater runoff during heavy rains, and more supportive of the health and well-being of Bronx residents.



There are a host of opportunities to create more enticing and comfortable walking environments across the area. This empty area under the viaduct is just one example of excess space that could be put to a better use.





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# Introduction and Background

The interstate highway boom of the 1950s and 1960s helped speed automotive traffic across cities and across the United States. These same new roadways—at times elevated above the environment and other times sunken below grade—cut huge swaths through neighborhoods, disconnecting the existing city grid and ripping the urban fabric that connected communities and the people living nearby. Today, those same communities and their leaders are working with public sector agencies and civic leaders to repair some of these disconnections and lessen the negative impacts that the interstate highways are having on the physical, mental, and social health of the surrounding residents.

The Cross Bronx Expressway, cutting east to west through the Bronx, bisected thriving, diverse, communities in the 1950s. The roadway is elevated in sections and tunnels below others. In nearly all instances, the din from the interstate traffic permeates the surrounding neighborhoods and the effects of the vehicular emissions are impacting residents' daily lives and well-being. Partnering to address these impacts, the New York City Department of Transportation, the New York State Department of Transportation, the New York City Department of City Planning, and the New York City Department of Health and Mental Hygiene turned to ULI New York to help inform a broader two-year study, Reimagine the Cross Bronx. The Reimagine the Cross Bronx study aims to “re-envision the Cross Bronx Expressway from the Harlem River

to the Hutchinson River Parkway, helping to reconnect the communities divided by it and lessen the negative effects it has had on surrounding neighborhoods.” As a function of that study and to better understand the potential for using green infrastructure, landscape strategies, and urban design to improve the lived experience of those living in, working across, and visiting the Bronx, the collective public agency partners turned to ULI New York and its technical assistance panel program for insights and recommendations. To meet this challenge and assist the Sponsors, ULI New York convened a panel of real estate professionals with experience in the areas of urban and landscape design, architecture, planning, sustainability and resilience, transportation engineering, community development corporation management, and urban park restoration and management. Through the course of two days, the panel received briefings from the sponsoring organizations, toured the study area, and interviewed key stakeholders, ultimately arriving at a series of recommendations the Sponsors can build into their broader work across the Cross Bronx Expressway.

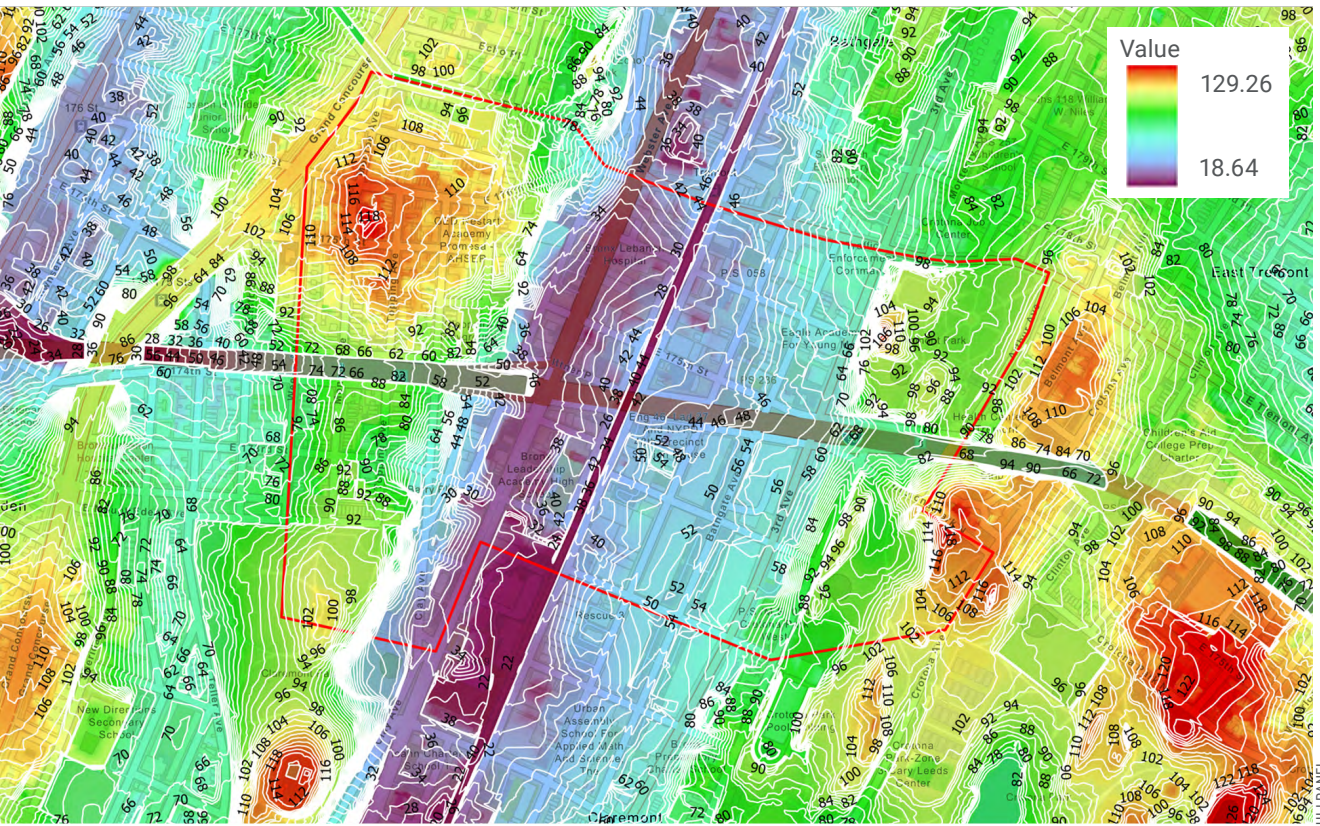
## Study Area Context

Within the broader context of the 5.4-mile Cross Bronx Expressway, the panel was asked to focus on the area loosely bound by East Tremont Avenue to the north, Grand Concourse and Weeks avenues to the west, East 173rd Street to the south, and Crotona and Arthur avenues to the east. The study

## TAP Scope

- What green infrastructure and landscape strategies will best meet the needs and conditions of the half mile surrounding the CBE? And how will they benefit residents who live near the expressway?
- What strategies will mitigate stormwater flooding?
- What strategies will mitigate the urban heat island effect?

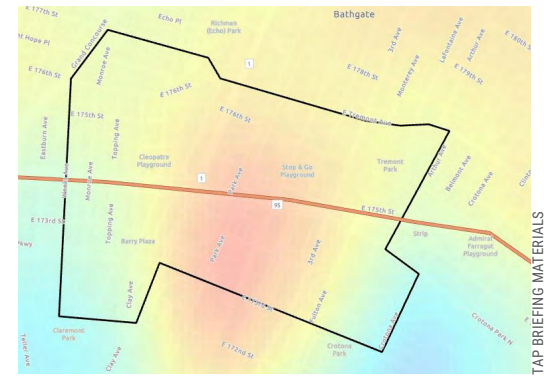




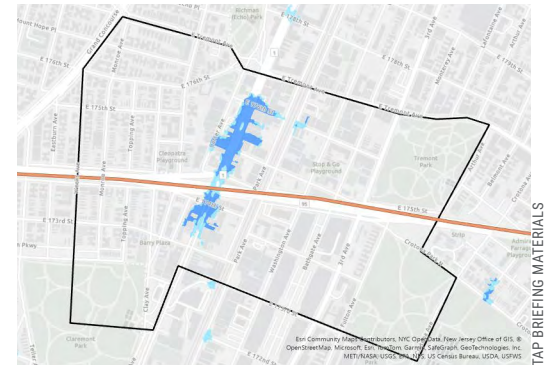
The topography of the study area is quite varied, with higher land marked in red and the lower-lying areas in the blue and purple tones. Webster Avenue and the Metro North rail line to the east follow the areas of low topography.

area includes portions of Claremont Park, Crotona Park, and Walter Gladwin Park, the latter two of which are separated by the CBE. The land uses within the study area include residential, commercial, mixed-use, and manufacturing. The manufacturing operations are largely centered around Webster Avenue and are part of an Industrial Business Zone (IBZ), which provides businesses operating in the area with rebates and incentive funding relating primarily to advancing cleaner trucking operations.

The topography of the study area is an important factor as it influences the movement of air and water through the neighborhood. High ground can be found in the northwestern and southeastern quadrants, and the low-lying areas generally follow north to south along the Webster Avenue corridor. A heat map of the study area mirrors these topographical characteristics, with the low-lying areas experiencing greater heat intensities than areas on higher ground where air movement is less encumbered.



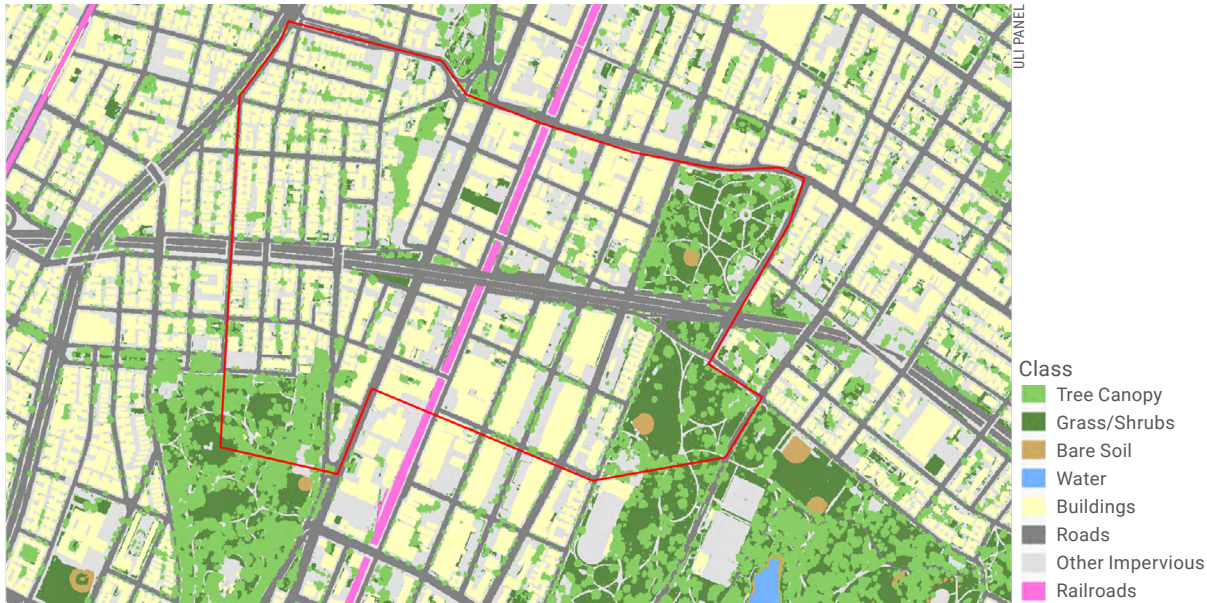
A heat map of the study area mimics the topography map, with low-lying areas standing out as the geographies experiencing the greatest heat.



Areas that experience frequent flooding also correspond with the low-lying areas along Webster Avenue.

Similarly, the low-lying areas also collect the area's rain and stormwater and, in cases of heavy precipitation, often become inundated with runoff from the surrounding areas, leaving the Webster Avenue corridor flooded.

While many refer to the Bronx as being green, marked by parks and trees, the borough, and the study area in particular, is still covered by vast amounts of impervious surfaces (i.e., roads) and buildings. Tree wells can be found throughout the neighborhood, yet while the trees are able to take hold and survive, the



A map of the study area's tree canopy shows the coverage provided in the parks and the scattering of trees along neighborhood streets. Buildings, roads, and other impervious surfaces dominate, making the area hot and prone to flooding.

vegetation in the wells beyond the trees does not often survive, leaving a dirt pit behind.

Transportation uses across and within the neighborhood vary widely. Train and bus services are readily available, yet transfers are often required for trips of any distance, adding significant time to public transportation use. Ride-sharing automobiles, personal vehicles, and delivery trucks frequently fill neighborhood streets, and residents are fiercely protective of parking spaces. Bicycles are also used in the neighborhood, but, in some instances, the speed of some bike riders is concerning for residents, many of whom prefer to or must walk as their primary means of transportation to/from school or employment.

The Cross Bronx Expressway has created an imposing barrier through the Bronx. With over 70 percent of the traffic on the interstate moving through the borough, including commuting and truck traffic that never leaves the roadway, the neighborhood is significantly impacted by the noise and pollution of an infrastructure asset that does little to benefit the community through which it moves. The panel understood its challenge to guide the Sponsors regarding the utilization of green infrastructure and landscape design to minimize the negative impacts of the interstate. They also recognized this as a unique opportunity to identify new and better ways to reconnect the neighborhood and community members living around the CBE.

## What the Panel Heard

The panel interviewed 30+ leaders and staff from the sponsoring agencies, community board leaders, community members, and leaders from nonprofit organizations active in the Bronx. The following were the key takeaways:

- The area needs better east-west connections
- Transit connections are difficult
- It is very car-centric and people want/need more parking
- There are pedestrian safety issues
- Multiple barriers to movement exist (e.g., highway, rail lines, truck traffic)
- Notable noise and air quality issues exist
- Flooding along Webster Ave. is persistent
- IBZ is full of warehousing and less of a job creation corridor
- Improvements should not cause displacement
- The community is in favor of highway capping conducted at a community scale
- Excitement exists around a new rec center
- Park connections are needed
- Need more spaces for social connections
- Would like more parks and easier access
- More quiet space is needed
- Streets need more benches
- Sidewalks need more shade



—  
The Vision for the  
Neighborhood

The divisions created by the construction of the Cross Bronx Expressway require healing, and the focus of the Reimagine the Cross Bronx initiative to reconnect the neighborhoods is an all-hands, all-tools endeavor. This neighborhood-scale approach is an excellent model the Sponsors are encouraged to employ in their study of other sections of CBE. The charge to the TAP panel, to make recommendations around green infrastructure tools and resources to support these reconnection efforts, inspired the panel to look deeper into those tools and consider how they could also connect more deeply into and benefit the surrounding communities. The panel's recommendations center around the formation and execution of a long-term neighborhood-scale vision that will support the green infrastructure improvements and tie into the other reconnection efforts that are anticipated from the Reimagine the Cross Bronx work.

The panel identified the following core characteristics of a green network that would help heal and reconnect the Bronx neighborhoods over and around the CBE while helping to reduce the impacts of extreme heat and flooding.

- **Cap the interstate in key locations.** While it may not be feasible to completely cover the entire 5.4 miles of interstate through the Bronx, there are sections that run well below grade and would be suitable for capping.
- **Create cool corridors.** Stakeholders noted and panelists observed the



Working in DCP's office during the TAP, the panel benefited from the presence of a large model of the Cross Bronx Expressway and the surrounding neighborhoods. Working through their recommendations, the panel created pathways, highway covers, noted school buildings, and envisioned the cool corridors as functions of this larger district model. A video of the entire model with the panel's additions can be found [here](#).

challenges of moving east and west in the study area as the street grid is often interrupted by jogs in the roadway and other impediments. By creating corridors with cooling mechanisms, such as larger shade trees and structures, the pedestrians traversing these east-west corridors may be more comfortable walking, even with a less direct path, and might be less prone to call a ride-share service.

- **Address commercial and transit corridors.** Improvements to public transit should align with the key commercial corridors in the area as one complements the other. Additionally,

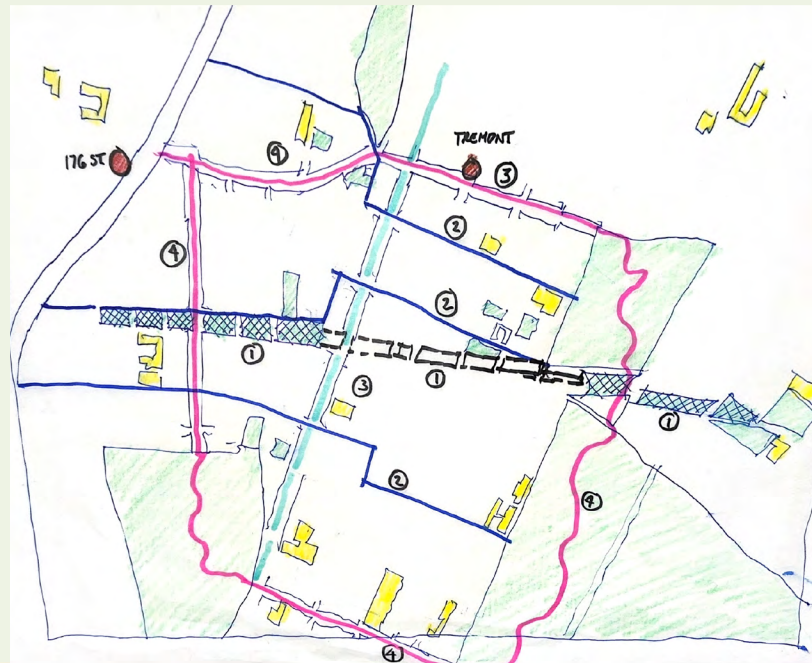
a commercial overlay along Webster Avenue and significant drainage basin improvements to the Webster Avenue corridor would support improved connections east and west and help ease flooding in the area respectively.

- **Adapt the IBZ to extreme heat.** The large industrial buildings in the IBZ are ripe for green infrastructure improvements like green and blue roofs, solar panels (particularly over parking lots), and green walls. Each of these improvements would lessen the impacts of heat and, in some cases, can also reduce the stormwater runoff that plagues the Webster Avenue corridor.

## Vision for the Neighborhood

The panel's recommendations, which extend beyond the immediate surroundings of the CBE and into the neighborhoods, are depicted in the sketch to the right and identified below.

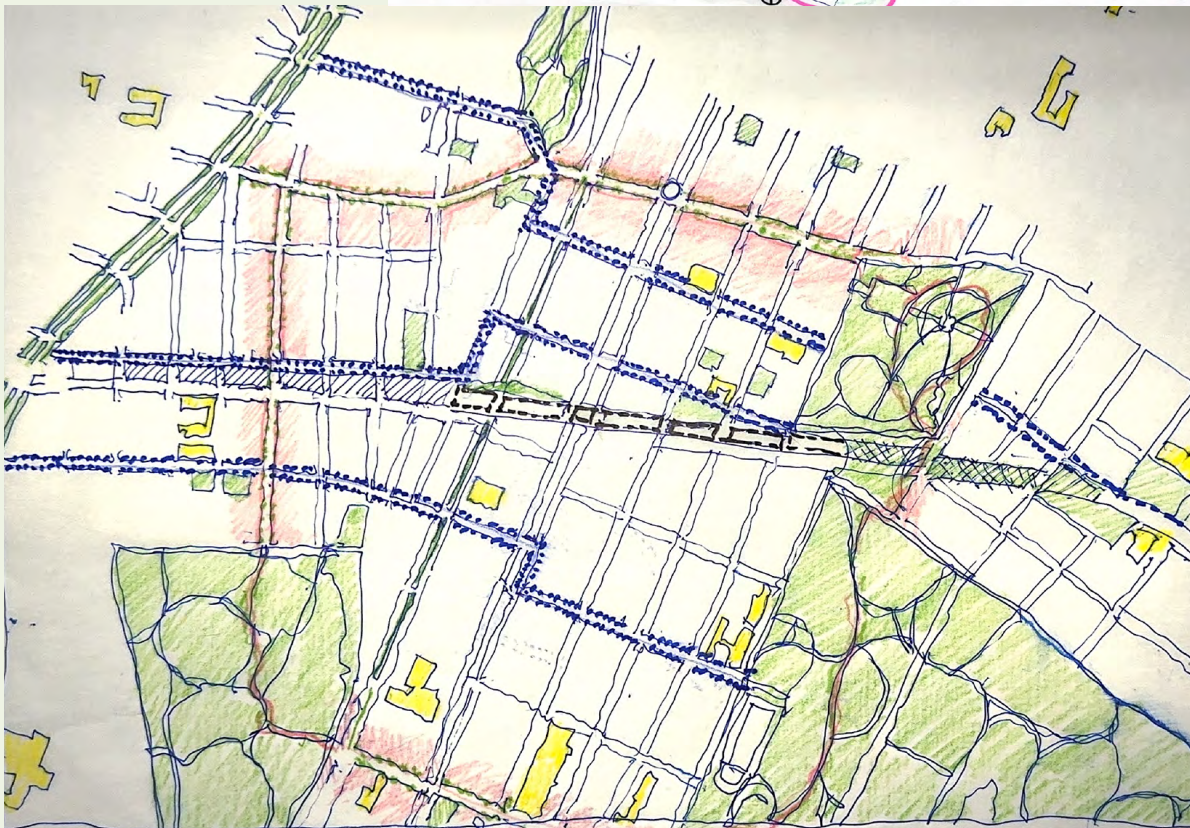
- 1 Areas of capped interstate
- 2 Cool corridors on 173rd, 175th, and 176th streets
- 3 Commercial and transit corridor interventions along Webster Avenue
- 4 The community loop








ULI PANEL

- **Create a community loop.** By connecting the major parks in the study area, the panel envisions a walkable and visible path—a “community loop”—that brings people out of their homes and cars, provides safe spaces for walking to work and school, and enhances social connectivity.
- **Incorporate placemaking elements.** While the green infrastructure improvements are underway, it will also be important to address smaller-scale placemaking improvements that can improve the walkability and experience of moving through the area. Signage, litter removal, and street furniture are just a few of the basic items that can greatly improve and enhance the pedestrian experience, thereby encouraging more walking and fewer vehicular trips.

Each of these elements and the contributions that each can make toward a healthier, better connected, and more resilient Bronx can be found on the following pages.



ULI PANEL

-  School buildings
-  Parks and green spaces
-  Cool corridors
-  Highway capping
-  Community Loop

The panel's vision for an integrated green network makes use of the existing parks, green spaces, and school buildings. It creates cool corridors and notes the areas where the interstate would be capped and roadways reconnected, with the community loop connecting it all.



—  
Reconnecting the  
Neighborhood



Throughout the course of the stakeholder interviews and its investigations, the panel heard resounding endorsements for capping the interstate. With this encouragement and with an understanding of the national political appetite and federal funding for reparative infrastructure investments of this magnitude and community impact, the panel studied the CBE corridor, where and how it traverses the Bronx and where and how it might be covered in places in order to reconnect the neighborhoods north and south to facilitate better movement—for pedestrians, bicyclists, and vehicles—throughout the area.

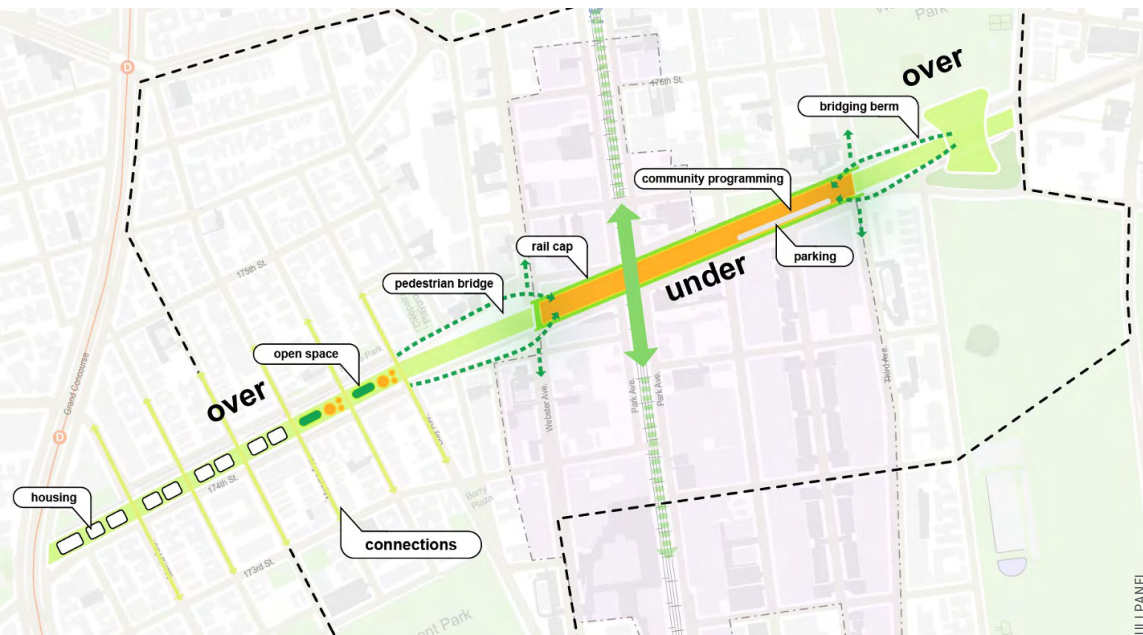
## Reconnecting the Urban Fabric

What was once a connected and efficient street grid has been drastically interrupted by interstate infrastructure. While traffic may find easy passage east and west through the Bronx on the CBE, the people living in the surrounding areas must use inefficient, daunting, and noise and air-pollution-riddled circuitous routes around and over the interstate.

**Cap the western blocks.** Starting from the west at Morris Street, the panel envisions an interstate cap that would extend east to roughly Clay Avenue. Throughout these five blocks, the interstate would be covered and ventilated and Eastburn Avenue and Topping Avenue would each reconnect across the expanse, restoring the urban fabric and facilitating improved movement north and south as well as east and west along the corridor.



(top) A 1951 image of the study area, outlined in red, and associated street grid before the interstate construction.  
(bottom) A satellite image of the same area in 2024 shows how the Cross Bronx Expressway interrupted the street grid.



The study area, outlined by the dashed line encompasses portions of the CBE that are below grade, which would be ripe for capping, and portions that are elevated above grade, which would benefit from improvements under the built structure.

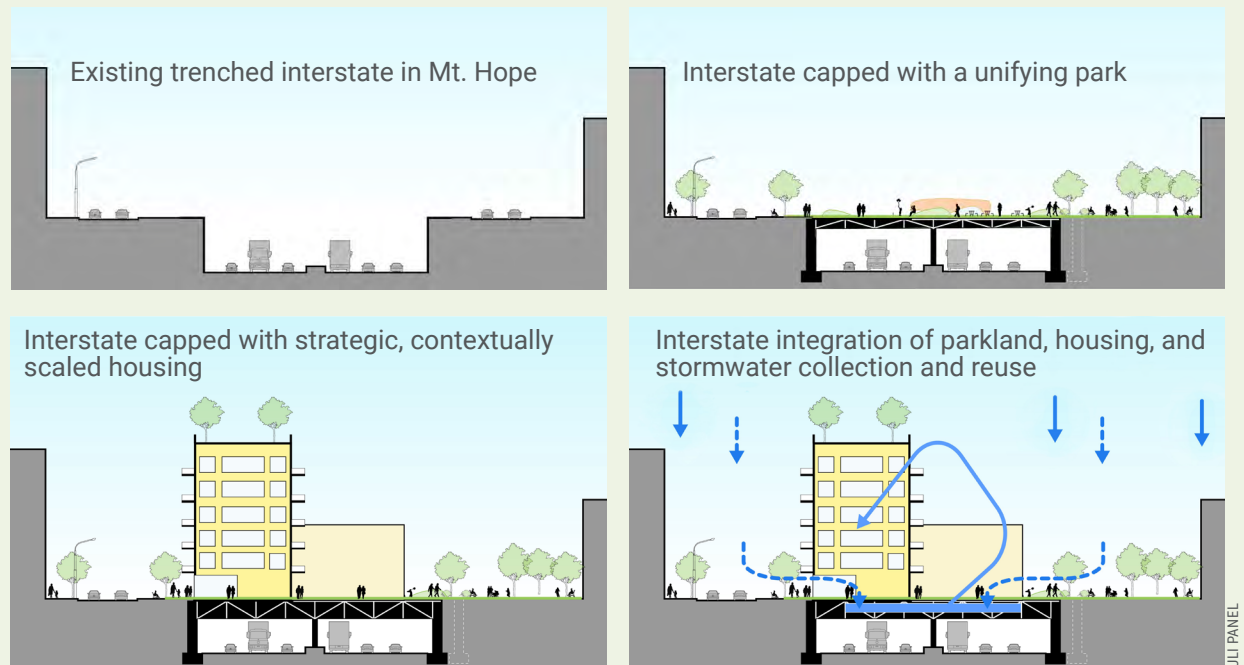


The capped sections could be developed into park space and new housing, both of which are desired by residents in the surrounding neighborhoods. A portion of the proposed community loop is depicted by the line with arrows.

This newly created space provides a host of opportunities and benefits to the surrounding neighborhood. Not only can streets reconnect north and south, the created space on top of the capped interstate could become park and open space for the surrounding neighborhoods. If desired, portions of the capped interstate could also be used for development of new housing. By using some of the land in this manner, the neighborhood can gain much-needed additional housing, likely in mid-rise multifamily buildings, and the proceeds from the sale of the land for development could be used to fund a portion of the improvements associated with the capping work.

**Cap the eastern blocks.** Starting at Fulton Avenue and continuing east to Clinton

### Interstate Capping Potential at Mt. Hope



Avenue, the panel also envisions the interstate capped. This new infrastructure would provide a compelling opportunity to connect Walter Gladwin Park and Crotona Park and extend and connect valuable recreational opportunities. The parks to the east, Admiral Farragut Playground and Prospect Playground, could also benefit from more direct and easier connections, encouraging families to move between playgrounds and explore the parks without having to cross a visually daunting and physically uncomfortable expanse of interstate highway.

Several schools are near these proposed capped blocks and children and families walking to and from school would benefit from the enhanced pedestrian safety and diminished impact of the interstate.

The panel envisioned two solutions for bridging this portion of the interstate. One solution gently slopes up to a peak in the center of the interstate lanes and the other, perhaps more cost-effective if less fanciful solution, creates a flat deck that is accessed via landscaped berms on the northern and southern edges.

The capped sections will likely require ventilation systems to capture, channel, and expel the emissions from the vehicles within. Improvements in this type of emissions capture have made capping interstates much safer and cleaner in recent years and the panel encourages the Sponsors to seek guidance from professionals who can recommend the most effective solutions for an installation of this magnitude.

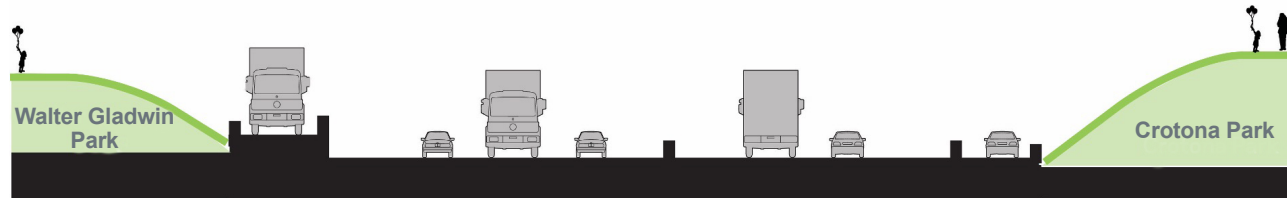
## Enhance the Viaduct

Between the east and west sections of the interstate proposed for capping, the Cross Bronx Expressway elevates beyond grade level to rise above the neighborhood on

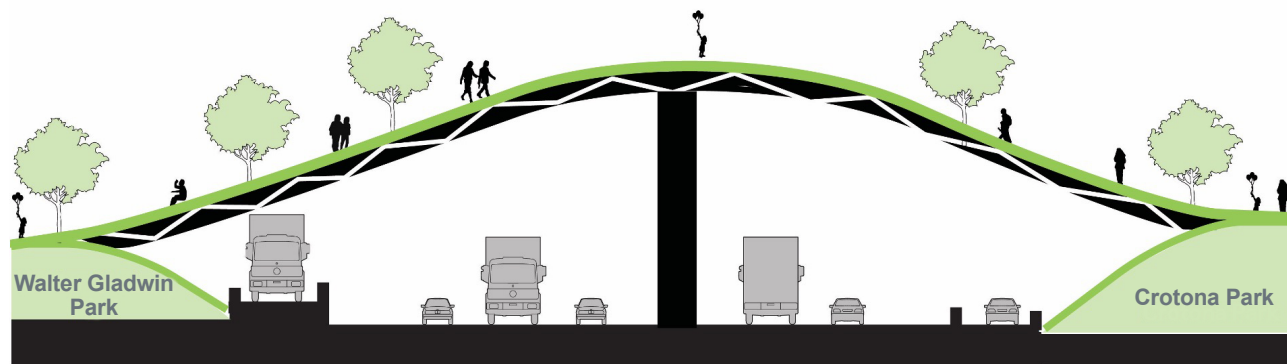
elevated infrastructure creating massive underpasses and “leftover” space beneath. These underpasses are often fenced, to keep people out, left to gather debris, leased to entities like the NYPD, or given over to informal vehicular parking.

## Interstate Capping Potential in West Bronx

Existing Crotona Park and Walter Gladwin Park division



Deck park reuniting Crotona and Walter Gladwin parks



Enhanced Arthur Avenue connection and bermed park edges



### Enhance the Bathgate IBZ Underpass.

With a little care and planning, the leftover spaces under the viaduct could become useful spaces for electronic vehicle charging and additional vehicle parking through the addition of additional decking. This addition of EV charging sites can help address concerns about the lack of on-street charging opportunities in the city and encourage greater EV use. The additional parking spaces in the underpass will serve the neighborhood well and may help in community discussions around reducing on-street parking to install green infrastructure.

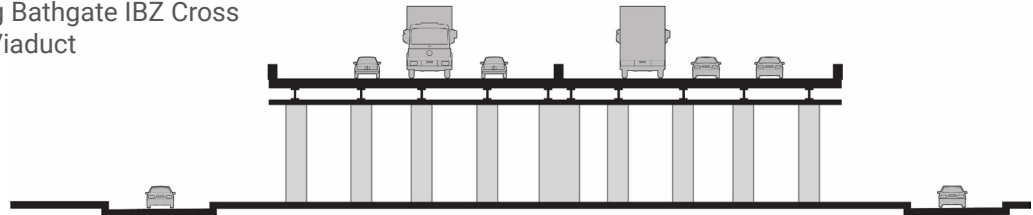
The edges of the spaces below the deck could become spaces for community programming, making use of the shade of the structure and the protection from the elements.

The entire structure could be harnessed to collect stormwater from the roadway above and to create channels to help manage the runoff from the surrounding streets.

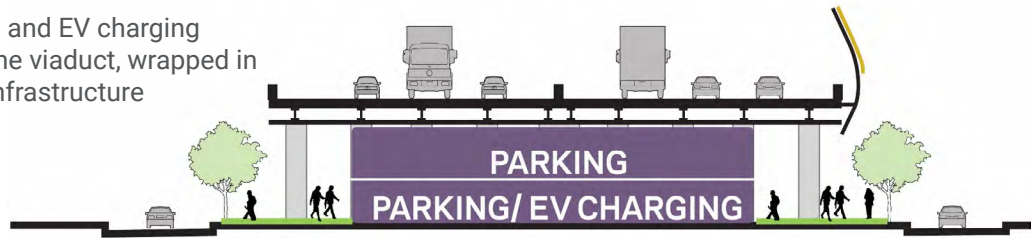
The addition of green infrastructure elements would enhance the functionality of the viaduct. Shade trees and rain gardens at grade can assist in providing relief from the heat and mitigate rainwater. Solar panels installed along the southern edge could help power the EV charging areas while also helping to block some of the noise and pollutants from the interstate.

## Viaduct Green Infrastructure Improvements

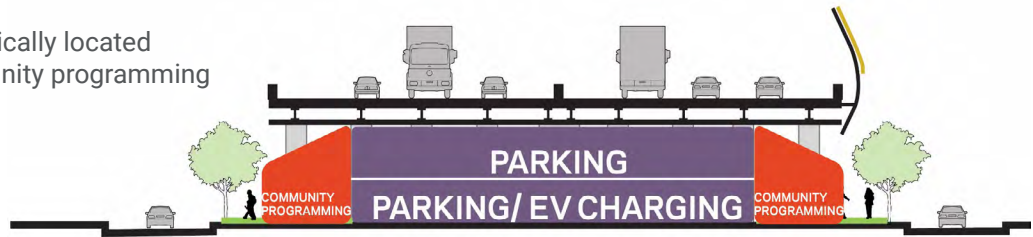
Existing Bathgate IBZ Cross Bronx Viaduct



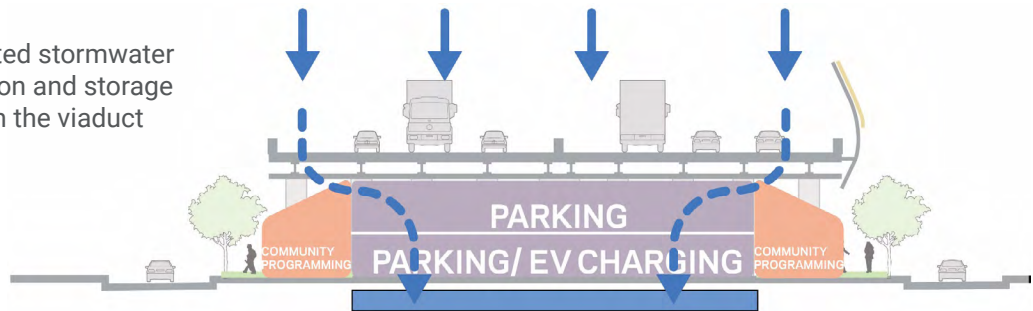
Parking and EV charging under the viaduct, wrapped in green infrastructure



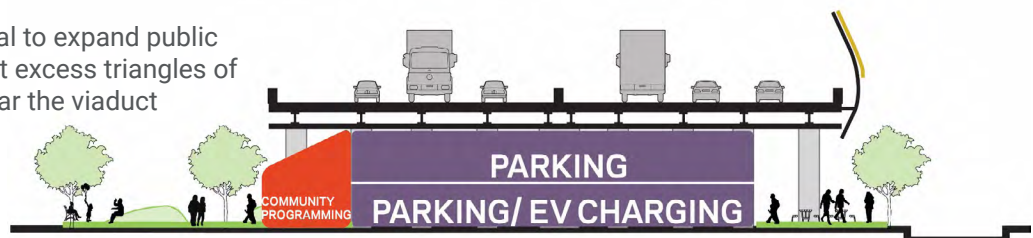
Strategically located community programming



Integrated stormwater collection and storage beneath the viaduct



Potential to expand public realm at excess triangles of land near the viaduct



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## Case Study: Klyde Warren Park Dallas, Texas

Klyde Warren Park is Dallas's new town square that has literally and figuratively bridged the city's downtown cultural district with the burgeoning mixed-use neighborhoods to the north, reshaping the city and catalyzing economic development. The park brings Dallasites together in new ways, with dozens of free activities and amenities every week, from concerts and lectures to games and fitness classes, all within a beautiful five-acre jewel.

The park decks over the sunken Woodall Rodgers Freeway, which had been an imposing barrier between downtown and the densely populated Uptown neighborhood. Spurred by a study in 2002 that confirmed the feasibility of a "deck park" over the freeway, leaders of the Dallas business community formed the non-profit Woodall Rodgers Park Foundation, which was responsible for the operations and maintenance of the new park.

Built with a combination of public and private funds, the park features a flexible, pedestrian-oriented design that arranges a children's park, reading room, great lawn, restaurant, performance pavilion, fountain plaza, games area, dog park, and botanical garden around a sweeping pedestrian promenade. After ten years of planning, design, fundraising, and construction, Klyde Warren Park opened in the fall of 2012 and was immediately embraced by the community, cementing its place as a world-class urban park.



The interstate roadway and overpasses prior to the interstate capping.



The park land created by the capping of the interstate.

### Key points:

- Park bridges an 8-lane freeway
- Connects downtown with uptown
- \$93 million construction cost (2012) + \$17 million for initial operations and maintenance
- Funded through a public-private partnership
- City of Dallas owns the park's land and permanent fixtures
- Woodall Rodgers Park Foundation manages all programming, operations, and maintenance, and is responsible for raising the estimated \$5.3 million annual operating budget



Play structures, park furniture, and frequent programming appeals to all ages.

## Additional Highway Conversion Case Studies

From the ULI publication [“Transformations: How Highway Conversions Can Pave the Way for More Inclusive and Resilient Places”](#)

Overview of Featured Highway Conversions	Location	Type	Key Community Amenities	Key Resilience and Sustainability Features
<b>I-579 Cap/Frankie Pace Park</b>	Pittsburgh, Pennsylvania	Cap	Three-acre (1.2 ha) public park, pedestrian and bicyclist infrastructure, incorporation of design elements created by local artists	Permeable lawns and open trench drains to capture stormwater, rain gardens, new trees
<b>I-70/I-71 Long Street Bridge and Cultural Wall</b>	Columbus, Ohio	Stitch/cap	Reconnection of neighborhoods, art that celebrates the community and reduces roadway noise, improved sidewalks, green space	New trees, use of drought-tolerant and disease-resistant plants
<b>Capitol Crossing Third Street Tunnel</b>	Washington, D.C.	Cap	Reconnection of the street grid, increased open space	Centralized water collection and reuse system to treat stormwater runoff, eco-chimneys to clean exhaust and toxins from parking garage, green areas and increased shade, use of graywater for landscaping
<b>Park East Freeway Removal</b>	Milwaukee, Wisconsin	Removal	Extension of the Milwaukee RiverWalk trail, community benefits agreement guiding corridor redevelopment with equitable development priorities	Reduction in impervious coverage and surface parking, reduction in vehicle congestion
<b>The Bentway</b>	Toronto, Ontario	Public space beneath an elevated roadway	Creation of urban park underneath the expressway, winter skate trail, new multiuse path that connects to surrounding communities, addition of restrooms and free wi-fi	Transformation of a brownfield to a safe, clean, and usable public space, stormwater treated on site using native plantings and permeable ground treatments
<b>Presidio Tunnel Tops</b>	San Francisco, California	Cap	Addition of new park spaces including play structures, visitor center, and open meadows, reconnection of park areas for the first time since the 1930s	Reduction in impervious pavement, creation of green space and parkland, adjacency to new marshland that replaced impervious pavement



Cool Corridors

The east-west corridors throughout the study area would work well if they were treated as cooling corridors—thoroughfares lined by green infrastructure installations that would make the pedestrian experience less prone to the impacts of extreme heat. The initial corridors could include East 176th Street, East 175th Street along the Cross Bronx Expressway, and East 174th Street. With the addition of additional trees to provide shade and mitigate the heat, and rain gardens and bioswales to capture rainwater and also assist with heat, these corridors can better serve the neighborhood, mitigating heat and excess stormwater, and perhaps help reduce vehicle trips by making walking a more pleasant experience.

The panel recommends the Sponsors take into account the following factors when improving these corridors.

- **Consider topography.** The rolling topography of the Bronx creates strain on the low-lying areas during heavy rainfalls. Detaining stormwater upland



The map depicting all of the panel's green network recommendations.

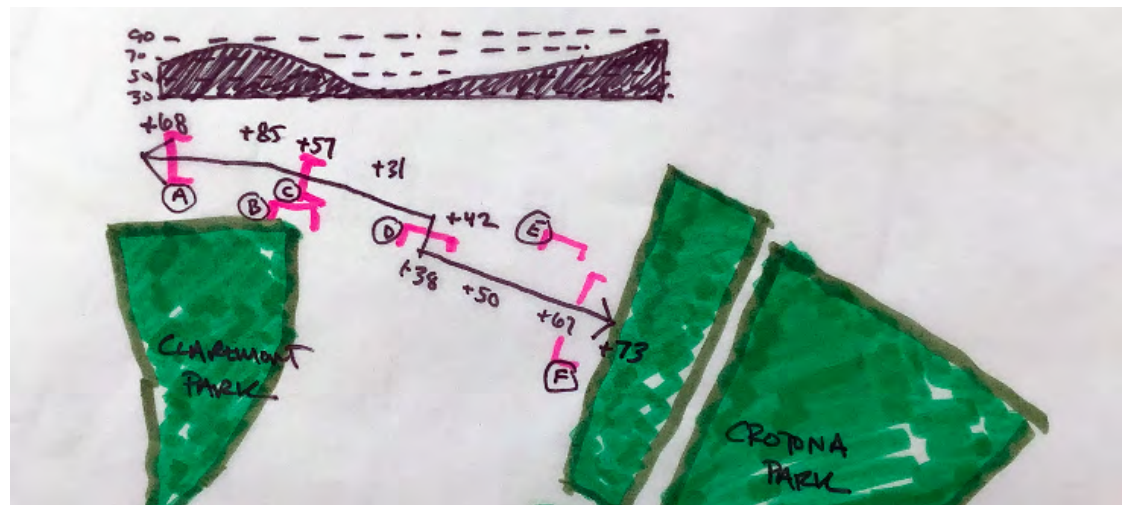
wherever possible will reduce water volumes in lowland areas.

- **Use a system of solutions.** By employing a “cloudburst hub” approach, which manages stormwater using multiple interconnected practices—including the existing sewer system, holding tanks, and green infrastructure—the damage caused by heavy rains on the surrounding area can be reduced.

- **Connect social infrastructure.** With multiple schools and daycares across the study area and surrounding neighborhoods, numerous parks and playgrounds, and places of worship, the selected corridors can better connect the community spaces that undergird the social health and vitality of the neighborhoods. People are already traveling to these places, yet many are choosing to do so by car as the walk is uncomfortable in the warm months.



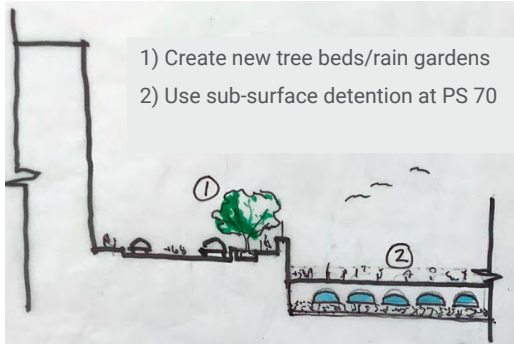
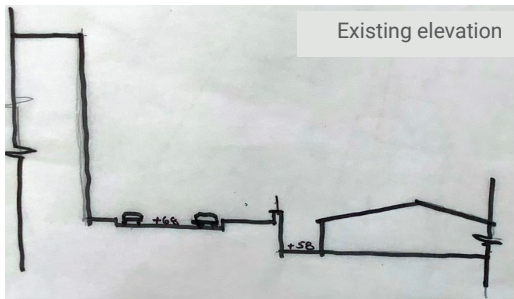
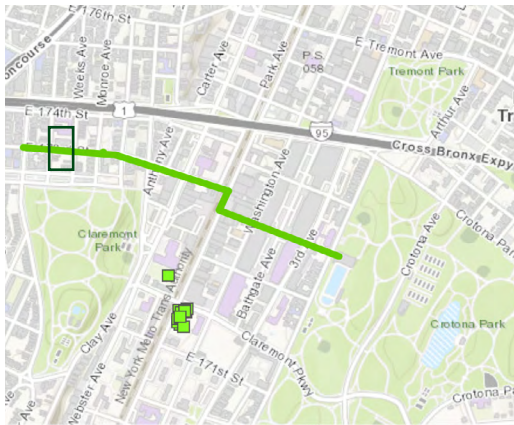
A closer look at East 173rd Street shows its potential park and school connections and how a cooler pedestrian environment could better connect the area's public assets.



The grade changes along East 173rd Street, with high points at both Claremont and Crotona parks, made this a good representative corridor to study in greater detail.



## East 173rd Street at P.S. 70

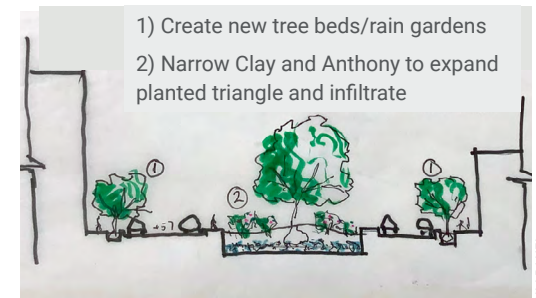
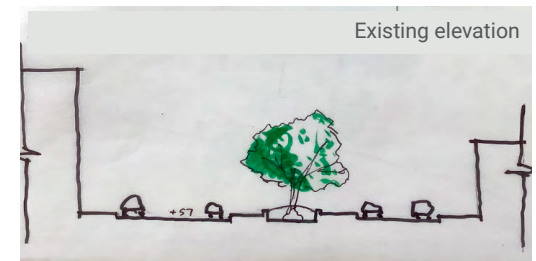
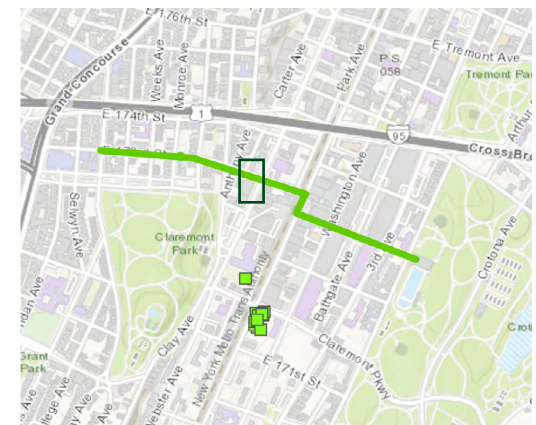


The positioning of PS 70 below the elevation of the roadway along E173rd provides an opportunity to place sub-surface water detention along the edge to capture water runoff from the roadway and channel it underground. The addition of more street trees and rain gardens along the sidewalk would also assist in flood mitigation and cool the walk to school.

- **Improve the thermal comfort on common routes.** With heat radiating up off the pavement and inconsistent shade opportunities, thermal heat in the neighborhood is an imposing factor. By focusing on cooling elements along key corridors, the experience of moving between the social, commercial, and gathering places becomes more pleasant and safe for people of all ages.
- **Integrate solutions with pedestrian realm enhancements.** The green infrastructure elements that will support a cooler environment broadly will support the comfort of individuals traveling through the area on foot, in strollers, wheelchairs, and more. These improvements should be integrated with other pedestrian improvements, including repairing or replacing sidewalks, bench installations, and more.

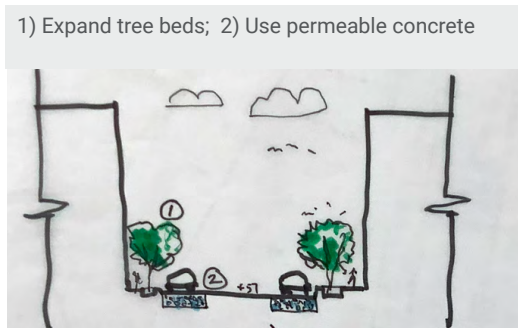
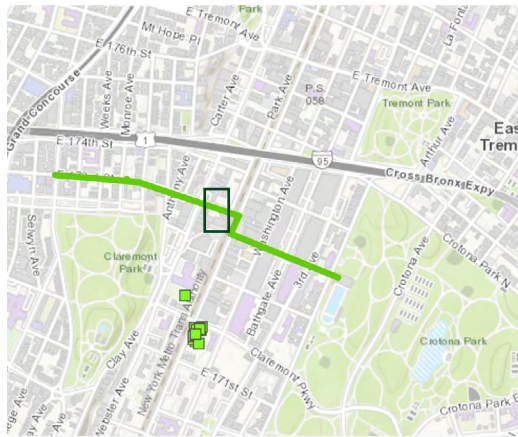
Based on these foundational elements, the panel used East 173rd Street as a case study, identifying six areas where green infrastructure elements could be deployed to have a positive impact on the effects of extreme heat and stormwater management. East 173rd Street travels through higher elevations near Claremont and Crotona parks and moves through low-lying areas near Webster Avenue. This varying topography allowed the panel to explore and detail a number of design interventions that could work well across the rest of the study area and beyond.

## East 173rd Street at Clay Avenue

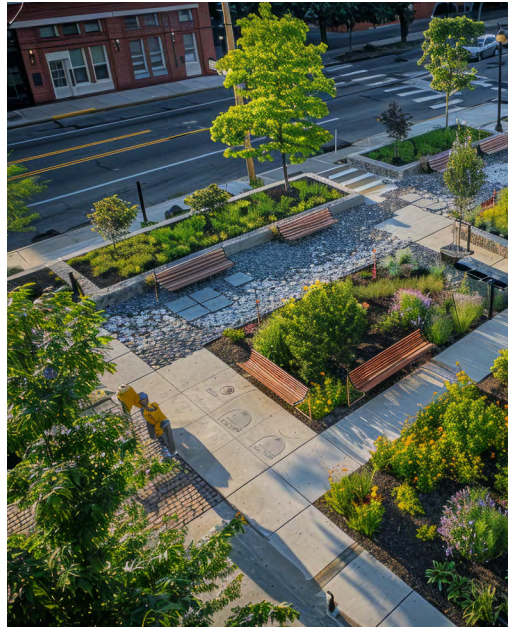


At Clay Avenue, the environment is marked by an existing green street/tree-planted median that provides welcome shade. By expanding the planted area into the excess roadway on both sides (the roadway is overly wide for one-way traffic), more impervious surface can be given over to planted material and rain gardens that can better absorb water. Additionally, the streetscape on the building side of the roadway would benefit from additional tree plantings nearer the intersection.

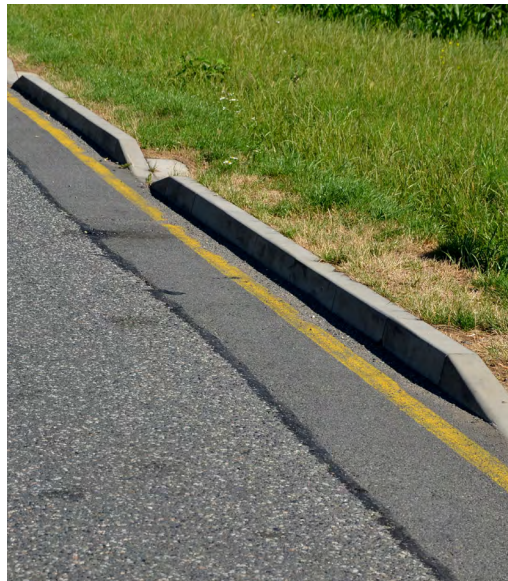
## East 173rd Street, narrow roadway



Moving east along E173rd past Clay, the street narrows considerably. Here additional and expanded street tree beds and permeable surfaces, including porous concrete, should be used to provide shade and help manage water.

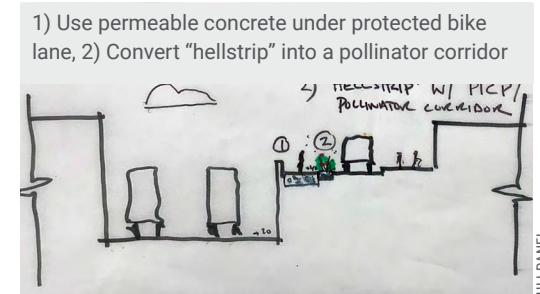
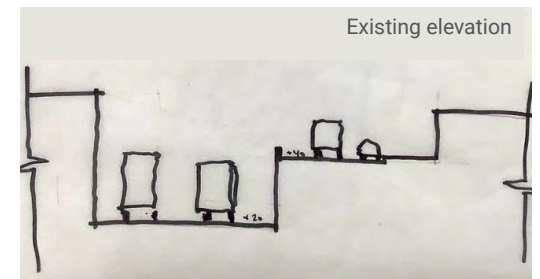
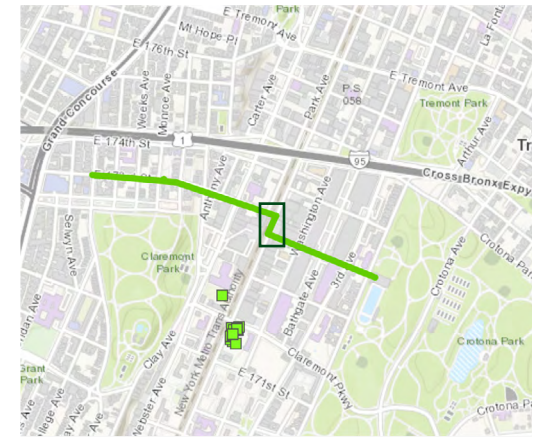


Large tree beds, rain gardens, and plantings help cool the environment while absorbing water before it enters stormwater collection areas.



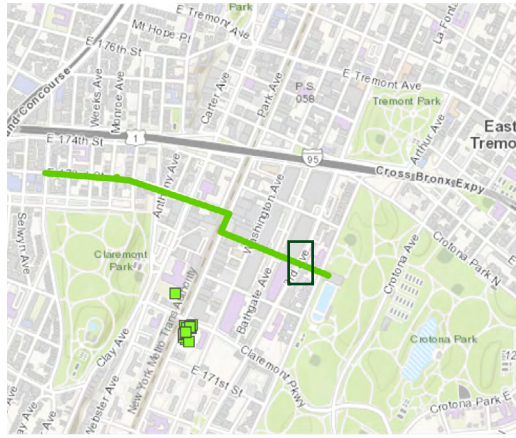
Permeable pavement and cuts in the concrete edging help manage excess water along the roadway.

## East 173rd Street at Park Avenue

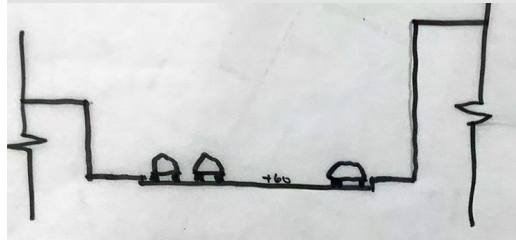


Crossing over the Metro North rail lines, E173rd jogs to the south and incorporates a bike lane on the western edge. The hellstrip, the small strip of land between the bike lane and the MTA fencing, could be planted as a pollinator garden, providing absorption and habitat support. The bike lane should be converted to permeable concrete to also assist with stormwater runoff.

## Third Avenue at East 173rd Street



Existing elevation



- 1) Create new tree beds, rain gardens, 2) Install a 6-foot minimum median to replace road striping, 3) Use permeable concrete under protected bike lane



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Third Avenue at E173rd Street is a wide, two-lane street. By replacing the striping in the roadway with a planted median, featuring trees and rain gardens, excess rainwater can be put to good use. Similarly, expanding the tree beds along the sidewalks and converting the bike lanes to permeable concrete will likewise assist in the more active management of excess water runoff.

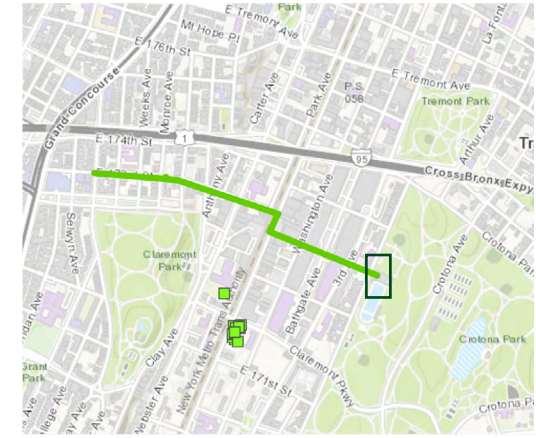


A wide planted median with trees that can grow into the space and provide shade can help cool the area and mitigate excess rain water.

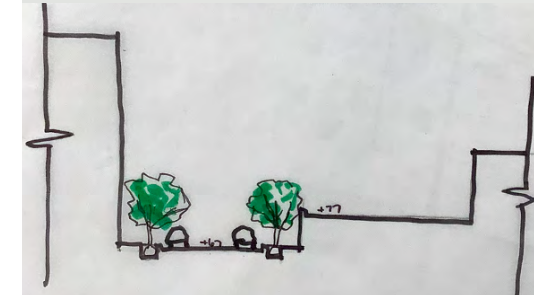


Permeable pavers and planters help absorb excess water along the roadway.

## East 173rd Street at PS 4



Existing elevation



- 1) Create new/expanded tree beds, 2) Use permeable concrete, 3) Install planters at PS 4



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Nearing Crotona Park, E173rd is lined on the north by the elevated playground at PS 4 Crotona Park West School. Additional and expanded tree beds, permeable concrete, and planters will help mitigate stormwater as well as shade and cool the area for children and their families walking to and from school.



—  
Commercial and Transit  
Corridors

There is a symbiotic relationship that typically exists between public transit and commercial corridors. The commercial operations benefit from the proximity to large numbers of transit riders and the transit riders benefit from the proximity to commercial businesses, particularly retail operations, within the view of or a short walk to transit routes.

## East-West Transit Improvements

Within the study area, Tremont Avenue is a robust commercial corridor with an underdeveloped transit network. NYC DOT is currently developing plans for sorely needed transit improvements. Conversely, Webster Avenue has scattered commercial and retail operations yet features one of the more active bus routes in the area.

### Improve bus services on Tremont Avenue.

Tremont Avenue could provide much needed rapid east-west connections north of the expressway. Prioritizing and increasing bus service on this corridor would facilitate east-west travel to the local businesses, the subways, and the Metro North Harlem Line as well.

Over 72 percent of households near Tremont Avenue do not own cars, and 78 percent of commuters walk or use transit. Typical rush hour bus speeds, however, hover near five to seven miles per hour, creating long and arduous commutes for passengers. Transit improvements to this corridor would be



Traffic congestion, involving personal vehicles and delivery trucks, slow public transit along Tremont Avenue.

welcome, and the New York City Department of Transportation is currently studying potential bus service improvements to the Bx36 line.

**Improve bus services on Claremont Parkway.** While there are fewer commercial enterprises along Claremont Parkway, improving the Bx11 bus service on Claremont would improve east-west mobility south of the Cross Bronx Expressway and facilitate more efficient commutes and general mobility within the broader study area.

## Webster Avenue Improvements

As a primary north-south street in the area, business owners, employees, and residents living around Webster Avenue would benefit from specific attention in a number of areas.



The bus lines along Tremont Avenue, Webster Avenue, and Claremont Parkway need to become more efficient.



Frequent flooding along Webster Avenue interrupts commerce in the area and creates barriers for those moving through the neighborhood.

**Create a commercial zoning overlay** The Webster Avenue corridor is currently zoned for manufacturing. Adding a commercial overlay to this corridor could encourage a wider array of commercial enterprises, including more retail offerings perhaps housed in new vertical mixed-use buildings, which could better support area residents with proximate shopping and new housing opportunities.

A commercial overlay can also help connect commercial corridors on Tremont and Claremont, providing continuity through the

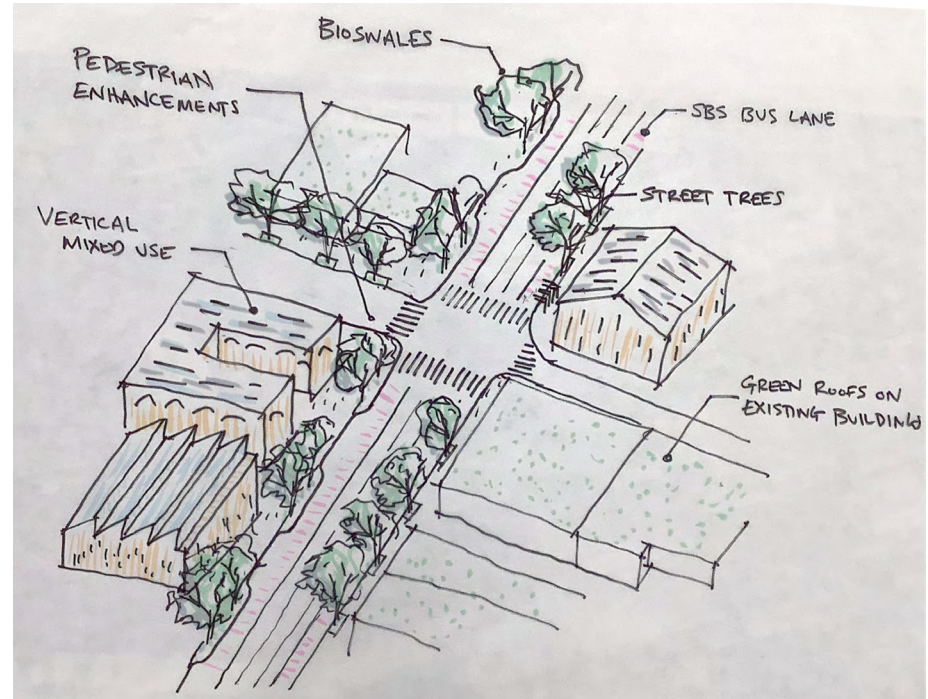
IBZ. Combined with further Bx41 bus line improvements, a commercial overlay could increase the presence of public-facing retail and improve the pedestrian experience in the IBZ, which today is clogged primarily with truck traffic.

Streetscape improvements, including street trees and improved street signs, lighting, and other street furniture, could further improve the pedestrian experience. With more residents and visitors finding the walk between destinations comfortable, fewer vehicles would need to enter the roadway.

**Improve the Webster Avenue drainage basin.** Webster Avenue is a low point for the neighborhood and is prone to flooding. While there are existing stormwater catch basins, many are easily overwhelmed due to inadequate cleaning and maintenance attention. To further assist with stormwater management, additional right-of-way bioswales, rain gardens, and infiltration basins should be installed along the corridor to further mitigate flooding.



The rooftops of the commercial businesses along Webster Avenue could become important green infrastructure tools through the addition of green or blue roof treatments, solar installations, or even simple white roofing material that helps reflect heat and keep the building cooler. Bioswales and trees planted along the sidewalks would also be welcome additions in the fight against extreme heat and flooding along the corridor.



The panel re-envisioned the Webster Avenue corridor with a new select bus service (SBS) lane, street trees, bioswales, and green roofs on existing buildings. Improvements to the IBZ more broadly could include mixed-use zoning that could bring additional commercial and even residential opportunities to the area.



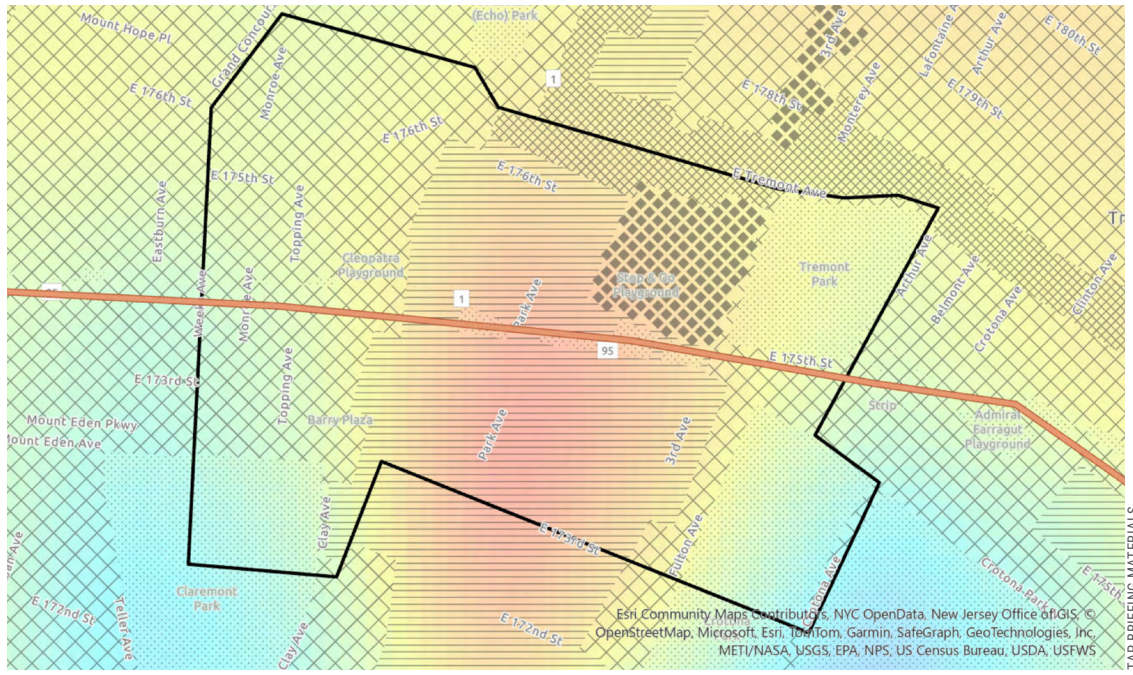
# — The IBZ and Extreme Heat

Within the study area, the IBZ is notably warmer than the rest of the surrounding areas. The combination of the industrial uses in the IBZ—and associated truck traffic, building coverage, and driving surfaces—and the low-lying topography, which traps heat and limits air flow, leads to continued environmental stress on the people in the IBZ. Without intervention, the impacts of climate change and increasing temperatures will only grow and increasingly impact the health and safety of those living in the Bronx.

There are several green infrastructure improvements that can be made across the IBZ and on specific properties to help mitigate heat and provide a safer and more

comfortable environment for those working in the IBZ and those using the corridor to commute to work or school. The panel outlined the following recommendations for consideration on rooftops, on facades of buildings, and on the ground level.

**Encourage, promote, and support rooftop solutions.** Businesses across the IBZ and beyond should be encouraged to install roofing materials that reflect the heat or make use of the sun’s rays. Rooftop solar installations can harness the sun’s energy, and white roofing materials can help reflect the sun’s rays and support a cooler environment within the building. Green roofs—roofs covered by drought-tolerant



The heat map for the study area aligns with the industrial uses in the low-lying areas. With large industrial buildings and corresponding large impermeable surfaces on both building roofs and driving surfaces, the area generates and traps heat.



The rooftop on the right makes use of its surface area to capture energy through a solar array. The building on the left should leverage the same green infrastructure.



Solar arrays, white roofing material, and green roofs can make good use of wide flat roofing surfaces to capture energy, reflect the sun’s rays, or to help mitigate rain water.



succulent plants and grasses—and blue roofs—surfaces covered by a network of stone and sealed roofing membranes—allow rainwater to collect on the rooftop and be reused to water vegetation or stored safely in the stone and membrane trays.

**Encourage green facade and landscaping.**

Adding green infrastructure to building facades can also help cool the building's interior spaces, particularly in areas like the IBZ where there are numerous long, interrupted walls. By capturing the energy



Plants along the edges of buildings can help mitigate rainwater and capture it before entering the storm drain.



Green facades can help capture rainwater and assist in cooling interior spaces.

from the sun's rays and heat, facades supporting plants can put the energy to good use. Similarly, adding grasses and drought-resistant plants to landscaped areas near the building's walls can provide some of the same effects without requiring building attachment. In both cases, these plants can also assist with stormwater management by capturing some of the rainfall before it runs off into the drains and sewer network.

Through the stakeholder interviews, the panel gained a better understanding of the zeal



Solar installations atop parking lots can capture energy while helping to keep cars shaded and cool.



Easily-accessible EV charging stations in parking lots can encourage broader EV usage.

the neighbors and business owners have for the area's existing parking spaces. If it is not feasible to turn parking spaces into green infrastructure, it is possible to make better use of the space by capturing the sun's rays through the installation of solar panels above parking spaces. Encouraging electric vehicle usage through plentiful and proximate charging stations can also support those using vehicles in the area, while also supporting green improvements.



Green infrastructure along the Grand Concourse is a step in the right direction and should be deployed elsewhere.



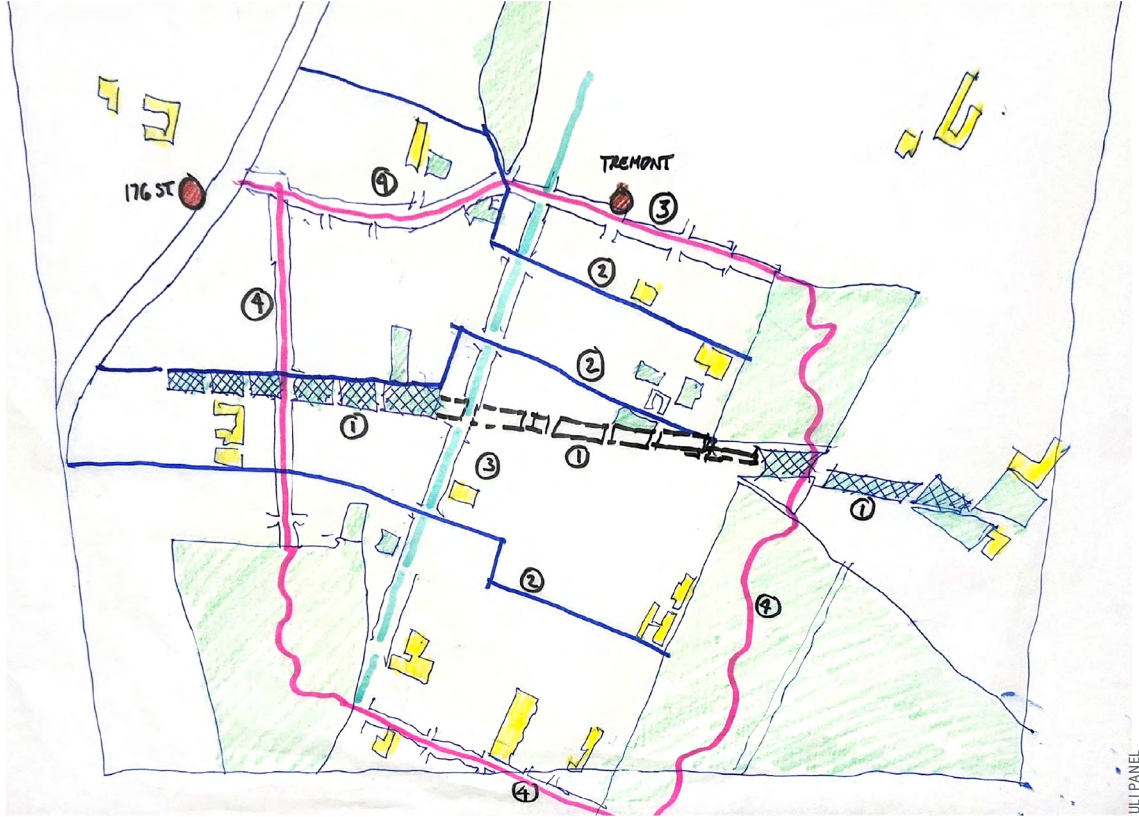
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Community Connections and  
Placemaking Models

In the course of its conversations with stakeholders and deliberations about improvements to the built environment, the panel turned back to the needs of the people living in the study area. With so many community members turning to ride share to complete short, intra-neighborhood trips, the panel recognized the importance of better connecting the community, enhancing the streetscape and pedestrian environment, and creating a walkable, sustainable, and cohesive network that community members would love to use.

## Build a Community Loop

Using the green infrastructure improvements recommended by the panel and leveraging the existing network of sidewalks and park trails, the panel envisioned a community loop—an interconnected and visible network that brings the community together through the built environment and supports social cohesion by encouraging community members to get out and walk.

- The loop, marked by the pink on the map to the right, makes use of the cool corridors that are envisioned for key east-west corridors. The cool corridors are the blue lines labeled “2” on the map.
- The loop is designed to connect four key parks in the study area, shaded green on the map, and to better connect the educational institutions that dot this Bronx landscape, which are represented by the yellow blocks on the map.



The Community Loop makes good use of and amplifies existing assets to aid safer and more pleasant pedestrian and non-vehicular movement around the neighborhood.

- The loop crosses over the CBE in two newly-capped sections of the interstate, which are noted with “1” and cross-hatching on the map above. To the east, the loop traverses the new park deck between Crotona and Walter Gladwin parks. To the west, the loop could connect over the expressway on Weeks Avenue, providing a safer direct connection to PS 70 for students and families.
- Finally, the loop makes use of existing paths in the parks, pulling people into the parks and exposing them to the healing qualities of open and green space.

## Leverage Small-space Placemaking

In the spaces between, whether in space leftover near the interstate or spaces between the public and private realms, there are several interesting opportunities for small-scale, small-space placemaking that can have a cumulative effect. These small-space interventions can enhance the environment and daily lives of the surrounding residents and make the walk along the city’s streets more enjoyable.

**Utilize underpass areas for community use.** With some careful planning and design, the

spaces on the edges of the CBE viaduct can transform into park space or space for programming for the community.

In Brooklyn, the space under the Kosciuszko Bridge has been transformed into “Under the K Bridge Park,” a formerly abandoned site that is now a seven-acre park along Newtown Creek. More than 20,000 trees and native plant species now grow in the park and under the bridge columns, which are connected by a signature continuous beam of light that runs the park’s length.

**Ensure the basics are covered.** The fundamental city maintenance functions, like trash removal and street sweeping, need to be prioritized and can no longer be neglected. Litter is a significant issue in the Bronx and around the study area, which leaves residents and visitors with a sense of abandonment, unsure if anyone is caring for these spaces. While not high-tech, litter removal by hand, with a team of people with brooms and sweep buckets, can make a big difference along popular commercial corridors where pedestrians frequent. The trash receptacles along neighborhood sidewalks should be readily available and frequently emptied.

**Pursue improved streetscape elements.** Streetscape elements, such as lighting and signage, and furniture, like benches and planters, can have a significant effect on the visual and physical experience of a street. Street signs that are well-lit and easy to read are important. Trash cans that are durable

and in good repair reflect the care taken across the public realm. Well-maintained tree boxes and planters, free of litter and full of thriving plants, enhance the streetscape and support the absorption of rainwater

before it enters storm drains or pools on sidewalks or streets.

**Talk with the community about graffiti.** While there are a number of instances of graffiti



The median along Grand Concourse is well-planted, yet litter and debris continue to collect on the edges.



Frequent street sweeping can help ensure that the streets remain free of litter and other debris.



Graffiti is very present across the neighborhood. Managing the graffiti—either through curation or removal—should be done in collaboration with and informed by the residents living in the area.

across the neighborhood, it is unclear if it is welcomed by the community. Through conversations with community members—both residents and business owners—perhaps some consensus can be reached over where, when, and how to remove graffiti or preserve it as community-generated art and expression.

### Capital Costs and Operations

The recommendations in this section will require capital expenses, to purchase street furniture for example, and will also require investments to support the ongoing operations and maintenance. To help

the Sponsors anticipate the scale of the potential costs involved, the panel outlined the following table of capital costs and

expenses. As these are only very rough estimates, much further exploration and refinement will be required.

Program	Estimated Capital Cost	Estimated Annual Operating Cost
Small space placemaking (10 parcels)	\$10 M	\$4 M
Litter collection	-	\$7 M
Streetscape upgrade (lighting, signs, trees, cans, etc.)	\$75 M	\$1 M
Graffiti removal	\$0.5 M	\$0.2 M

*\* These estimates relate only to the geography captured by the study area, are based upon the panelists' experiences, and may ultimately prove conservative in a volatile financing and/or construction environment.*



Leftover spaces, such as this cul-de-sac at the southern end of Anthony Avenue, could be transformed into space that leverages its proximity to the Cleopatra Playground, the Cleopatra Basketball Court, and the end of an interesting connecting walkway from Clay Avenue and its hopscotch patterned sidewalk mural.



# Potential Funding Sources

There has never been a better time to consider an infrastructure project of this magnitude. Federal, state, and local agencies are interested in opportunities to reconnect communities that were broken apart by the interstate highway system. Similarly, climate mitigation endeavors, such as the creation of the cool corridors, are also of public sector interest. These projects would require deep and varied resources, and would take years, perhaps even decades, to complete.

## Federal Funding

Federal funding is available from a variety of sources including the US Department of Transportation, the Environmental Protection Agency, and the Federal Emergency Management Agency.

### USDOT

- [Reconnecting Communities and Neighborhoods Grant Program](#) – grants to repair the harm caused by infrastructure choices of the past. The program prioritizes disadvantaged communities and aims to improve access to daily needs, foster equitable development and restoration, and reconnect communities by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity.
- [Neighborhood Access and Equity Grant Program](#) – grant awards to connect communities by supporting neighborhood equity, safety, and

affordable transportation access as well as mitigating negative environmental impacts. The NAE program will emphasize assisting economically disadvantaged or underserved communities with planning and capacity building.

- [Mega Grant Program](#) – grants to support large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.
- [Pilot Program for Transit-Oriented Development Planning – Section 20005\(b\)](#) – funding to communities to integrate land use and transportation planning for a new fixed guideway or core capacity transit project corridor through a comprehensive or site-specific planning study.

### USEPA

- [Community Change Grants](#) – funding for environmental and climate justice activities to benefit disadvantaged communities through projects that reduce pollution, increase community climate resilience, and build community capacity to address environmental and climate justice challenges.
- [Environmental Justice Government-to-Government \(EJG2G\)](#) – funding to support government activities that lead to measurable environmental or public health impacts in communities



A pedestrian path runs parallel to the CBE along the Cleopatra Playground.

disproportionately burdened by environmental harms.

- [Environmental Justice Collaborative Problem-Solving \(EJCPS\)](#) – funding to address local environmental or public health issues in their communities to develop solutions to environmental or public health issue(s) at the community level.

### FEMA

- [Building Resilient Infrastructure in Communities \(BRIC\)](#) – funding to support capability and capacity building, encouraging and enabling innovation, promoting partnership, enabling large infrastructure projects, maintaining

flexibility, and providing consistency to jurisdictions as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards.

## State Funding

At the state level, New York has also provided a number of funding mechanisms that would be worth exploring to support the capping infrastructure, as well as the other green infrastructure recommendations that the panel proposed.

- [Environmental Facilities Corporation Green Resiliency Grant Program](#) – grants to flood-prone communities and help them undertake innovative green infrastructure projects such as green roofs, green streets, and permeable pavement.
- [Department of State Downtown Revitalization Initiative](#) – funding to help transform downtown neighborhoods into vibrant centers that offer a high quality of life and are magnets for redevelopment, business, job creation, and economic and housing diversity.
- [Department of State Smart Growth Program](#) – funding for community planning and development activities that integrate economy, equity, environment, and energy with the goal of creating livable, sustainable, and equitable communities.
- [Regional Council Capital Fund Program \(ESD Grants – REDC\)](#) – funding for capital-based economic development initiatives intended to create or retain jobs; prevent, reduce, or eliminate unemployment and underemployment; and/or increase business activity in a community or region.
- [Capital Improvements Grants for Pro-Housing Communities](#) – funding to support projects in pro-housing communities to foster economic development by being a catalyst to increase availability and access to housing and stimulate community development and neighborhood growth through the elimination and redevelopment of blighted structures.
- [NYSERDA NY-Sun](#) – training, tools, and assistance to help local governments and jurisdictions identify opportunities, mitigate barriers, and create solar programs.
- [Homes and Community Renewal NY Main Street Program](#) – funding for units of local government, and not-for-profit organizations that are committed to revitalizing historic downtowns, mixed-use neighborhood commercial districts, and village centers.
- [Homes and Community Renewal Housing Trust Fund/LIHTC](#) – tax credits to promote private sector investment in the retention and production of rental housing that is reserved for low-income households.

## Local Funding and Programs

Finally, there are a variety of funding sources available through the City of New York, most of which would be in support of green infrastructure investments.

- [Department of Environmental Protection Green Infrastructure Grants](#) – funding for private property owners to incentivize private property owners to retrofit their roofs with green roofs to manage stormwater runoff.
- [Department of Environmental Protection Cloudburst Hub](#) – while not a formal grant program, by working with the city’s DEP, the agency’s work and focus could include the installation of a hub in the study area.
- [DOT Public Space Equity Program](#) – operational and maintenance services, horticultural care, financial subsidies, programming, and a host of technical assistance tools to public space partner organizations in under-resourced neighborhoods where community-based partner organizations need support in maintaining high-quality public space.
- [Housing Preservation and Development New Construction Financing](#) – funding programs to support the construction of affordable housing.



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# Conclusion

The work that the Sponsor team has embarked upon through the Reimagine Cross Bronx initiative is sparking conversations across the community that will have lasting social impacts and significant impacts on the health and well-being of community members. The repair required to reconnect the neighborhoods over the Cross Bronx Expressway, through highway capping and similar large-scale infrastructure investments will take years to execute and financial feasibility studies will be required. Yet, given the national conversations around this type of community healing and the funding being directed to it, the time is right to launch such an initiative for the Bronx.

There are also a host of other additional initiatives that can be launched to have positive impacts on the neighborhoods surrounding the interstate. The green infrastructure initiatives outlined by the panel and its vision for a community loop through the study area may also take years to complete yet these important neighborhood-scale improvements can begin to address issues the community regularly faces with extreme heat and roadway flooding.

Creating more welcoming pedestrian experiences across the neighborhoods, through the cool corridors concept and stepping up litter removal, can encourage

more walking adventures in place of short vehicular rides. The more cars that can be pulled off the street in favor of a short walk, the more pleasant, healthy, and vibrant the community can become. It is not just the traffic on the interstate that impacts the community; neighborhood traffic can also have similar health effects and further disconnect community members from one another.

Reconnecting the community is very much a built-environment endeavor, marked by capping the highway and improving the pedestrian experience throughout the neighborhoods. It is also a social endeavor, however, and the panel encourages the Sponsor team to keep the community—the residents of these Bronx neighborhoods—fully engaged, ensuring that the decisions made today are made with the community, not just for the community. The work completed to date on the Reimagine the Cross Bronx initiative reflects this approach. It is work that takes time, careful planning, and authentic relationship building.



10



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Appendix: Green  
Infrastructure

The City of New York has identified the importance of green infrastructure as a tool in stormwater management, environmental cooling, and climate resilience. Within the Bronx specifically, green infrastructure can be used as a tool to greatly support the future livability of the neighborhoods surrounding the Cross Bronx Expressway.

Reports, guidebooks, and toolkits abound and funding is readily available to support climate-adapted solutions in New York City neighborhoods. These resources should be maximized in the study area and across the broader neighborhood. NYC Department of Environmental Protection's [Green Infrastructure Program](#) holds great promise for green infrastructure solutions and has been rolled out across the City; the program remains under-leveraged in the study area, however, with a very small number of projects underway and all clustered at Little Claremont Park close to the Metro North rail line. According to the [city's green infrastructure mapping site](#), no other green infrastructure projects appear to be in the planning or construction phases in the entire western half of the Bronx.

For the study area and the areas along the CBE, the incorporation of the following green infrastructure tools, applied across wide sections of the landscape, would begin to have a significant positive impact on mitigating the flooding that plagues the area. Additionally, the increased use of elements like rain gardens in place of simple concrete pavement and blue and green roofs could also help cool the environment through the increased presence of vegetation, retained water, and reduced concrete surfaces.

## Existing Resources

New York City has a rich resource library for communities seeking information and guidelines to support improved climate resilience, green infrastructure, and sustainability measures across a wide variety of landscapes.



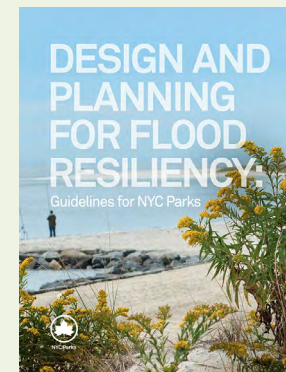
[NYC Green Infrastructure 2023 Annual Report](#)



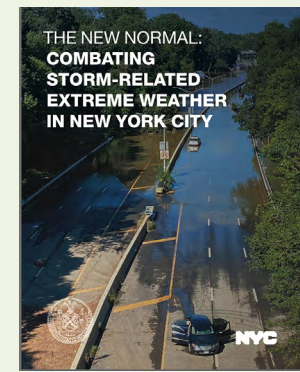
[PlaNYC: Getting Sustainability Done](#)



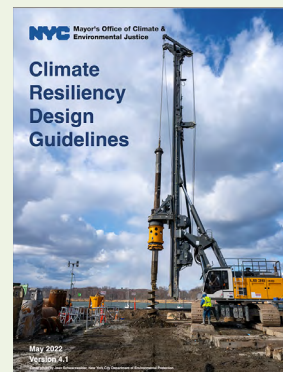
[Cool Neighborhoods NYC](#)



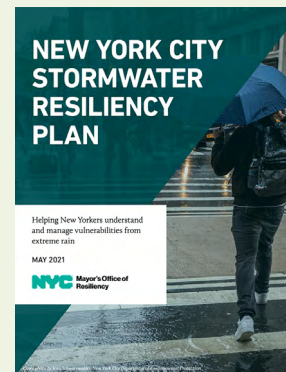
[Design and Planning for Flood Resiliency](#)



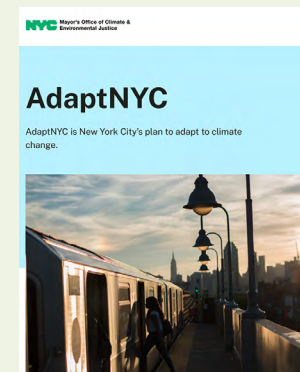
[The New Normal: Combating Storm-Related Extreme Weather In New York City](#)



[Climate Resiliency Design Guidelines](#)



[New York City Stormwater Resiliency Plan](#)

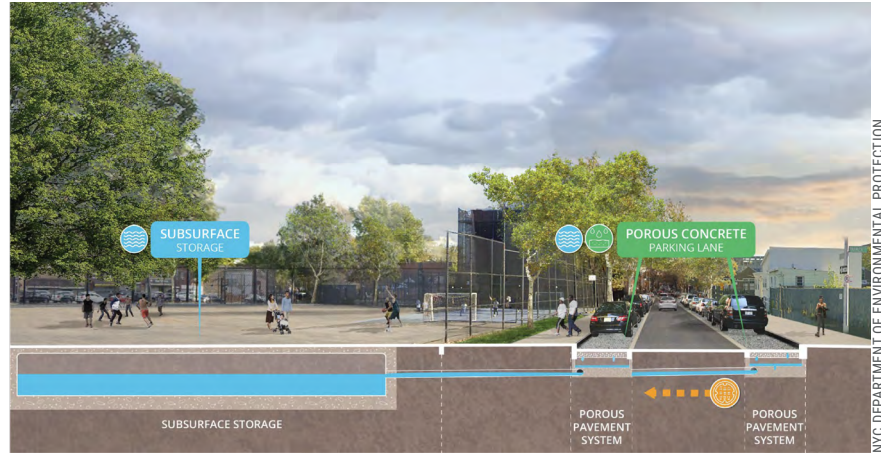


[AdaptNYC](#)

## Green Infrastructure Toolkit

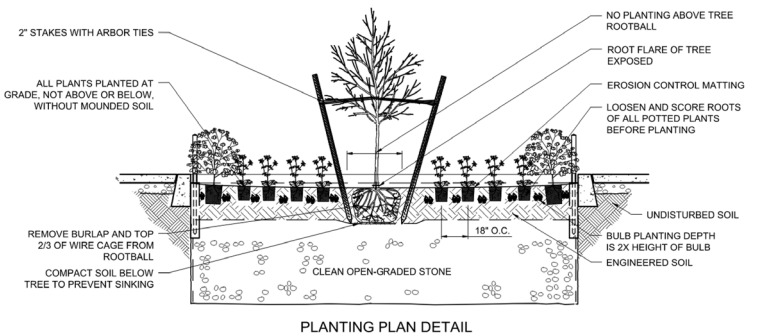
The following terms and diagrams are from the New York City Department of Environmental Protection's [website](#) and from the publication [Standard Green Infrastructure Specifications](#). These references can be used to guide further exploration into the tools that should be considered across the Bronx.

Co-benefits abound with the use of green infrastructure. Environmental co-benefits include water quality improvements, biodiversity, and habitat creation. Social co-benefits include enhanced public health through improved air quality and mental well-being as well as increased opportunities for awareness and engagement around sustainable practices and environmental stewardship. Economic co-benefits include reduced flood damages and the potential for increased property values and green job creation.



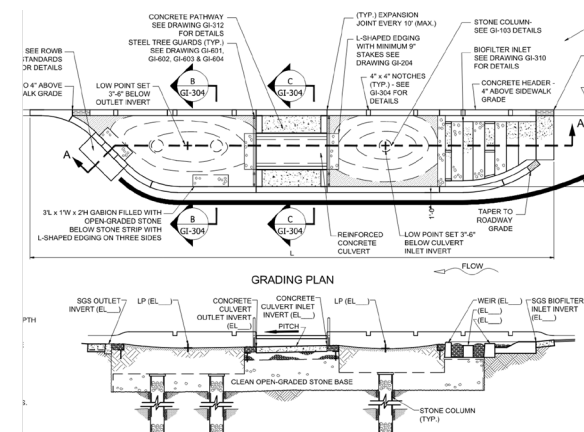
## Rain Gardens and Bioswales

They are located within the sidewalk and have curb cuts that serve as inlets and outlets to capture stormwater runoff along the roadway. The surface is a depressed bowl shape of vegetation designed to capture and hold stormwater. This area may or may not include a tree. The vegetation is underlain by an engineered soil of mostly sand mix, followed by an open graded stone area designed to capture maximum stormwater before infiltrating naturally into the existing subsoils. The latest design improvements include new planting plans, a concrete walking strip, and sediment capture mechanisms to trap debris and reduce erosion.



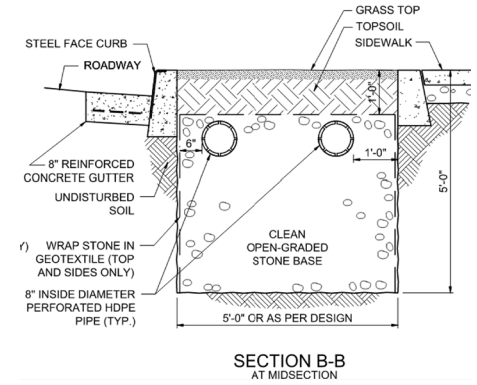
## Stormwater Greenstreets

Stormwater Greenstreets are very similar to Bioswales and are planted areas designed to collect and manage stormwater that runs off the streets and sidewalks. However Stormwater Greenstreets are typically constructed in the roadway, are usually larger than rain gardens, and have varying lengths, widths and soil depths based on the characteristics of the existing roadway.



## Infiltration Basins

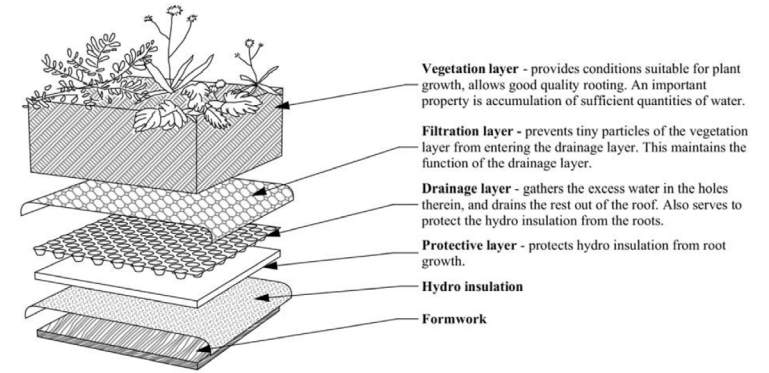
Infiltration Basins are designed to match the existing sidewalk (concrete or grass strip). They are the preferred alternative in high-density residential, industrial, or commercial areas where sidewalk space is limited, and plants may not thrive. The Infiltration Basin has an inlet within the curb which leads to a concrete chamber with sump underneath the grate within the sidewalk. The water is then dispersed into the asset by distribution pipes into the open graded stone layer.



## Green Roofs and Blue Roofs

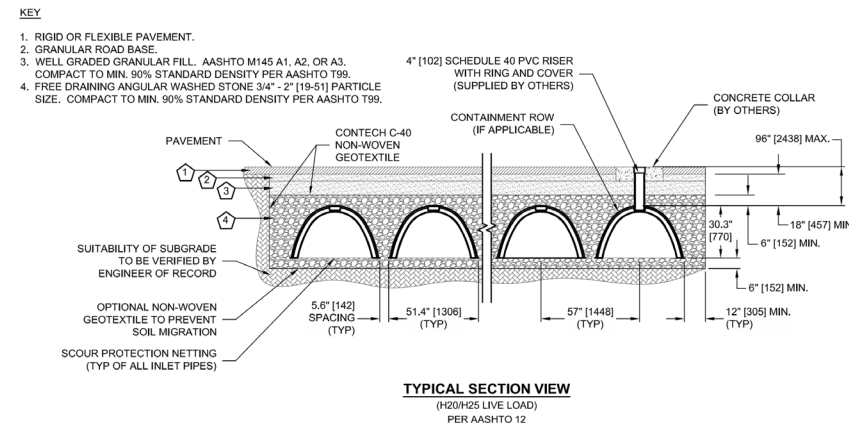
Green roofs are made up of a top vegetative layer that grows in an engineered soil, which sits on top of a drainage layer. A green roof can be intensive, with thicker soils that support a wide variety of plants, or extensive, covered in only a light layer of soil and minimal vegetation.

Blue roofs are designed without vegetation for the primary purpose of detaining stormwater. Weirs at the roof drain inlets create temporary ponding and gradual release of stormwater.



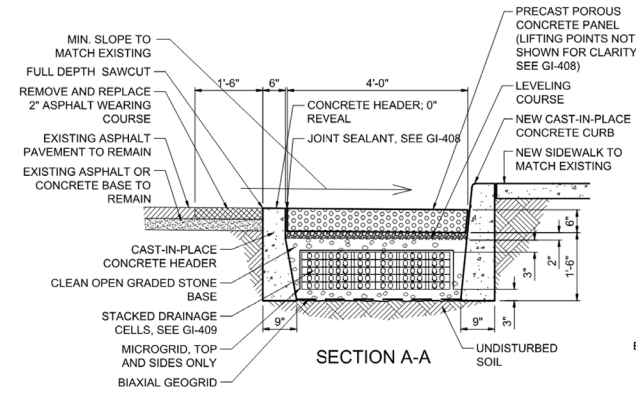
## Stormwater Retention and Detention

Subsurface Detention Systems with infiltration capability provide temporary storage of stormwater runoff underground. These systems have an open-bottom and can incorporate perforated pipe and stormwater chambers for added detention volume. Systems are primarily designed with a gravel bed that stores water until it can infiltrate into the ground.



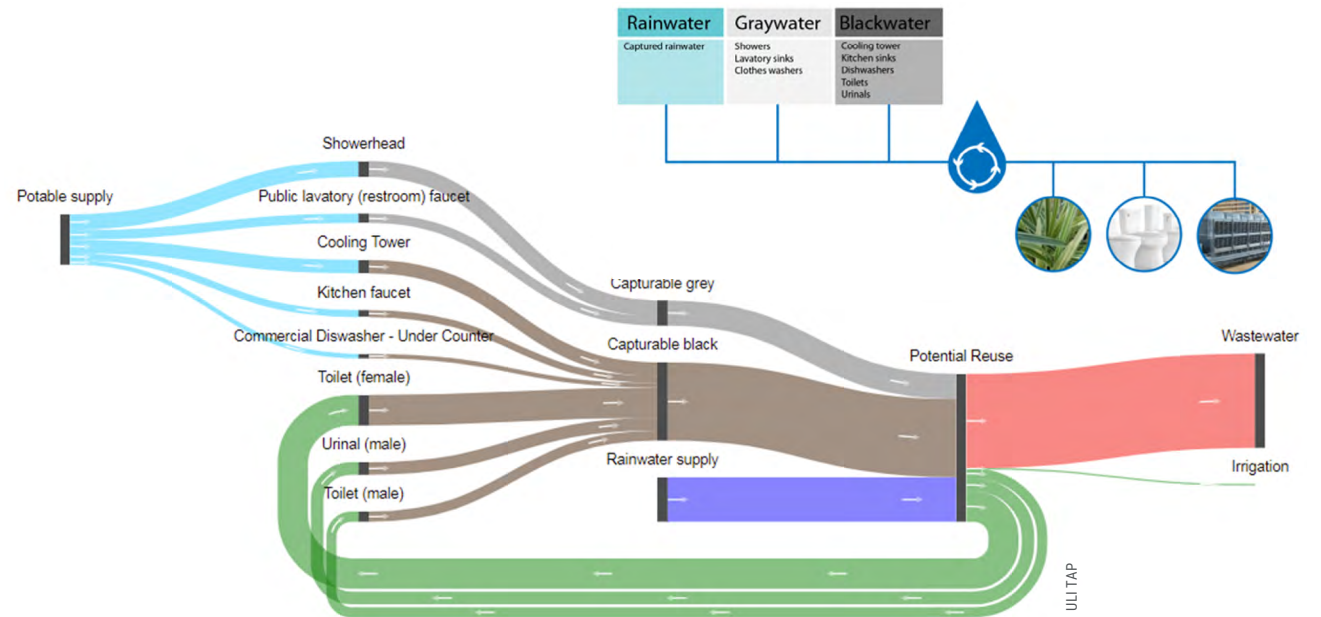
## Permeable Pavement

Permeable pavement installations in the roadway are ideal for neighborhoods with limited opportunity for green infrastructure on sidewalks due to existing trees, driveways, and other siting constraints. These installations typically extend four feet into the roadway from the curb, remain within the parking lane, and extend the majority of the block. Underneath the permeable pavement layer there is again an open graded stone storage layer for managing the collected stormwater.



## Water Reuse

In addition to traditional green infrastructure and low-impact development (LID) stormwater management strategies, there are also opportunities to reuse potable water and stormwater within individual buildings. As shown in the accompanying diagram, potable water, which is water that is safe for drinking, can be reused for greywater systems (i.e., landscape irrigation, toilet flushing, laundry) and for industrial cooling systems. Reusing rainwater involves collecting and storing excess water from roofs and other surfaces, which can then be reused for toilet flushing, landscape irrigation, and other greywater applications.



# Cross Bronx Expressway Improving the Environment Surrounding the CBE

NEW YORK CITY, NY  
TECHNICAL ASSISTANCE PANEL

MAY 2024

7:30 PM  
5/22/2024

## About the Panel



## Regina Myer

Panel Chair

President

Downtown Brooklyn Partnership

Regina Myer is President of Downtown Brooklyn Partnership, a not-for-profit local development corporation that serves as the primary champion for Downtown Brooklyn as a world-class business, cultural, educational, residential, and retail destination. Until October 2016, she served as President of Brooklyn Bridge Park, transforming 85 acres of formerly industrial Brooklyn waterfront into a world-class open space that welcomes millions of visitors a year, leading the mission to plan, construct, and maintain the sustainable waterfront park stretching 1.3 miles along Brooklyn's East River shoreline, creating a recreational, environmental and cultural destination enjoyed by the residents of, and visitors to, New York City.

Prior to Brooklyn Bridge Park, Regina was the senior vice president for planning and design at the Hudson Yards Development Corporation, and the Brooklyn Borough Director for the New York City Planning Department, where she directed the comprehensive redevelopment of the Greenpoint / Williamsburg waterfront, the rezoning of Downtown Brooklyn for high density office and residential development, and numerous neighborhood rezoning efforts. She received her BA and Masters in Urban Planning from the University of Michigan, and resides in Park Slope, Brooklyn.

## Daniel A. Biederman

Founder and President

Bryant Park Corporation, 34th

Street Partnership, and Biederman

Redevelopment Ventures Corporation

Dan Biederman is the Founder and President of Bryant Park Corporation, 34th Street Partnership, and Biederman Redevelopment Ventures Corporation. He also founded and managed Grand Central Partnership for 14 years, and Chelsea Improvement Company for 7 years.

During his career, through these entities, he has turned around or created 12 privately-funded and managed urban parks and seven troubled neighborhoods, cutting thousands of annual crimes, creating 2,500 direct jobs and over \$15 billion in real estate value.

In 1980, he began the restoration of Bryant Park. Under Biederman's guidance, BPC instituted a program of security, sanitation, capital repair and public event planning that transformed the park from a symbol of urban violence and neglect into a gorgeous, impeccably maintained and crime-free gathering place that became Manhattan's Town Square.

Starting in 1989, Biederman set up the 34th Street Partnership, a Business Improvement District covering 31 key blocks in midtown Manhattan. Using methods honed at Bryant Park, 34SP was instrumental in the dramatic revival that has made 34th Street one of NYC's most vibrant neighborhoods. Crime declined by 90%, the streets are free of litter and the capital plant is innovative and well-maintained. 34SP transformed the downtrodden Herald and Greeley Squares into pleasant places for shoppers to rest, and popular locations for events and product launches.

Mr. Biederman has also consulted for private realty owners, universities, professional sports teams, government agencies, and foundations in 34 states and seven foreign countries. His consulting experience includes the programming, fund-raising, and park operations plan for Klyde Warren Park in Dallas, probably the most successful "cap park" in the US. He is also on the team that is currently analyzing a cap for I-75 in downtown Detroit.

He graduated from Princeton's Woodrow Wilson School of Public Affairs, magna cum laude, in 1975, and from Harvard Business School with distinction in 1977.

## David Burgy

Senior Resilience Planner  
Stantec

David Burgy, AICP, PMP is a Senior Resilience Planner at Stantec, focused on advancing climate resilience, transportation infrastructure solutions, and funding strategies for clients. David has more than 12 years of experience working at the intersections of climate adaptation, transportation, and socioeconomic and demographic analysis in New York State. His experience includes nearly nine years in the public sector working on a \$4.5 billion HUD CDBG-DR funded disaster recovery and climate adaptation grant to support housing, economic development, community reconstruction, and infrastructure, in addition to service on the New York State Extreme Heat Action Plan Work Group. His experience also includes several years in the private sector, consulting to NYSDOT on socioeconomic and demographic factors for federally required transportation planning processes, co-authoring the society and economy chapter of the New York State Climate Impact Assessment, and most recently helping a client in New Jersey understand federal funding sources available for their transportation, sustainability, and resilience strategies. David has actively volunteered with the American Planning Association for over a decade to advance consideration of social equity in all areas of practice nationwide.

## Tyler Cukar

Senior Associate  
FXCollaborative

Tyler Cukar, AICP, LEED AP ND, is a Senior Associate at FXCollaborative where he practices at the intersection of urban design, planning, and architecture. Tyler approaches each project with an eye towards community and inter-connectivity by questioning 'who' in addition to 'what'. Bringing professional experience in architecture, landscape architecture, transportation design, urban design and planning, he weaves these dynamic complexities together with work on some of New York City's largest planning projects, including the Penn Station District Plan, the Sunnyside Yard Feasibility Study, the Revisioning of Fifth Avenue, and the closure & reuse of Riker's Island. Through creating connections that holistically consider social, economic, and physical particularities, Tyler is responsible for shaping the organization and programmatic concepts that come to define spaces and cities. In addition, Tyler has extensively researched race and social equity in the built environment and has been published, featured on NPR podcasts, and lectured at multiple National AIA and APA events on the topics. Tyler aims to form equitable communities and activate change that both maintains the integrity of a place and acts as a catalyst for the future. Tyler is a fellow at the Urban Design Forum and a frequent guest critic at numerous universities including Columbia, Pratt, Parsons, NYU, and Cooper Union.

## William Farrell

Senior Transportation Engineer  
Sam Schwartz

William is a professional transportation engineer at Sam Schwartz with over ten years of experience in NYC and a strong conviction for social, economic, and environmental justice. At Sam Schwartz he has led projects ranging from highway mitigations, probe data analyses, and airport landside operations. He has also held additional positions as a data journalist for the DC Policy Center and an adjunct professor at The City College of New York. He received his Bachelor's and Master's degrees in Civil Engineering from McGill University, where he researched the relation between land use and transportation related air pollution.

## Michael Haggerty

Principal

**Starr Whitehouse Landscape Architects  
and Planners**

Michael Haggerty is a Principal at Starr Whitehouse Landscape Architects and Planners. As Director of Urban Planning and Design, he leads projects related to open spaces, housing, streets, and climate resilience. His recent work in New York City reimagines connectivity and sustainability in urban systems. Current and recent projects include Climate Strong Communities for the Mayor's Office of Climate and Environmental Justice, the East Village / Lower East Side Waterfront Access Study for NYC DOT, Manhattan Greenway Harlem River for NYC Parks, and the Union Square / 14th Street Streetscape Plan for Union Square Partnership. Michael began his career with the public art organization Creative Time in New York, and subsequently earned professional degrees in architecture and urban planning at Harvard University Graduate School of Design. While at Harvard he was awarded the Presidential Public Service Fellowship to work with MASS Design Group.

## Julie Pietrzak

Principal, Sustainability & Resilience

Practice Leader

**Thornton Tomasetti**

Julie Pietrzak, Thornton Tomasetti's Sustainability & Resilience practice leader, provides sustainable and resilient building and infrastructure design and carbon consulting services to a range of clients. A licensed civil engineer in NY, NJ, MA & CA, she has particular expertise in climate risk and resilience assessments, stormwater management, and the implementation of multi-hazard climate resilience strategies. Julie specializes in analyzing potential vulnerabilities to site-specific climate hazards over a project's lifespan and works with clients to develop sustainable and resilient solutions for maintaining business continuity following a hazardous event. Her portfolio includes the design of large-scale water resource and land development projects and flood resilience strategies for NYC MTA, MBTA and SFPUC. Julie was invited by the National Academy of Engineering to participate in the US Frontiers of Engineering Symposium in 2017 and 2018 and the Japan-America Symposium in 2021.

## Marquise Stillwell

Founder + Principal

**Openbox**

Marquise Stillwell is a designer and a catalyst for building communities and products across design, art, and culture. His career spans across two decades, and his curiosity for people and spaces developed into a passion for designing systems to make environments better for all people. In 2009, Marquise founded Openbox. Within Openbox, he later co-founded Opendox, a film company that tells lesser-known narratives around art, science, nature, and politics. Marquise has executive produced *The New Bauhaus* and most recently co-directed *This World Is Not My Own*, which premiered at SXSW and Hot Docs. He has also co-founded *Deem Journal*, a biannual print journal and online platform focused on design as social practice, and *Urban Ocean Lab*, a think tank for the future of coastal cities. Most recently, he acquired *Stae*, a go-to open-source data hub that allows people to visualize and leverage open city data in a meaningful way. Additionally, Marquise serves as a board member for the Center for Architecture and the Public Housing Community Fund as well as on advisory boards for Creative Capital, Riverkeeper, and Black Girls Shred. He is also a member of the High Line Advisory Committee, a fellow at Urban Design Forum, and was a Founding Board Member and Co-Chair at The Lowline, the first underground park.

## Jay Valgora

**Founder and Principal  
StudioV**

Inspired by the industrial architecture of his hometown of Buffalo, from the iconic grain elevators to the vast steel mills where his father worked, Mr. Valgora pursued his passion for architecture. Receiving degrees from Cornell University, Harvard University GSD, and a Fulbright Fellow to the United Kingdom, he gained valuable experience in firms from Boston to London. Finally arriving in New York City, he founded STUDIO V, a practice dedicated to the reinvention of the city.

Mr. Valgora's work is defined by an extraordinary range of projects and scales, encompassing innovative new construction to creative adaptive re-use, dramatic interiors to new urban networks and neighborhoods. His designs have been recognized internationally for engaging history, culture and context with innovative contemporary design: creating inspirational public spaces, encouraging diversity, restoring historic artifacts, and bringing new life to the edges and interstices of our city while reconnecting communities.

## Autumn Visconti

**Regional Design Leader – Landscape  
Architecture  
HOK**

A recognized leader in urban planning and landscape architecture, Autumn Visconti RLA, ASLA specializes in reimagining existing infrastructure to create vibrant, resilient and equitable public spaces. Her projects help cities prepare for climate change and foster community bonds.

Autumn's award-winning portfolio includes leading the design team for the East Side Coastal Resiliency project, a \$1.45 billion initiative to construct 2.5 miles of flood-resistant public waterfront in Lower Manhattan. She also led the design of the new Brooklyn-Queens Park that will transform an aging three-tiered highway into a linear park and greenway.

Autumn is a frequent speaker on the pivotal role landscape architecture plays in the integration of open space and city making. She is an Urban Design Forum Forefront Fellow, an active member of the American Society of Landscape Architecture and was honored as an "Outstanding Alumna" by Virginia Tech's College of Architecture and Urban Studies.



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